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# Integrating Ethical Literacy Regarding the Use of Emerging Pedagogical Technologies into Initial Teacher Education Programme: Educational Stakeholders' Perspectives in Tanzania

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## ABSTRACT

The dramatic adoption of digital technology has raised enormous ethical concerns within the education community. This study explored educational stakeholders' perspectives on the place of ethical literacy regarding the use of technology in initial teacher education (ITE) in Tanzania. Also, it inquired about the reasons for their perspectives and aspects that should be taught in the ITE. It was a qualitative case study with 40 participants, including pre-service and in-service student-teachers and teacher educators selected from the Dar es Salaam University College of Education. The data were collected through semi-structured interviews, Focus Group Discussions and document reviews. The findings indicate the need for ethical literacy in ITE due to the increased unethical practices, the absence of training on the ethical use of technology, the digitalisation of education, and the preparation of ethical role models. The respondents cited the concepts of cyber ethics and associated terminologies, privacy and confidentiality, intellectual property and copyrights, information accuracy, plagiarism and the National Cybercrimes Act of 2015 as key aspects for inclusion in the ITE. The study recommends that integrating ethical literacy into ITE should be mandatory. Also, regular seminars and workshops are paramount to expose in-service teachers to ethical knowledge about technology use.

**Keywords***: Initial teacher education*; *pedagogical technologies; ethical literacy*

## INTRODUCTION

Technological developments have been more drastic in the 21st century worldwide (Nishad et al., 2016). They have incorporated the emergence of digital technologies and the high availability of reasonably affordable networked digital devices, such as smartphones, laptop computers, and tablets (Omiunu, 2017; Wishart, 2018). As the world is hurrying toward digital media and the information society, these devices have occupied every sphere of human activities, including education (Alemu, 2015; Sareen, 2020). In education, digital devices have emerged as new pedagogical tools with significant potential to enhance teaching and learning with no place or time limit (Shohel et al., 2010; Al-jundi et al., 2017; Koohestani et al. 2019). Their multi-functionality and broader connectivity have inspired most countries worldwide to embrace mobile learning to improve access to quality education (UNESCO, 2017).

In sub-Saharan Africa, mobile learning through networked digital devices has been identified as a catalyst for addressing the shortage of teachers and educational resources (Swarts et al., 2010). They are also regarded as potential means of diversifying education to enhance the competitiveness of the workforce in the increasingly globalised world (Gibbons et al., 2018; Njiku et al., 2022). Hence, several initiatives and reforms have been implemented to guide and regulate the integration of digital technology as a pedagogical tool into mainstream education systems (UNESCO, 2017; Mtebe et al., 2020;). For example, through different projects, governments, in collaboration with educational partners, have made available a range of digital devices and internet connectivity in schools and colleges (UNESCO, 2017). This implies that a 21st-century teacher must be capable of using digital tools and virtual platforms to meet their own professional needs and promote students' learning (McGarr et al., 2021). To ensure that teachers have adequate digital

literacy, an increasing number of Initial Teacher Education programmes (ITE) offer courses in educational technology (Manyengo, 2021). Although the content of courses may vary across countries, they are mainly aimed at providing teachers with the skills needed to integrate digital technologies in the planning and delivery of lessons (Shin, 2015; Manyengo, 2021).

Like other sub-Saharan African countries, Tanzania recognises the educational potential of digital technology in the ever-changing world of work (United Republic of Tanzania [URT], 2003, 2007). In a bid to reap the potential, in 2007, the ICT Policy for Basic Education was launched to guide the mainstreaming of technology in education (URT, 2007). The policy has identified a variety of digital devices relevant to the delivery of education, including mobile phones, laptops, TVs, e-players, tablets, and related services (URT, 2007). Accordingly, in 2009, the government developed the Framework for the Integration of Digital Technology in ITE to support the professional development of teachers in government teacher training colleges (Manyengo, 2021).

Along with the policy initiatives, investment in infrastructure to support the use of various digital devices in schools and colleges has been a priority (Ministry of Education, Science, and Technology [MoEST], 2017). Until 2017, 20% of secondary schools and all government teacher training colleges had Internet connectivity (MoEST, 2017). Most recently, the government has provided over 293,400 tablets to teachers and teacher educators to improve the teaching and learning process (Daily News, 2022). Recognising that the meaningful integration of technology in education requires teachers with adequate digital knowledge and skills, teacher educators have received in-service training in technology use. Also, training on ICT use for pre-service teachers has been one of the ITE curriculum's components (Mtebe et al., 2020; Manyengo, 2021; Njiku et al., 2022).

However, while knowledge and skills in the pedagogical use of technology are important, given that teaching is inherently a moral career, its moral nature cannot be separated from pedagogical knowledge (Purevjav et al., 2017). This entails that ethical knowledge is also imperative if 21st-century teachers are to exhibit the best example possible in using technologies in their work (Mfaume, 2020; Milton et al., 2021). In this context, the ITE could be the most important venue for developing teachers' pedagogical and ethical competencies regarding the use of digital technologies (Iyadat et al., 2012; Marcial, 2017; Rogerson, 2017; Stahl et al., 2017; Mfaume, 2020; Mfaume, 2022). Ethically competent teachers are uniquely positioned to embrace digital technology's ethical and critical use in their future workplaces. They are expected to be role models to students and the wider society regarding ethical use (Langland, 2009; Milton et al., 2021).

Notwithstanding its importance, ethical literacy regarding digital pedagogical technologies is not explicitly included in the ITE curriculum in Tanzania (Jamil et al., 2013; Manyengo, 2021). Nevertheless, as the adoption and use of digital technologies increase, some reports indicate that teachers are among the culprits of unethical practices in cyberspace. They are reported to have engaged in defamation, plagiarism, invasion of privacy, examination malpractices, sexting, cyber bullying, falsification, and unauthorised disclosure of confidential documents (National Examination Council of Tanzania, 2009; Lubasi, 2017; Ramadhan, 2018; Mfaume, 2020; Mfaume et al., 2022;). In instances where ethical values are violated, it might imply a low level of ethical knowledge, signifying the training needs for teachers. Thus, the neglect of ethical literacy in the ITE, and the seemingly alarming rate of unethical use of digital technology, incited the researcher to explore stakeholders' perspectives on the place of ethical literacy in the ITE curriculum in Tanzania. For this purpose, the researcher attempted to answer the following key questions:

1. What views do education stakeholders have on integrating ethical literacy about using emerging pedagogical technologies into the ITE curriculum in Tanzania?

2. What key ethical aspects do stakeholders consider worth integrating into the ITE curriculum in Tanzania?

## RELATED LITERATURE

Ethical issues surrounding the use of technology have garnered a great deal of interest from educational researchers across countries. This section highlights some studies to provide insights into this area.

Crystal, Geide, & Salpeter (2000) highlighted the need to teach students about computer ethics to minimise the growth of cybercrimes and unethical behaviours. Kuzu (2009) examined problems associated with computer ethics in Turkish universities. The participants requested better training in computer ethics to promote ethical use. Iyadat et al. (2012) determined university students' level of knowledge of information technology ethics in Jordan. They revealed that most students had a moderate awareness of the ethical use of computer technologies and recommended that universities teach ethical behaviours to prevent cyber crimes and better prepare them for the world of work. Shin (2015) pointed to a lack of awareness and knowledge of copyright among pre-service teachers and called for training in cyber ethics for teachers. Warnick et al. (2016) exposed unethical behaviour among teachers, including displaying their videos while committing an offence, infringing copyright, and sharing images or videos without a third party's consent. Cilliers (2017) assessed ethical information issues among undergraduate students in South Africa and revealed plagiarism was a serious problem among first-year students. The study recommended that information ethics must be included in the undergraduate curriculum. In a survey by Gallego-Arrufat et al. (2019), 47% of teacher trainees in Spanish and Portuguese pointed to unethical practices, such as inappropriate sharing of information and digital content.

Gudmundsdottir et al. (2020) asserted that competence in cyber ethics should be considered a key transversal competence for teachers. Helleve et al. (2020) opined that pre-service teachers must be aware of and responsible for how they want to present themselves on social media during the transition from student to teacher status. Baysan et al. (2021) determined the training need of teachers regarding the ethical use of information technologies in Turkey. They pointed out that most teachers were adequately informed about the ethical use of technology; thus, they needed less training. A study by Milton et al. (2021) established that most pre-service teachers in Malta, Spain and Norway lacked knowledge about copyright rules and sharing images that are not licensed. They recommended that Cyber ethics be integrated as a key dimension of ITE. Marín et al. (2021) revealed a lack of knowledge about pre-service teachers' perspectives regarding social media data, copyright and privacy and recommended its inclusion in the ITE curriculum. Also, in their study, McGarr et al. (2021) revealed that 48% of pre-service teachers shared images on social media without asking for consent. They suggested teaching them key concepts associated with cyber ethics during ITE.

Aderibigbe et al. (2022) assessed the cyber ethical behaviour of undergraduate students at the Nigerian Federal University. Their findings revealed a higher prevalence of cyber hacking, cyber-sexuality, and cyber defamation attributable to a lack of cyber ethics knowledge. They recommended that universities educate their users on cyber ethics and the consequences of deviant behaviour. Sibanda et al. (2022) examined the level of cyber security awareness among students and staff at Zimbabwe universities. Their findings showed that most lacked the requisite cyber security and data protection knowledge. They recommended training sessions to ensure users understand the most common cyber security threats and vulnerabilities. Mfaume et al. (2022) revealed several reasons for teachers' unethical use of mobile phones in Tanzania, including a lack of ethical knowledge about technology use. They recommended incorporating ethical aspects of technology use into ITE. The recent study by Eltahir et al. (2023) on cybersecurity awareness

among university students in Sudan revealed limited cybersecurity knowledge. The participants recommended the inclusion of cybersecurity awareness courses in undergraduate programmes.

The above literature underlines the need to understand the perspectives of further education stakeholders on integrating cyber ethics knowledge in ITE in Tanzanian contexts. This study attempts to fill that knowledge gap.

## RESEARCH METHODOLOGY

The study adopted a qualitative approach to explore and gain insight into respondents' perspectives on the subject under investigation. The approach was appropriate for the study as it allowed the researcher to delve into respondents' perspectives about the place of ethical literacy regarding the use of emerging pedagogical technologies in the ITE curriculum (Yin, 2011; Creswell, 2014). In line with the qualitative approach, a case study design enabled the researcher to obtain in-depth, rich and varied views from the pre-service and in-service student teachers, teacher educators and lecturers from the Faculty of Education at the Dar es Salaam University College of Education (DUCE) (Yin, 2011; Creswell, 2013). Also, it allowed for the triangulation of research methods and multiple data sources (Yin, 2011; Patton, 2015). The choice of DUCE as a case study was twofold; it was convenient for the researcher and is one of the major colleges that explicitly train teachers in the country. This allowed the researcher to have prolonged engagement with participants and gain an informed understanding of their perspectives on the topic at hand in their natural settings (Yin, 2011).

The study sample included forty (40) respondents, including 18 undergraduate pre-service teachers, 18 postgraduate in-service student teachers, two teacher educators from the cohort of postgraduate students and two lecturers from the Faculty of Education. They were purposefully selected based on their position, course and programme, and willingness to participate in the study (Mertens, 2010; Patton, 2015). In this respect, pre-service and in-service teachers from the cohort of undergraduate and graduate students who were in teacher training and had taken ethics courses were selected. Accordingly, teacher educators (Tutors) from teacher training colleges pursuing master's degrees in Education at DUCE and the Lecturers teaching ethics-related courses were included in the study. These respondents were exposed to ethical issues in the field of Education and hence provided pertinent and extensive data on the subject.

Data were collected through semi-structured interviews, Focus Group Discussions (FGDs) and the review of documents (Mogalakwe, 2006; Turner, 2010; Patton, 2015). Interviews gathered in-depth information from tutors and lecturers (Turner, 2010). They allowed the interviewees to express their opinions fully, enabling the researchers to delve deeply into insider perspectives on the subject under inquiry (Turner, 2010; Patton, 2015). Accordingly, FGDs were used to collect data from pre-service and in-service student teachers. Three FGDs, each including six participants, were held with the pre-service teachers and three with the in-service student teachers. The group dynamics encouraged participants to probe each other during the discussions, allowing the researcher to get different perspectives and immerse himself in the subject (Patton, 2015). All interviews and FGDs were conducted in areas with no interruptions to ensure confidentiality and were recorded with the participant's consent, each taking not more than one hour. The researcher also reviewed documents such as course outlines, the Cybercrimes Act of 2015, the Teachers' Code of Conduct, and the Public Servant Code of Conduct to augment and verify the data from interviews and FGDs (Mogalakwe, 2006; URT; 1996; 2015; TSC, 2016). All ethical protocols were adhered to before, during and after the research.

Data collected were analysed through six stages of thematic data analysis proposed by Braun et al. (2006). In the first stage, the researcher transcribed the audible data in written form and read each transcription several times while listening to the relevant audio tape to become familiar with

the data. The second stage involved compiling the data into sections of repetitive ideas in different transcripts and grouping them to form precise initial codes. In the third stage, the original codes were redefined after repetitive changes, and the researcher tried to find the meaning contained in each extract and the associated code. The fourth stage involved interpretive coding, where the researcher focused more on interpreting the meaning of each code than describing the participants' accounts. Accordingly, codes with similar ideas were collated based on research questions and literature. In the fifth stage, the researcher identified all descriptive codes with common meanings as major themes to establish participants' perspectives and opinions. Finally, the researcher developed concepts, reached general statements and conclusions based on relationships and trends in the themes identified in the data, and then reported the results (Braun et al., 2006).

## FINDINGS

This section presents and discusses the study findings in two parts according to the research questions.

### Perspectives on the Place of Ethical Literacy Regarding Technology Use in the ITE

The first research question inquired about respondents' perspectives on the place of ethical literacy related to the use of emerging pedagogical technologies in the ITE curriculum in Tanzania, and why they held these views.

The results indicated that all the respondents acknowledged the integration of ethical literacy regarding using emerging pedagogical technologies as an integral part of the ITE curriculum. They stressed that ITE must be the first place to familiarise and equip pre-service teachers with the ethical understanding of using technology for a smooth transition to become professional teachers. The respondents' opinions are well articulated in the following quotations:

> *"I think the ethical use of technology was supposed to be part of the teacher education programme since 2007 when the country adopted the ICT policy. This is an important aspect that pre-service teachers should learn before they are employed" (*Lecturer)

An in-service student teacher added:

> *"Teachers must have a pedagogical and ethical understanding of the use of technology to survive in the 21st century. It is, therefore, time for our colleges and teacher-training universities to teach these skills as a basic course for our educational well-being"* (In-service Teacher).

In support of these views, a pre-service student teacher admitted:

> *"Technology is part of our daily life inside and outside the college. Unfortunately, most use it dishonourably due to a lack of ethical knowledge. Therefore, teaching ethical use of technology is essential to our smooth journey to becoming teachers."* (Pre-service Teacher)

The preceding excerpts indicate that integrating ethical knowledge of technologies use into the ITE is essential for a more thorough understanding of the ethical use of new pedagogical technologies. The study respondents indicated four key reasons for including ethical literacy in the ITE. One of the reasons was the prevalence of unethical practices exhibited by pre-service and in-service teachers. They noted that unwholesome practices such as cyberbullying, disclosure and sharing of confidential official information, sharing other people's images or videos without consent and

examination malpractices, to mention a few, have been tremendous. According to the respondents this situation implies a lack of knowledge regarding the ethical use of technology, which justifies the need to integrate it into the ITE. Commenting on this, a college tutor explained the following:

> *"The unethical use of technology is increasingly becoming a critical problem among our country's pre-service and in-service teachers. This is due to a lack of knowledge on ethical use. Teaching moral literacy in ITE is the right way towards positive behaviour"* (Tutor).

Accordingly, an in-service student teacher added:

> *"There are increasing unethical incidents committed by teachers online. For example, a few weeks ago, teachers in the Kagera region recorded and posted their head of school punishing students instead of helping the victims. This also happened in the Mbeya region some years ago... teachers also engage in examination fraud and share confidential official documents without consent. These incidents indicate the lack of ethical knowledge that ITE should address"* (In-service Teacher).

A pre-service student teacher also expressed a view on this:

> *"I propose that not only student teachers but all students in tertiary education [should] be taught essential behaviour associated with technology use. This will help to prevent cyber crimes, which are rampant in colleges and workplaces in our country*..." (Pre-service Teacher)

The above statements suggest that teachers misuse technologies due to a lack of awareness of cyber ethics. Therefore, its integration into ITE will enable teachers to better understand the appropriate use of emerging technologies.

Moreover, it emerged from the views expressed by most of the pre-service and in-service student teachers that, at present, ethical literacy in the use of technology is not part of the ITE programme in teacher colleges that offer a Diploma in Education. Nor does it appear in the ethics courses provided to students by universities like the University of Dar es Salaam. Therefore, they felt it was essential to incorporate this aspect into the ITE curriculum so that student-teachers would know earlier how to identify and address cyber-ethical issues before taking up professional roles. The following assertions clarify the findings:

> *"Teacher training is an effective way to improve teachers' ethical standards directly... I'm wondering why this knowledge is not being taught in our teacher training colleges" (*Teacher training college tutor)

The findings were also well elaborated by an in-service student teacher:

> *"Knowledge of ethics regarding the use of technology should be an integral part of the ITE curriculum...when I was pursuing a diploma in Education, no ethics courses were given. At the undergraduate level, we had an ethics course and one in the first semester of the master's programme. Still, none had ethical aspects regarding the use of technology... this is an aspect worth being taught during ITE*." (In-service student teacher)

Based on the above findings, the implication is that to reap the enormous benefits of emerging technologies, ITE should focus on developing pedagogical and ethical competencies so that pre-

service teachers become familiar with the ethical use of technologies before undertaking professional responsibilities.

The respondents also cited that ethical literacy should be incorporated into the ITE because, as future educators in the information society, pre-service teachers will be responsible for demonstrating ethical use of technology to the community and their students. Apart from setting a positive example, they will also be responsible for teaching students about personal and professional safety online. To carry out this responsibility successfully, they must have acquired adequate cyber-ethics knowledge during the ITE. The view of the lecturer below reinforced this view:

> *"I propose integrating ethical knowledge into the ITE because pre-service teachers are future leaders and agents of change in the information society. They cannot escape the ethical responsibilities of being ethical role models in technology use, which requires adequate training*." (Lecturer)

An in-service student teacher supported the view:

> *"Ethical literacy must be integrated into the ITE to enable pre-service teachers to develop and administer their professional identity, particularly by being aware of their online behaviour."* (In-service teacher).

In a similar tone, a pre-service student teacher put it thus:

> *"In today's society, teachers' personal and professional lives are inseparable from technology. Therefore, acquiring ethical and moral knowledge of using technology during ITE is paramount for them to behave as public and professional digital role models*." (Pre-service student teacher).

The findings suggest that ethical competence in ITE is pertinent for pre-service teachers' proficient and fluent use of digital technologies, as role models in their future personal and professional lives. Another reason the respondents considered integrating ethical literacy into ITE was the digitalisation of education. They said the Government of the United Republic of Tanzania is making concerted efforts and developing initiatives to promote access to quality education through various digital technologies. Also, it has been training teachers on integrating digital skills into teaching and learning. Still, these initiatives hinge on the availability of pedagogical knowledge and skills, often leaving gaps in ethical knowledge. In this regard, they emphasised that for meaningful digitalisation of education, teachers need both pedagogical and ethical literacy. They noted that moral literacy would enable teachers to assess the authenticity of online teaching and learning materials, as some online materials originate from predatory sources and are unregulated in quality. Consider the following sentiment from a college tutor:

> *"ITE must prioritise teaching ethical literacy about technology use because our education system is transforming into digital. So digital and ethical competencies are paramount for teachers' proficient integration of digital technologies in teaching and learning*..." (College Tutor)

One of the lecturers who were interviewed agreed as follows:

> *"The government is making concerted efforts to digitalise our Education. Thus, pre-service teachers must be digitally and ethically competent in applying technologies. Nowhere can these competencies be acquired apart from the ITE."* (Lecturer)

One pre-service student teacher went on to say:

> *"Education worldwide is transformed drastically from a traditional to a digital system. This means that 21st-century teachers must be digitally and ethically competent... Teacher education is an efficient way to equip teachers with these potentials."* (Pre-service teacher)

The preceding excerpt entails that the rapid transformation of education to digital learning exposes teachers to critical pedagogical and ethical challenges. Thus, teachers should acquire adequate digital pedagogical and ethical competencies from initial teacher education to face the challenges.

**Ethical Aspects for Inclusion in ITE Curriculum**

The second research question was to obtain respondents' perspectives on the ethical components worth integrating into the ITE. The findings disclosed the following:

Most respondents proposed that the ITE curriculum should prioritise the ethical and responsible use of technologies by first exposing pre-service teachers to the meaning of cyber ethics, its associated terminologies, its importance, and the consequences for violating it. They stated that understanding key concepts is critical in capturing general ethical knowledge and understanding technology use. The view of a pre-service student teacher below confirms the ideas presented so far:

> *"I think learning begins from simple to complex. So the first aspect of learning should be key concepts such as cyber ethics and their importance...understanding these concepts will lay a foundation for a broader understanding of the ethical use of technologies"* (Pre-service teacher).

An in-service student teacher emphasised:

> *"It is good to start with teaching about the general meaning of ethics, then cyber ethics and other related terminologies, before we proceed with the importance of cyber ethics and rules guiding the ethical use of technologies*." (In-service student teacher)

The teacher educators supported these views as noted below:

> *"I think the content should begin with understanding key concepts related to ICT ethics, like cyber ethics, cybercrime, and the importance of cyber ethics knowledge to student teachers. This will lay a foundation for understanding complex aspects..."* (Teacher Educator)

The responses imply that logical organisation and/or arrangement of the content from key concepts is critical to acquiring deep ethical knowledge about technology use.

The respondents also recommended that pre-service teachers be taught about intellectual property rights and copyright rules. They stated that using illegally obtained materials online is a critical concern in education. As such, ITE should provide pre-service teachers with knowledge of what is and is not allowed, how to recognise and safeguard intellectual property rights, and how to obtain permission from copyright owners in cyberspace. Such knowledge was considered crucial since, in a personal capacity as university students and in their professional remit of becoming teachers, pre-service teachers use online resources for various academic activities such as writing assignments, research, and preparing teaching and learning materials. Affirming the finding, one respondent noted:

> *"ITE should teach rules guiding intellectual property rights... most often, our student teachers violate intellectual property rights and copyright when using online materials due to a lack of knowledge."* (Lecturer)

In corroboration, another lecturer added:

> *"I suggest that intellectual property rights be integral to the ITE. Because some people illegally use other peoples' works or ideas as if they are their property... Education is not immune from this pandemic"* (Lecturer).

The preceding views suggest that intellectual property and copyright infringement are growing concerns in education. The finding indicates that one effective way to address this concern is to raise pre-service teachers' awareness of intellectual property through training.

Another ethical dimension suggested for integration into ITE was privacy and confidentiality. The respondents admitted witnessing violations of privacy and confidentiality among pre-service and in-service teachers. They noted their observations which indicated that some pre-service teachers film their lecturers during lectures, record their colleagues, and post videos online without informed consent. Also, in-service teachers have been posting humiliating photos of their students, colleagues, and other people and confidential official documents without permission. Therefore, they concluded that developing knowledge about these aspects was essential to learning in teacher education. The assertion from an in-service student-teacher respondent elaborates:

> *"Privacy and confidentiality are ethical aspects worth being taught. It has been a culture for teachers to breach other peoples' privacy and confidentiality. We are witnessing nude videos of university students and humiliating videos of students or colleagues posted online, and people take it as fun*." (In-service student teacher)

A pre-service student teacher added:

> *"I think privacy and confidentiality are critical ethical aspects to in. Some incidents show the need for knowledge about this. For example, during lectures, students take films of lecturers or colleagues and share them without informed consent and take it as something normal... One day I came across my photo posted in a WhatsApp group, and I was asleep. Can you imagine?" (*Pre-service teacher)

The excerpt above shows that the privacy and confidentiality violations perpetrated by pre-service and in-service teachers online that may be due to decisions taken without foreknowledge about ethical responsibilities. The implication is that including these aspects in ITE can foster adherence to privacy and confidentiality among teachers in technology use.

Moreover, most participants maintained that information accuracy is an aspect that is worth integrating into ITE. They clarified that due to a lack of knowledge about identifying genuine sources and the credibility of information, most people, including teachers, use Internet sources without questioning their authenticity. As such, they are most often unwittingly involved in citing inaccurate information and sharing and publishing unverified, false and misleading information to the public, which is unethical. Teaching this aspect within the ITE was considered an effective way of addressing this ethical concern among teachers. A college tutor clarified as follows:

> *"Information accuracy should be taught during ITE. We rely greatly on information from the Internet, but not all information is accurate. We download these documents unknowingly and put them into our work or use them as teaching*

> *material. No one could use junk information if we were introduced to evaluate credibility."* (College Tutor)

The preceding viewpoint was supported by a lecturer who noted the following:

> *"I propose student teachers learn how to confirm the accuracy of online information. This knowledge will help them eliminate sharing or using information from unreliable online sources, something which is a growing ethical concern*." (Lecturer)

The findings imply that training pre-service teachers to identify the credibility and authenticity of information obtained online is critical to dealing with misleading information among education practitioners.

Most respondents, particularly teacher educators and in-service teachers stressed that plagiarism should be one of the aspects that student teachers should be taught in the ITE. They said plagiarism is a severe problem in academic settings. Most students do not know that copying and pasting literary works from the Internet without acknowledging the source or copying a series of paragraphs verbatim and simply recognising the authorities in the reference lists is unethical. They said including plagiarism knowledge in the ITE is essential for educating teachers and ensuring they comply with the ethical rules governing academic writing before undertaking professional roles. This proposal is well articulated by the following teacher educator views:

> *"One of the critical ethical aspects I think should be taught to student teachers is plagiarism. Most university students are neither aware of what constitutes plagiarism nor that plagiarism is unethical... if they are not taught at colleges, plagiarism will likely transpire in their professional careers*..." (Teacher Educator)

Supporting the inclusion of plagiarism in ITE, another teacher educator declared that:

> *"I think knowledge about plagiarism needs to be taught in ITE. Most higher-education students are blind to plagiarism, and some do not consider it unethical. Their works are full of copy-and-paste downloaded materials... if student teachers are aware of this ethical concern, they will later educate others and reduce the problem."* (Teacher Educator)

These views suggest that plagiarism is a significant concern among the cohort of students in tertiary education. This situation suggests that knowledge about plagiarism must be incorporated into the curriculum to enable student teachers to refrain from current and future unethical conduct in preparing professional documents.

Finally, most respondents suggested that ITE should provide pre-service teachers with general knowledge about the national Cyber Crimes legislation enacted in 2015. They said learning about the law would deepen their awareness of different unethical behaviour such as falsifying information, illegally disclosing information, creating and circulating pornographic materials, and the like. It will also raise their understanding of the implications of unethical behaviour in technology use. They concluded that knowledge about the legislation would serve as a tool for pre-service teachers to analyse and evaluate ethical issues and dilemmas they may experience in their routine use of emerging technologies and refrain from prohibited behaviour in cyberspace. The views of an in-service student teacher below elaborate:

> *"As we learn about the teacher's professional code of conduct, we must also learn about the National Cyber Crime Legislation of 2015, the guideline for ICT use.*

> *Though I have not read it, I am sure it has stipulated all expected behaviour regarding the use of technology*." (In-service student teacher)

A pre-service teacher further noted:

> *"I think it is worth teaching us about the Cybercrimes Act. Most of us engage in unethical conduct online because we are not familiar with what the National Cybercrimes Act requires regarding the use of technologies. I hear about it from the mass media but know nothing about its content*." (Pre-service teacher)

The Lecturer from the faculty of Education also puts it thus:

> *"The use of information technologies in Tanzania is guided by the Cybercrimes Act of 2015. It stipulates clearly what is ethical and what is not. However, many people, including the pre-service and in-service teachers, are unaware of the law. As a teacher educator, this law should form part of the ITE content."* (Lecturer)

The finding highlights the need for student teachers to learn about the Cybercrimes Act of 2015, which is the primary law guiding the use of technology in Tanzania.

## DISCUSSION

The study findings are discussed through the lens of the two research questions that guided the study.

The findings of this study showed that all respondents felt that the inclusion of ethical literacy associated with using technology in ITE is worthwhile. The reasons cited for including that aspect in the ITE, among others, were connected with the prevalence of unethical use of technology perpetrated by pre-service and in-service teachers. The findings support the recommendations of several previous studies (Crystal et al., 2000; Kuzu, 2009; Iyadat et al., 2012; Baysan, 2021; Aderibigbe et al., 2022; Sibanda et al., 2022; Mfaume et al., 2022) that information ethics should be taught at different educational levels to improve ethical behaviours and combat cybercrime. In light of the significant increase of cyber ethics violations in education settings in Tanzania and elsewhere, arguably, equipping teachers with ethical knowledge during ITE is undoubtedly an effective way to enhance their consciousness of various cyber ethical concerns (McCarthy, 2013; Cilliers, 2017; Milton et al., 2021). Teachers well-informed about cyber ethics during ITE will likely focus on the appropriate use of technologies in their personal and professional activities.

Accordingly, the findings indicated that integrating ethical literacy into ITE is imperative since it is an aspect that is currently neglected in teacher education. The finding bolsters the work of Manyengo (2021), who observed that ethical and critical use of digital technologies was not featured in the Information and Computer Studies syllabus for pre-service teachers taking the Diploma+ in Secondary Education in Tanzania. The finding is also supported by Jamil et al. (2013), who suggested that information ethics should be embedded in the ITE since very few curricula had such a component in their list of learning outcomes. Based on the findings, it is apparent that students in most universities and colleges are not exposed to technology ethics during the entire training duration. Since universities and colleges are responsible for producing morally and ethically upright teachers, teaching about essential ethical behaviours associated with technology cannot be underestimated. The knowledge is important for them as they face cyber ethical challenges in the digital world of work in the 21st century.

Further, the findings divulged that ethical literacy about technology use is important to prepare future educators, who will act as ethical role models for their students and the broader society. This

perspective was underscored by Marín et al. (2021), who maintained that ethical knowledge and skills concerning social media will enable pre-service teachers to act as digital role models for their students. The findings suggest that integrating ethical knowledge into ITE entails producing teachers with adequate ethical competencies to cater to their professional needs and their pedagogical obligation of supporting their pupils in developing ethical digital skills.

The digitalisation of education was among the reasons that emerged from the respondents for including ethical literacy in ITE. Based on the findings, there is confirmation that the transformation of education systems to digital is a global focus. This highlights that meaningful change requires teachers with adequate pedagogical and ethical competence in using digital technologies in the 21st century (Cassim, 2011; Cilliers et al., 2017; Manyengo, 2021).

On the ethical aspects worth integrating into ITE, the findings indicated five key elements are worth integrating, including the concept of cyber ethics and associated terminologies. There are several overlapping concepts when dealing with the realm of ethical issues related to information technologies, such as cyber ethics, cyber security, etiquette, computer ethics, information ethics and Internet ethics, to mention a few (Capurro, 2008). If these overlapping and interchangeably used concepts are not clear, it can give grounds for confusion. Thus, understanding these concepts should be seen as a key transversal skill for teachers to learn during ITE to avoid confusion and gain a broader understanding of the ethical issues around the use of technology.

Intellectual property rights and copyright were among the ethical dimensions proposed for inclusion into ITE. This proposal is supported by Marín et al. (2021) that pre-service teachers' knowledge and skills concerning privacy when using social media are important to serve as role models for their students. The results indicate that teaching intellectual property rights and copyright in ITE is pertinent for pre-service teachers as it will broaden their knowledge of these ethical aspects. The knowledge may help them to protect intellectual property rights and copyright when writing assignments, research work and production of digital materials as part of their mission to become professional educators (Milton et al., 2021).

Moreover, privacy and confidentiality were among the key aspects proposed for inclusion in the ITE. Unlawful disclosure or access to confidential information or data is a criminal offence in Tanzania under the Cybercrimes Act of 2015 (URT, 2015). However, unauthorised access to personal information and disclosing confidential information or documents is an increasing problem in the education community (Mfaume, 2020; Milton et al., 2021; Aderibigbe et al., 2022). Based on this finding, it may be logical to argue that exposing pre-service teachers to moral codes of privacy and confidentiality will increase their understanding of the information to be shared and the importance of obtaining consent before displaying or posting information on social media.

The findings also showed that respondents thought it was important to integrate knowledge about Information accuracy into ITE. Since the generation, sharing and publishing of unverified and misleading information are increasingly critical in educational contexts due to the lack of prior knowledge of the accuracy of the information, incorporating the knowledge into ITE will likely provide pre-service teachers with a potential tool to analyse and evaluate the authenticity of information before sharing or publishing it online (Cilliers 2017).

Consequently, plagiarism was proposed as an ethical aspect that should be taught during the ITE. The findings support that of previous studies. In a study by Manyengo (2021), education stakeholders recommended that students be educated on the ethical use of technology, including plagiarism. Cilliers (2017) suggested that universities and colleges teach their students about authorship to avoid plagiarism, as many undergraduate students were unaware of that problem. Plagiarism has been the subject of discussions and a critical concern for cohort students in university and college environments across countries. By incorporating this knowledge into the ITE,

pre-service teachers will be well-positioned that copying words and ideas without taking credit for them is wrong. Ultimately, they will respect authorship and avoid plagiarism (Cilliers, 2017).

The findings further revealed that knowledge of the National Cybercrimes Act 2015 should be integral to the ITE. This reinforces the work of Mfaume (2020) that teachers in Tanzania should be aware of the Cybercrimes Act of 2015 to combat the abusive use of mobile phones. Findings from the Cassim study (2011) also showed that the lack of ICT literacy at the national and regional levels exacerbated problems in the area of cyber ethics. The Cybercrimes Act passed in 2015 is the main law that provides for the acceptable use of information technology and related services in Tanzania. In this respect, teachers, as public servants, must understand and abide by this legislation. Thus, exposure to this law during the ITE could effectively inform them of its existence and what constitutes ethical and unethical behaviour in cyberspace.

## CONCLUSION AND RECOMMENDATIONS

This study provided insight into stakeholders' views about the place of ethical literacy regarding the use of emerging pedagogical technologies in the ITE. It also solicited their views on key ethical aspects that should be taught during the ITE in Tanzania. The findings showed that all respondents acknowledged that ethical literacy should be integral to the ITE. Several reasons were established for why ethical literacy should be integrated into ITE, including the increase in unethical practices perpetrated by pre-service and in-service teachers online, the neglect of ethical knowledge regarding technology use in teacher education, the digitalisation of education in Tanzania, and preparing future educators who will act as ethical role models for their students and the broader society. On ethical aspects that should be taught during ITE, it was recommended that pre-service teachers be trained about the concepts of cyber ethics and associated terminologies, privacy and confidentiality, intellectual property and copyrights, information accuracy, plagiarism and the National Cybercrimes Act of 2015.

The study has significant implications for policy and practice in Tanzania. It sheds light on the current status and practice of ethical knowledge regarding using pedagogical technologies among pre-service and in-service teachers in Tanzania. This issue has not been recognised and addressed in ITE so far. Therefore, since the major responsibility of ITE is to prepare ethical and morally competent teachers, hopefully, the study will serve as a benchmark for concerned organs, such as the Ministry of Education, Science and Technology, Teachers' Service Commission and teacher training colleges and universities in developing and integrating into ITE a relevant course content that will enhance pre-service teachers' digital and ethical competencies which will be transferred to their future jobs.

Based on the above conclusion, it is recommended that, due to the rapid advancement of technology and the associated ethical concerns, exposing student teachers to essential ethical literacy in technology usage should be mandatory to prevent cyber crimes and better prepare them for the world of work. Since most of the teachers on duty were not exposed to ethical knowledge during the ITE, regular seminars and workshops can effectively familiarise them with such vital competence to refrain from cybercrimes and exemplify ethical behaviours in cyberspace.

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