

Ethical Issues in the Implementation of Educational Technology in Schools: A Systematic Review

Gabriel Odame Amfo

gabrielodameamfo@gmail.com

University of Education Winneba Faculty of Educational Studies <https://orcid.org/0009-0001-9962-0896>

Ephraim Agyei Ampofo

University of Education, Winneba

Florence Amanfo

University of Education, Winneba

Systematic Review

Keywords: Educational technology, ethical issues, data privacy, digital divide, academic integrity, techno-ethics

Posted Date: August 25th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10779390/v1>

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Additional Declarations: The authors declare no competing interests.

Abstract

The increasing use of educational technology in classrooms has revolutionised teaching and learning by facilitating interactive instruction, expanding access to information, and supporting learner-centred practices. However, this integration has also raised important ethical issues affecting the fair and responsible use of digital resources. Focusing on Ghanaian education, this systematic review examines the ethical dilemmas raised by educational technology use in schools, guided by two research questions: what ethical issues teachers and students encounter, and how these issues affect teaching and learning outcomes. Following PRISMA 2020 reporting guidelines, a structured search was conducted across five academic databases (ScienceDirect, Scopus, ERIC, Semantic Scholar, and Google Scholar), yielding 150 records. After removing duplicates and applying eligibility criteria through a two-stage screening process, 25 peer-reviewed articles were retained for thematic synthesis. The review identified five recurring ethical issues: data privacy and confidentiality, the digital divide, academic integrity and intellectual property, professional and responsible technology use, and the ethical implications of artificial intelligence and algorithmic decision-making. Inadequate institutional support, weak policy enforcement, insufficient teacher preparation, and unequal access to digital resources emerged as the main drivers of a persistent gap between ethical theory and classroom practice, particularly in under-resourced settings across sub-Saharan Africa. Africa remains markedly underrepresented in the educational techno-ethics literature, which is concentrated in the Global North, pointing to a gap in contextually grounded knowledge. The findings suggest that strong ethical governance frameworks, clear and enforceable institutional policies, and sustained teacher professional development are needed to address these challenges.

1.0 Introduction

In the modern world, technology is necessary to navigate every facet of life. In a number of industries, including communication, healthcare, finance, and entertainment, technology has altered how people live, work, and connect (Colbert et al., 2016). Technology has become a necessary component of modern life due to its efficiency and convenience in daily tasks (Kumar et al., 2022). Furthermore, technology has had a significant impact on education, revolutionizing the process of teaching and learning (Colbert et al., 2016). For the technological era to be successfully incorporated into our educational system, ethical concerns must also be addressed.

1.1 Background to the Study

"Education is a conscious and planned effort to create an atmosphere of learning and the learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble morals, and skills needed by themselves, society, nation, and state". Therefore, utilizing different educational communication technology is a part of helping kids reach their full potential, particularly in this epidemic era. Thaariq (2021). Even though communication technology is used in education, there are still issues with it. According to one discussion, developments in

educational technology are driven by technological advancements. Or do societal shifts necessitate the development of new (technology) approaches to educational issues that spur change? (For other perspectives on these issues, see Jandrić & Hayes, 2019, and Oliver, 2011.)

Formal definitions of educational technology, such as the 1977 definition by Ely and Plomp (1996) (cited in Moore & Ellsworth, 2014) or the AECT term (Januszewski & Molenda, 2007; Spector, 2016, p. 1003), also demonstrate this feature. Ethics has been a problem in educational technology since the field's inception. 2. In particular, the multidisciplinary field of educational techno-ethics is "dedicated to social and ethical aspects of technology within formal and informal educational contexts (education, training, and evaluation)" (Luppicini, 2010) (; Kimmons, 2020; Kimmons & Rosenberg, 2022).

Teaching methods, learning experiences, evaluation, and school administration have all changed significantly as a result of the growing use of digital technology in educational institutions around the world. To increase access, efficiency, and the caliber of education, learning management systems, digital assessment tools, artificial intelligence systems, and online communication platforms are being utilized more frequently (Alotaibi, 2024). But as digital technologies put more and more pressure on educational institutions, especially in the areas of governance and data privacy, professional responsibility, and accountability in the use of technology for education, these opportunities have also brought with them much larger potential ethical issues to address (OECD, 2023). The moral precepts that govern the conduct of individuals who engage with technology as well as the institutions that create and use it are known as ethics in educational technology. Every digital development in the realm of educational technology brings with it new ethical dilemmas. Therefore, in order to handle these complications, IT workers must rely on ethical frameworks.

The handling of students' data and privacy is a significant ethical issue related to the use of educational technology. Students are exposed to the hazards of data misuse, spying, and unauthorized access since institutions that use digital platforms are expected to collect, store, and process sensitive student information. While digital tools improve learning opportunities, many educational institutions lack sufficient safeguards and ethical awareness to successfully secure student data, according to an investigation of student ethics and data privacy (Wang et al., 2024). This gap between technological use and ethical responsibility raises serious concerns about students' rights and institutional accountability.

In addition to data privacy, how educators and technology executives interact with educational technologies is greatly influenced by professional ethics. When incorporating digital tools into instructional and administrative procedures, teachers and administrators are expected to exhibit responsible decision-making, integrity, and ethical judgment, according to professional ethics (Guney, 2019). Many technology users in educational settings operate with or without direction or instruction on ethical principles pertaining to the use of technology, which leads to inconsistent behaviors and problems in educational settings.

A wider examination of ethical issues in educational technology reveals that challenges go beyond individual behavior to systemic concerns. Victoria & Gemma (2023) identify recurring problems such as

unequal access to technology, lack of transparency in digital decision-making, inadequate policy enforcement, and limited stakeholder involvement in ethical governance Therefore, the main research question that this paper aims to investigate is the ethical challenges affecting the implementation of educational technology in schools.

1.2 Problem Statement

The adoption of educational technology in public schools is intended to improve teaching, learner engagement, and learning outcomes in general. Yet, in some schools, the use of educational technology is hindered by ethical and policy challenges. Ethical issues such as inadequate protection of learners' data, lack of awareness of responsible use of digital tools, and non-compliance with ethical standards have been noticed. These compromise learners' privacy and integrity within the learning environment (Wang et al., 2024).

Although there are recognized impacts of educational technology, there is limited research on how ethics challenges specifically affect schools. Thereby bringing a gap between the current state, where educational technology is underutilized and mismanaged, and the outcome that technology leaders expect, where technology is expected to be effectively integrated in an ethically responsible way to improve teaching and learning. Tackling this gap will require a systematic review of the ethical constraints as well as the identification of practical strategies such as strengthened data-protection practices, clearer institutional guidelines, continuous teacher capacity building, and improved infrastructure support. (OECD, 2023)

1.3 General Objective;

To investigate the ethical issues affecting the implementation of educational technology in schools.

1.3.1 Specific Objectives

1. To identify the ethical challenges teachers and students encounter when using educational technology.
2. To assess the impact of ethical challenges on teaching and learning outcomes.

1.4 Research Questions

1. What are the ethical challenges teachers and students experience when using educational technology?
2. What is the impact of ethical challenges on teaching and learning?

1.5 Justification of the study

The ethical issues surrounding the use of instructional technology in classrooms are examined in this comprehensive review. It is becoming more and more important to recognize and respond to the growing demand for ethical concerns as educational technology gradually advances in Ghanaian education. The

goal of this research is to support the creation of educational policies and practices, strengthen the body of scholarly literature already in existence, and stimulate pedagogical approaches that use educational technology to improve student learning outcomes at all levels of the nation. The focus on educational technologies within the broader framework of digital transformation in education is particularly significant because of their capacity to influence teaching and learning at both the institutional and classroom levels. Unlike traditional instructional tools, contemporary digital technologies are designed to support interactive learning, provide adaptive feedback, and facilitate differentiated instruction that responds to the diverse needs and learning abilities of students. These characteristics position educational technology as a critical component in achieving improved learning outcomes and enhancing instructional effectiveness. However, the successful implementation of such technologies is not solely dependent on their pedagogical potential but also on the existence of clear ethical guidelines and well-structured policy frameworks that govern their use. According to OECD (2023), the integration of digital tools in education requires robust governance mechanisms to ensure accountability, data protection, and equitable access. Again, Granić (2022) emphasizes that while educational technologies hold significant promise for enhancing learning, their effectiveness is often constrained by contextual and institutional factors.

2.0 Review of Related Literature

2.1 Concept of education technology

Although the history of educational technology is brief, many people are unaware of its length. This is partially due to the fact that refugees from other disciplinary silos are constantly discovering it as a new field. Additionally, it provides a rich environment for people looking for answers to real-world issues they run into when instructing and learning. (Scanlon, 2021). The scientific family of educational technology aims to address issues in education. Experts described educational technology as an organized system that encompasses design, performance, and evaluation of all these components in terms of learning objectives (Reiser, 2012). This definition expanded to a wider field. Be a result, educational technology is referred to be a process that involves a variety of elements, including the instructor, designer, students, content, instructional technology tools, classroom, assessment, and learning environment that will give the students an excellent simulation. (Buhamad, 2024).

Educational technology encompasses a diverse range of digital tools, devices, and platforms such as Canvas, Edmodo, Kahoot, Zoom, Socrative, and others that revolutionize the teaching and learning process. However, it's not a value-neutral intervention but one that also introduces ethical considerations in the educational practices. In the field of education, it democratizes knowledge by facilitating access to a wide range of information and educational materials beyond geographical boundaries. Interactive and captivating learning experiences are made possible by digital technology, which encourages student involvement and critical thinking. Kalyani (2024). Issues including data protection, equitable access, and responsible use are becoming major implementation challenges as instructional delivery is changing. Additionally, EduTech gives teachers the ability to tailor their lessons to each student's requirements and

interests. Teachers and students now collaborate and communicate more effectively thanks to EduTech, which fosters effective information exchange and teamwork. Additionally, it equips students with the core abilities, such as digital literacy and problem-solving strategies, necessary for success in the contemporary world.

. Granic (2022) emphasizes that while EduTech offers significant potential for improving learners' academic achievement, its effectiveness is often disadvantaged by contextual and ethical factors that influence how it should be adopted and used in the classroom. As a transformative force, technology continually evolves, presenting new opportunities and challenges for education stakeholders, requiring thoughtful integration to harness its full potential in enhancing learning outcomes and shaping the future of education. (Kalyani 2024).

2.2 Concept of ethics in educational technology

The field of computer ethics has a long history, beginning with Wiener's works on cybernetics nearly 70 years ago. It is defined as "the analysis of the nature and social impact of computer technology and the corresponding formulation and justification of policies for the ethical use of such technology" (Moor, 1985). Computing ethics, information ethics, informatics ethics, ICT ethics, IT ethics, and ethics of information systems are just a few of the many versions of the phrase "computer ethics" that have appeared in the literature over time (Stahl et al., 2016). According to Dodig-Crnkovic (2003), these concepts indicate the pervasive and growing usage of computing technology and its effects in many spheres of society, including governance and education.

The questions of right and wrong, "good or acceptable behavior and practice and unacceptable or harmful behavior and practice," that confront educational stakeholders (such as educational institutions, administrators, instructors, and students) when utilizing technology in educational settings, as well as the consequences of actions and inactions, are referred to as ethical issues of educational technology (Olcott et al., 2015; Spector, 2016). The ethical principles and practices for the use of modern technology in the academic environment. The following key aspects of ethics in the context of technology use include transparency, accountability, credibility, fairness, and equity. (Chen et al., 2025).

2.3 Ethical issues in educational technology

The integration of technology into education has created a set of ethical challenges that go beyond simple rule-breaking. The most common ethical problems teachers encounter when using IT in academic settings include plagiarism, infringement of intellectual property rights, incorrect use of personal data, and unauthorized use of software or multimedia resources.

Many more critical voices emerged regarding associated ethical issues as a result of the pandemic's forced, widespread use of technology in all educational contexts throughout the remote education period (Krutka et al., 2022; Williamson et al., 2020). In addition to the growing interest in study on long-standing ethical concerns in educational technology, like data privacy or intellectual property, other difficulties are more recent. At the nexus of algorithms and computation, education and big data,

artificial intelligence applications in education have also sparked ethical concerns about the use of algorithms in education, learning analytics, and artificial intelligence data (Holmes et al., 2021). Since the early days of educational technology, researchers have been concerned with ethical issues related to intellectual property, accessibility, the digital divide, security, and privacy. However, these issues have typically tended more toward philosophical and/or legal discussions than to ethical approaches and their relationship to educational practice with technology (Moore & Ellsworth, 2014). These aren't isolated incidents; they reflect structural gaps in how digital ethics is taught and understood in educational settings.

2.4 Empirical review

The majority of research on educational technology has been on adoption trends, user attitudes, and implementation difficulties; nonetheless, there is mounting data that raises ethical questions about its application in educational settings. Granić (2022) discovered that the majority of empirical research highlights users' acceptance of technology, especially through categories like perceived utility and ease of use, after conducting a comprehensive evaluation of educational technology adoption studies. Despite the significance of these elements, the study shows a lack of attention to the ethical use of technology in actual classroom settings. This implies that even while educators may exhibit favorable attitudes toward technology, ethical issues, including responsible data usage, fair access, and suitable instructional application, are frequently disregarded.

In their analysis of technology adoption in education, Oyetade et al. (2020) found a number of institutional and contextual obstacles that prevent its implementation. According to their findings, the usage of technology in schools is greatly impacted by poor innovation planning, inadequate professional development, and a lack of institutional support. From an ethical standpoint, these restrictions may lead to unequal access to digital resources, inconsistent use of technology, and possible abuse of teaching tools, especially in settings with little resources. The study emphasizes the necessity of intentional policy frameworks that direct the integration of technology ethically and equitably.

Kotrlik and Redmann (2009) discovered that teachers were less likely to successfully incorporate technology into their lessons if they did not have access to technical help, enough time, or possibilities for cooperation. Their study shows that structural limitations in the educational setting can result in incorrect or superficial usage of technology, even in cases where teachers are prepared to embrace digital technologies. This raises ethical questions about the efficacy and quality of instruction because poorly used technology may not be able to satisfy the needs of students or potentially disadvantage some student groups.

3.0 Materials and methods

The method used in this study is a systematic review, following the definition of a review that provides "a preliminary assessment of potential size and scope of available research literature" and aims to identify the nature and extent of research evidence (Grant & Booth, 2009; Sutton et al., 2019). The study complies

with the PRISMA 2020 reporting guidelines for systematic reviews (Page et al., 2021). Databases including ScienceDirect, Scopus, the Education Resources Information Center (ERIC), Semantic Scholar, and Google Scholar were the focus of this review. The stages of a systematic review are as follows: determine the research topic, find pertinent studies, choose studies, compile, summarize, and present the findings.

3.1 Identification of the research question

The research question was: What is known from the body of literature regarding ethical concerns that arise in technology-integrated teaching practices, and what suggestions are made to resolve them?

3.2 Identification of relevant studies

The eligibility criteria of the studies for their screening were not limited by year (all publications up to the search dates in 2025) because the review's goal was to provide an overview of the subject; however, publications in French and Spanish were excluded from the study due to their publication type. However, the following studies were disregarded: a) did not concentrate on an educational setting; b) had nothing to do with the use of technology; c) addressed ethical issues of technology for professional use or for engineering (technological development); or d) mentioned ethical issues in educational technology in passing (for instance, as a consideration at the end of the paper).

3.3 Information search

Five broad international databases were chosen for their extensive coverage of peer-reviewed journals and institutional access. Similar terms were used in searches at various dates, but depending on how each database handled them, different Boolean operators were used. The various keyword structures used to search for ethical aspects need special attention. In the case of English, the keyword or keywords needed to be more specific (thus the use of "ethical issue*" and "ethical use") because a large number of records were retrieved that had nothing to do with ethics in educational technology (e.g., about professional ethics); Despite being aware that this fact could be a limitation of the study, we chose to use generic keywords related to ethics rather than pointing already toward specific ethical issues in educational technology in accordance with the aim of this study and the objective of this systematic review of the body of literature of the ethical issues in the educational use of technology. Despite the fact that the researcher was fluent in English, the search was conducted in that language.

3.4 Study selection

With the use of a particular database, the researcher conducted two stages of screening for the study selection: 1) based on title and abstract, and 2) based on full text. Duplicate records were manually eliminated prior to screening using the downloaded list of data (articles). The second one uses EPPI-Reviewer (Thomas et al., 2020) because of its more advanced features for entire texts. In their cooperative systematic literature reviews, both programs help researchers manage and analyze data, including all of the judgments they make. Two procedures were used in relation to the reliability. On the

one hand, all records without duplicates were reviewed equally for inclusion or removal based on their title and abstract during the initial screening stage.

The search used field codes and country-specific restrictions to concentrate on studies connected to Ghanaian universities. After that, results were iteratively refined by combining pertinent subsets and removing irrelevant stuff using the "Queries" feature. 150 distinct types of materials from five different academic databases were found in the first database search. There were 120 papers left for the screening procedure after duplicate records were eliminated. Forty publications that did not fit the inclusion criteria were eliminated after these records were reviewed based on their titles and abstracts. A full-text review of 80 articles was then conducted. Fifty-five articles were eliminated at this point because they didn't fit the inclusion criteria, which included things like a lack of emphasis on education, a lack of methodological rigor, the language used in the works, ethics, and difficulties. Up until 25 papers were included in the final synthesis. No formal quality or risk-of-bias appraisal tool (e.g., the Mixed Methods Appraisal Tool) was applied to the included studies; this is acknowledged as a limitation in Section 6.

The systematic review process is transparent and rigorous, as shown by the PRISMA flowchart. A thematic analysis of the systematic review paper was conducted. The results were integrated using a narrative and theme synthesis, which produced comprehensive analytical categories of Ghanaian students' ethical concerns with educational technology. A comprehensive analysis of the existing knowledge gaps in the literature and possible directions for further study and application was made possible by this methodical methodology.

3.5. Collate, summarize, and report the results

The list of publications utilized in this study was displayed using tables, which were also used to calculate and graphically represent the sample's characteristics and research focus. On the other hand, solutions and methods for addressing ethical concerns in educational technology are given in a narrative style using textual quotations.

Table 1
List of articles included in the review

SN	AUTHORS	ORIGIN	DATABASE
1	Dr. Jyoti Ahuja	India	Scopus
2	Kirungi Richard and Nayebare Julian	Uganda	ERIC
3	Samantha Anne Hart	South Africa	Science Direct
4	J. Michael Spector	America	Google scholar
5	Thomas D. Parsons	Europe	ERIC
6	Manish Agrawal and Ibrahima Haneef	India	ERIC
7	Thomas A. Lucey	America	ERIC
8	Liliana Măță and Roxana Maria Ghiațău	Europe	Science Direct
9	Chen et. al	China	Semantic scholar
10	Victoria I. Marína and Gemma Tur	Salamanca	Scopus
11	Welesilassie et al	ETHIOPIA	ERIC
12	Choi, Sunhee	China	ERIC
13	Gupta et al	Australia	Google scholar
14	Juan Jesús Torres-Gordillo and Carolina Sanhueza	Spain	ERIC
15	Woldemariam et al.	ETHIOPIA	Science Direct
16	Swati Minz et al.	India	Eric
17	Denise M. Sweeney	United Kingdom	Google scholar
18	Ali Mahmoud Buhamad	Kuwait	ERIC
19	Silence Chomunorwa and Virimai Victor Mugobo	South Africa	Eric
20	Harry Barton Essel et al.	Ghana	Eric
21	Moses Kumi Asamoah and Jessica Amarteifio	Ghana	Google scholar
22	Zahid Zufar At Thaariq and Ence Surahman	Indonesia	ERIC
23	Eileen Scanlon	United Kingdom	Springer
24	Baidoo-Anu et al.	Ghana	ERIC
25	Danquah et al	Ghana	Science Direct

To give a more comprehensive view of the state of research on ethical dilemmas in educational technology, the frequency analysis that follows is based on the entire pool of 120 screened publications

rather than just the 25 papers that were included in the final synthesis.

Geographically speaking, the majority of research ($n = 50$) did not identify the nation in question, which may be connected to the high number of theoretical studies ($n = 43$). Locations in Europe ($n = 25$), North America ($n = 19$), and Asia ($n = 15$) are mostly identified when the study is carried out in a nation or institution. The other continents, particularly Africa ($n = 24$), have seen very few investigations.

Table 2
Locations from which the sample articles were found.

Location	Frequencies
Not stated	50
Europe	25
North America	19
Asia	15
South and Central America	10
Africa	24
Note: Within a study could include more than one area.	

In this latter case ($n = 9$), topics covered include academic integrity and intellectual property (Africa, $n = 3$; South and Central America, $n = 5$), language and culture (South and Central America, $n = 1$), digital divide (South and Central America, $n = 2$), algorithmic decision-making, netiquette, and general/not specific (South and Central America, $n = 1$, each). It's interesting to note that no publications in these regions addressed the most prevalent concern in the sample, data privacy and confidentiality. The majority of the studies ($n = 60$) deal with higher education, however a significant portion of the sample ($n = 28$) did not specify the educational environment (see the figure below). It is also noteworthy that while 19 research discuss elementary education, there are very few studies at other levels, such as kindergarten ($n = 5$) and secondary education ($n = 12$).

3.6 Methodologies/ strategies used within the articles screened.

Of the 120 papers, only 40 discuss strategies for addressing ethical challenges in educational technology, while 47 offer suggestions. Various exemplary quotations are provided for the categories associated with each of them. Two strategies can be identified based on the focus:

Pedagogical strategies, which are the most common ($n = 30$). These relate to several pedagogical facets that deal with ethical issues in educational technology. A few of these include the importance of training, thoughtful pedagogical and technological design, the creation of a safe and supportive environment, or

different methods or approaches, such as gaming experiences, open discussion, the use of ethical dilemmas, dialogue with invited speakers, or teaching with examples.

Technological strategies (n = 36). The usage of one's own restricted systems, adopting positions to regulate or avoid ethical difficulties, and adopting a good attitude toward computing and digital well-being are all mentioned. Additionally, there are technology loans and measures for the situation of the digital divide.

4.0 Results

4.1 Overview of Included Studies

The systematic search of five academic databases, ScienceDirect, Scopus, ERIC, Semantic Scholar, and Google Scholar, initially yielded 150 records. There were 120 records left for screening after 30 duplicate entries were eliminated. Twenty-five publications met the inclusion criteria and were chosen for the final synthesis following a two-phase screening procedure based on title, abstract, and full-text examination. The complete list of included studies, including the authors, country of origin, and source database, is shown in Table 1. The included papers cover a wide range of educational levels, research techniques, and geographic locations, offering a comprehensive and varied body of information for investigating ethical concerns in educational technology. According to Williamson et al. (2020), the bulk of research were published between 2019 and 2025, indicating a significant increase in academic interest in educational techno-ethics in the years after the COVID-19 pandemic.

4.2 Geographic Distribution of Studies

Instead of focusing only on the 25 papers that were ultimately included, the frequency analysis that follows uses the entire pool of 120 screened publications to give a more comprehensive view of the state of research on ethical issues in educational technology. Geographically, the majority of research (n = 50) did not pinpoint a particular national environment, which is in line with the huge number of theoretical and conceptual works in this field (n = 43). Europe was the most represented region (n = 25) among studies that did specify a place, followed by North America (n = 19) and Asia (n = 15). A lesser portion of the literature (n = 10) came from South and Central America. Despite being the site of quickly growing educational technology efforts, Africa is still notably underrepresented in the literature (n = 24), indicating a continued lack in regionally focused research on ethical issues in this setting. The regional distribution of the screened research is summarized in Table 2. The African contributions to the review were represented by four articles from Ghana (Essel et al.; Asamoah & Amarteifio; Baidoo-Anu et al.; Danquah et al.), two from Ethiopia (Welesilassie et al.; Woldemariam et al.), and two from South Africa (Hart; Chomunorwa & Mugobo). The remaining included sample consisted of single studies from Uganda, Australia, Indonesia, and Kuwait, as well as studies from India (n = 3), the United States (n = 2), Spain (n = 2), the United Kingdom (n = 2), and China (n = 2).

4.3 Distribution by Educational Level

The following distribution by educational level similarly refers to the broader pool of 120 screened studies, reflecting the wider scope of available literature on ethical issues in educational technology. The most often researched context was higher education ($n = 60$), indicating that ethical issues with instructional technology have gotten the most attention at the postsecondary level. Another indication of the predominance of broadly theoretical work in the subject is the significant number of research ($n = 28$) that did not specify an educational level. There were 19 studies that concentrated on primary education and only 12 that focused on secondary education. Kindergarten-level research was uncommon ($n = 5$). This distribution highlights a significant research gap regarding ethical concerns in secondary and early childhood educational technology contexts, where kids may be especially susceptible to digital harms like data misuse and uneven access.

4.4 Thematic Findings: Ethical Issues Identified

Thematic analysis of the 25 included studies identified five major recurring ethical themes in the implementation of educational technology in schools. These themes are presented below in order of prominence across the literature.

4.4.1 Data Privacy and Confidentiality

The most common ethical issue in all of the included research was data privacy, which was present in both institutional and geographic contexts. Sensitive student data must be frequently collected, stored, and processed by institutions using digital platforms; nevertheless, many do not have sufficient security measures in place to prevent misuse, illegal access, or monitoring (Wang et al., 2024). Marín and Tur (2023) emphasize that student data privacy is a deeply pedagogical issue as well as a technological one, especially when learning analytics are employed for monitoring and assessment. New players have emerged as a result of the shift from paper-based to digital data storage, such as commercial technology companies with financial and ideological stakes in student data (Castañeda & Selwyn, 2018). This finding underscores the need for clear institutional data governance frameworks and robust policy enforcement at both the school and national levels.

4.4.2 The Digital Divide and Inequitable Access

Throughout the evaluated literature, the digital divide was found to be a recurring and complex ethical problem, especially in African and developing-country contexts. Three layers of discrepancy are identified by Aissaoui (2021): learning outcomes (i.e., whether technology translates into educational benefits), use (i.e., whether students can effectively engage with digital tools), and access (i.e., whether students have devices and connectivity). These differences are continuously reflected in the included studies from Ghana, Ethiopia, and South Africa, with rural and underfunded schools encountering the biggest obstacles to fair access to technology. Between 2007 to 2020, the digital gap was found to have received equal academic attention. However, since then, scholarly attention to this issue has decreased in sections of North America and Europe, despite the fact that it is still a serious and expanding problem in sub-Saharan Africa.

4.4.3 Academic Integrity and Intellectual Property

With origins in early discussions about plagiarism, software piracy, and unapproved use of digital resources, academic integrity and intellectual property were recognized as long-standing ethical challenges in educational technology. According to the examined literature, rather than being the result of purposeful dishonesty, many academic integrity infractions are inadvertent and result from students' and teachers' lack of awareness of intellectual property rules (Kim & Uysal, 2021). These difficulties have been greatly exacerbated by the consolidation of social media platforms since 2006 and, more recently, by the emergence of generative artificial intelligence tools. These developments have created new complexities regarding information literacy, content authenticity, and the limits of acceptable technological assistance in academic work (Soler-Costa et al., 2021).

4.4.4 Responsible and Professional Use of Technology

The availability of digital technologies in educational contexts and educators' ability to use them morally and responsibly are at odds, according to several research. According to Guney (2019), a lot of teachers work without official guidelines about the moral standards guiding the use of technology, which leads to inconsistent practices and higher hazards for children. In a similar vein, Kotrlik and Redmann (2009) discovered that teachers are more likely to utilize technology incorrectly or superficially in the absence of sufficient technical assistance, professional development, and collegial collaboration. This theme emphasizes how institutional flaws in teacher preparation and policy implementation, rather than just individual carelessness, are the root cause of ethical failings in educational technology.

5.0 Discussion

The ethical issues surrounding educational technology that have been examined in the past are varied, consisting of social and technological dimensions as well as potential pedagogical ramifications. For example, the literature discusses copyright, learner privacy, and accessibility (Lin, 2007; Lucey & Grant, 2009), the digital divide (Aissaoui, 2021), netiquette (Soler-Costa et al., 2021), or cross-cultural competency and language and cultural considerations (Moore & Ellsworth, 2014). The study highlighted the moral dimensions of property, accessibility, privacy, and correctness in various educational environments. But this review also revealed issues that were essentially non-existent until recently but are now receiving attention, such as health, digital well-being, and environmental concerns that extend beyond educational technology and affect educational actors.

This study demonstrates that since 2007, when the emergence of social media caused users' roles on the Internet to drastically change, enabling them to become creators rather than merely consumers of knowledge, researchers have focused more on ethical issues pertaining to the use of technology in educational settings (Weller, 2020). In a similar vein, findings from the studies show that since 2020, when the Covid-19 pandemic struck, there has been a notable surge in research on educational technoeethics, with all the subjects seemingly receiving more attention (Williamson et al., 2020).

The most important topic in this study was data privacy and confidentiality, particularly in relation to students' data privacy and the crucial role that educators play in this regard (Marín & Tur, 2023). There have always been ethical concerns concerning student data, but paper-based data was stored at educational institutions (Alier et al., 2021) and was only available to a small number of close staff members, which minimized the possibility of illegal use by outside parties. Technology-generated data has attracted new actors with interests from both economic and ideological viewpoints, according to current critical methods research (Castañeda & Selwyn, 2018; Kühn Hildebrandt, 2019; Williamson & Hogan, 2020). When thinking about learning analytics for learner monitoring and assessment, this issue is not only a technological and sociological one but also a pedagogical one.

This study has shown that there is serious concern about the dishonest use of software and information, as well as plagiarism practices, which are often inadvertent because of a lack of knowledge about intellectual property issues in relation to social and communicational aspects and related to cultural contexts in their treatment (Kim & Uysal, 2021). Since its inception, it has undergone a lengthy trajectory, peaking in 2006 with the consolidation of social media and most recently reaching a new level of scholarly interest with the COVID-19 pandemic. These issues are still pertinent given the concurrent rise in content accuracy, which is intimately linked to academic integrity and information literacy, as well as the current state of fake news (Soler-Costa et al., 2021). They seem to partially be moving towards practice, too, despite the considerable presence of connections to legal issues in the sample regarding academic honesty and intellectual property (Moore & Ellsworth, 2014).

The second decade of the twenty-first century saw the emergence of a wide range of challenges, including digital well-being from an individual and social perspective as well as more technology-focused subjects like algorithmic decision-making and monitoring. But after 2020, monitoring got fair attention, but digital well-being doesn't seem to get the same focus. Additionally, it is noteworthy that the topic of the digital divide has received balanced attention since 2007 and has significantly decreased since 2020 in some part of Europe and America but in Africa the topic of digital divide still persists, particularly in light of the three levels of disparities in technology access and use (Aissaoui, 2021), which include both pedagogical (use and performance) and technological (access).

Aside from the fact that the majority of the studies are not contextualized at any particular level, this systematic review demonstrates the significant attention given to students' privacy concerns in addition to their academic integrity in education both higher and basic schools. This could indicate the lack of interest outside of academics in ethical concerns related to educational technology. The paucity of research on teacher education and the challenges of teaching safe use are equally startling (Caena & Redecker, 2019; Marín et al., 2021). The results related themes and territories show certain gaps in the international research setting, even though there are some reservations because of restrictions on the languages and databases employed.

As a result, the growing interest in ethical issues, including data privacy, surveillance, digital well-being, and environmental challenges, is limited to the northern hemisphere. Studies conducted in the Global

South appear to focus more on cultural and linguistic problems as well as the digital gap, which is somewhat consistent with the assertion of digital colonialism and epistemic bias in international educational technology research (Adam, 2019). Other evaluations of the literature have likewise reflected this limited presence (Bond et al., 2021).

Furthermore, the majority of studies are theoretical essays based on conceptual frameworks without the backing of an empirical investigation that can help demonstrate successful practices. This is consistent with the finding that the majority of studies have a general approach without addressing a particular technology or issue in any concrete context, as well as the large number of studies with a specific topic. In order to address ethical issues, which seem to be a recurring problem, empirical research based on practices is also necessary, even though the philosophical foundation helps conceptualize ethical issues and their impact on education and the future of educational technology (Moore & Ellsworth, 2014).

The study also sought to gather information on suggestions for future instructional strategies. From a pragmatic standpoint, teachers and other staff members can primarily handle pedagogical and organizational tactics at all levels. According to Whitbeck (1996), referenced in Moore & Ellsworth (2014), instructional design with technology will therefore also be crucial in terms of ethical considerations, which should be addressed as an inherent feature.

Teachers must continue to address the ethical issues arising from the use of technology in the classroom, in addition to emphasizing students' lifelong learning skills and providing them with individual, relational, and contextual opportunities to enact their agency regarding these ethical issues (Castañeda & Tur, 2020; Marín et al., 2020).

6.0 Limitations

The systematic review was subject to various limitations. The first to talk about is the over-reliance on some specific academic databases, which excluded some literature, particularly from the developing areas. Again, the review depended on secondary data, thereby limiting control over the methodological rigor of the articles included. Some other portions of the reviewed articles were empirical, with limited theoretical evidence on how the practical implementation will be carried out. Furthermore, most studies were conducted in developed countries, which may affect the practicality of the findings in Africa, specifically Ghana. The last to talk about was the fact that the publications were all in English language, and those in other languages, the researcher couldn't get the English version of them. Finally, no formal quality or risk-of-bias appraisal tool (e.g., the Mixed Methods Appraisal Tool, CASP checklists, or JBI critical appraisal tools) was applied to the 25 included studies; screening relied on the title/abstract and full-text eligibility criteria described in Section 3 rather than on a standardized methodological-quality instrument. Future reviews in this area should incorporate a named appraisal tool suited to the mixed conceptual and empirical nature of the educational-technology-ethics literature.

7.0 Conclusions

The importance of ethics in educational technologies has long been recognized, and early research shows the necessity of challenging simplistic assumptions about the principles behind technology (Yeaman et al., 1994). Even while the use of technology in the classroom has given ethical dilemmas a fresh viewpoint, they are still not well researched (Kimmons, 2020; Moore & Ellsworth, 2014). Our goal in conducting this study was to close the ethical gap that technology has created in education and to increase the field's focus on research and practice. Additionally, it broadens the perspective on more complex ethical issues in educational technology beyond earlier conceptualizations, such as (Lucey & Grant, 2009; Moore & Ellsworth, 2014). The literature review's broad scope allows us to spot certain trends while also motivating us to develop new areas of study and practice in education. Even though our results point to a pertinent research area, this must be considered in the context of the worldwide research on educational technology. The ethical dimensions of educational technology have not advanced as much in the twenty-first century, particularly when seen from a more practical standpoint. Additionally, it is clear from the absence of references to them in certain recent literature reviews that ethical concerns have not been incorporated into instructional designs that incorporate social media use, for instance (Greenhow & Askari, 2017; Otchie & Pedaste, 2020). This is evolving, and the ethical approach is now a crucial component that every citizen may grasp and develop, and it needs further study to be improved. In addition to validating the topic classification produced in this review, future research will concentrate on educators' viewpoints on these subjects and their approaches to handling them.

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Figures

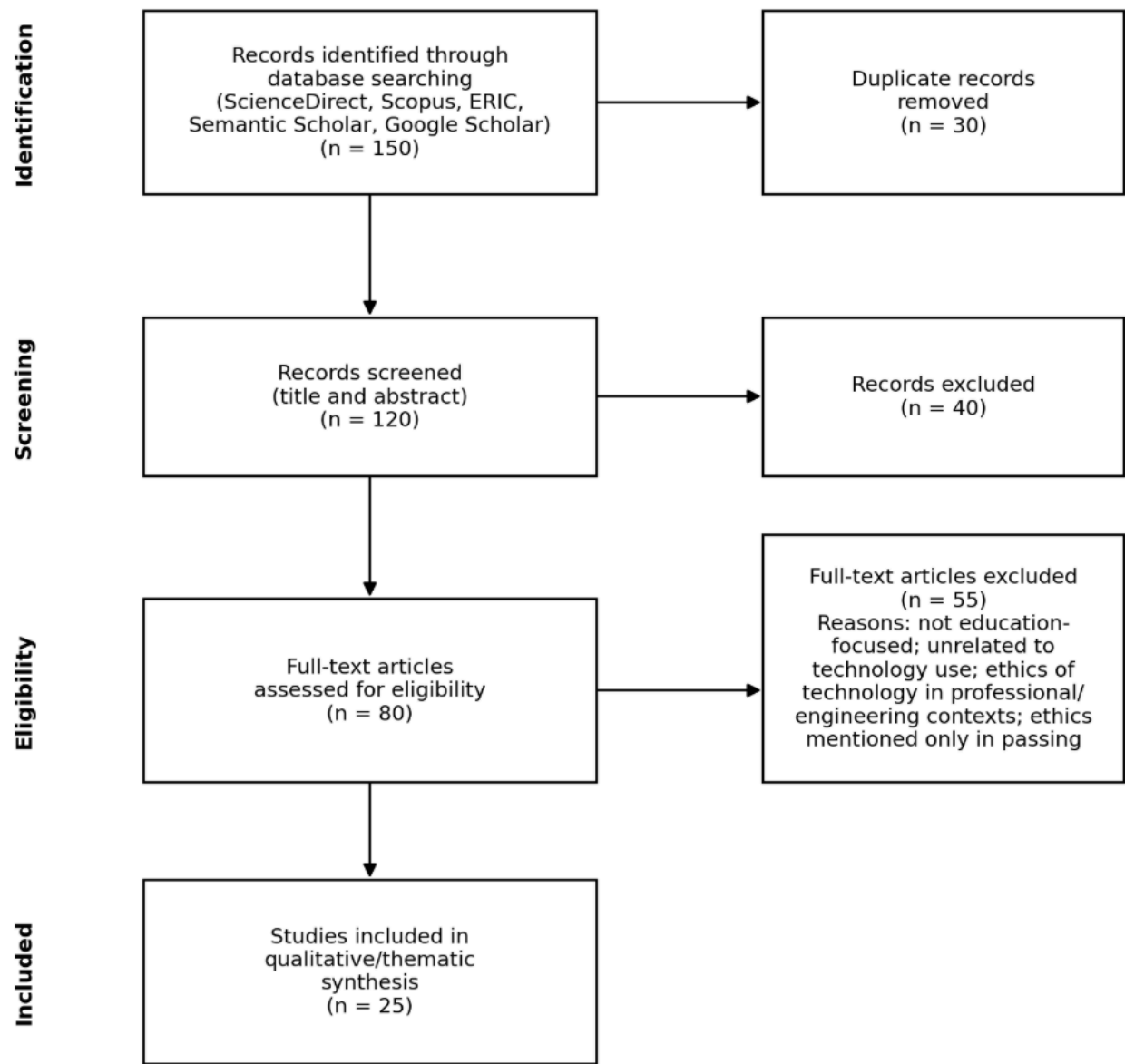


Figure 1

PRISMA 2020 flow diagram of the study identification, screening, eligibility, and inclusion process

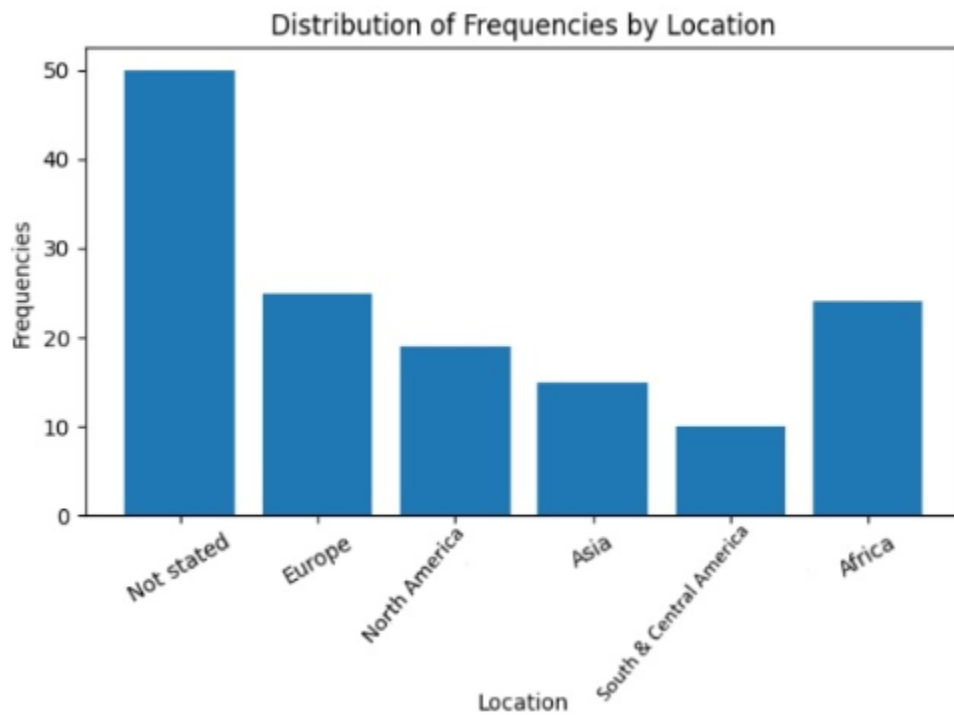


Figure 2

Distribution of frequencies by location.

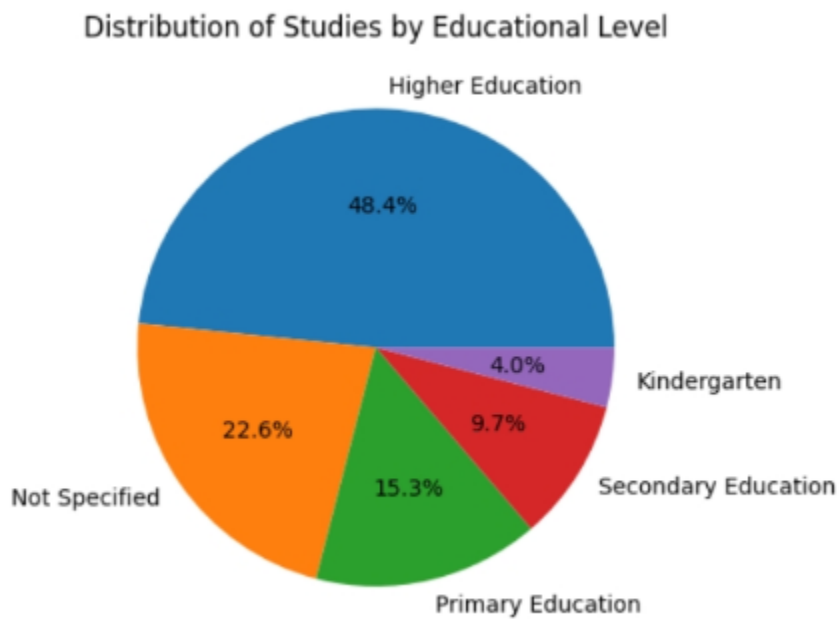


Figure 3

Distribution of studies by educational level.