



DIGITAL ETHICS IN EDUCATION: A SYSTEMATIC LITERATURE REVIEW

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Abstract

Digital ethics has become a central concern in education as artificial intelligence (AI), generative AI, learning analytics, and data-driven systems are increasingly embedded in teaching, learning, research, and institutional decision-making. Despite rapid growth in scholarship, the literature remains conceptually dispersed, making it difficult to identify dominant ethical concerns, educational responses, and unresolved research gaps. This systematic literature review synthesizes recent scholarship on digital ethics in education by examining ethical implications of AI and generative AI, ethics education and professional development, and ethical dilemmas within professional and institutional practice. The review followed the PRISMA 2020 framework. Searches were conducted in Scopus and ERIC and were limited to English-language peer-reviewed journal articles published in 2024 and 2025. The searches identified 560 records (408 from Scopus and 152 from ERIC); following screening, eligibility assessment, and quality appraisal, 20 studies were retained for qualitative synthesis. The findings converge around three interrelated themes: ethical implications of AI and generative AI; ethics education, ethical training and professional development; and ethical challenges within professional, institutional and data-intensive practice. Overall, the review shows a shift from abstract ethical principles toward applied, context-sensitive ethical competence and governance, while empirical validation and policy evaluation remain limited. The review supports the development and testing of integrated ethical frameworks to guide responsible digital transformation in education.

Keywords: digital ethics, education, artificial intelligence, ethics education, systematic literature review

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INTRODUCTION

Digital transformation is reshaping education through the rapid adoption of artificial intelligence, generative AI, learning analytics, and other data-intensive technologies. These developments create new opportunities for personalization, efficiency, and access, but they also intensify ethical questions concerning privacy, bias, transparency, accountability, consent, autonomy, and human oversight. Recent scholarship shows that such concerns are not merely technical matters; they influence how knowledge is produced, how learners are represented by data, how professional responsibilities are exercised, and how institutions govern digital systems (Floridi, 2024; Kamila & Jasrotia, 2025; Wang et al., 2025). International guidance similarly frames responsible AI around human rights, human dignity, fairness, transparency, accountability, data protection, and meaningful human oversight

(UNESCO, 2021; Miao & Holmes, 2023).

Within educational settings, ethical risks are strongly shaped by context. Research on generative AI highlights privacy concerns among university students and the potential for algorithmic systems to reproduce ideological or cultural bias (Van Poucke, 2024; Wang et al., 2025). Recent empirical studies also show that students and educators are concerned with data privacy, algorithmic bias, transparency, autonomy, and the uneven application of AI-ethics principles (Al-Zahrani, 2024; Kamali et al., 2024; Lünich et al., 2024). Studies from different sociocultural settings further show that governance, fairness, labour, and intergenerational justice cannot be addressed adequately through universal technical rules alone (Wakunuma & Eke, 2024). At the institutional level, these concerns extend to professional responsibility, informed consent, confidentiality, data governance, and the boundaries of appropriate technology use (Chenneville, Duncan, & Silva, 2024; Chenneville, Haskett, et al., 2024).

A second body of scholarship focuses on the educational response to these challenges. Ethics education is increasingly treated as a core dimension of professional preparation, including initial teacher education, counselling, health professions, and technology-mediated practice. Studies suggest that ethical competence is strengthened when ethics is explicitly integrated into curricula, case-based learning, reflective practice, and continuing professional development rather than confined to isolated modules (Bonifácio et al., 2025; Carvalho et al., 2025; Vincenzes et al., 2024). Recent empirical work likewise indicates that explicit-reflective AI-ethics instruction can strengthen ethical knowledge, awareness, and problem-solving, while students' ethical perceptions are also shaped by experiential exposure and practical contexts (Cheng & Lee, 2024; Usher & Barak, 2024). This shift positions ethical competence as an applied capacity involving judgment, reflection, communication, and context-sensitive decision-making.

Despite this growing scholarship, the field remains fragmented across technological, pedagogical, professional, and institutional domains. Studies often examine specific technologies, professions, or ethical dilemmas independently, limiting a coherent understanding of how these strands intersect within education. The resulting gap is not a lack of ethical discussion, but a lack of integrated synthesis that connects technological risks, educational preparation, professional practice, and institutional governance. This fragmentation also makes it harder to translate broad ethical principles into coherent educational and institutional responses. Addressing this gap is important for clarifying the current evidence base and identifying where future empirical and policy-oriented work is most needed.

Accordingly, this systematic literature review synthesizes recent research on digital ethics in education published in 2024 and 2025. The review aims to: (1) identify the principal ethical implications associated with AI and generative AI in educational settings; (2) examine how ethics education and professional development support ethical competence; and (3) analyse ethical challenges arising in professional, institutional, and data-intensive educational practices. By integrating these strands, the review seeks to provide a clearer conceptual map of contemporary digital ethics in education and to identify implications for practice, policy, and future research.

RESEARCH QUESTIONS

The review questions were structured using the PICO framework (Population, Interest, and Context),

which is suitable for qualitative and exploratory evidence synthesis because it helps define the target groups, phenomenon of interest, and educational setting (Lockwood et al., 2015). Three research questions guided study selection, data extraction, thematic synthesis, and interpretation:

RQ1. What ethical implications of artificial intelligence and generative AI are reported in formal educational settings?

RQ2. How do ethics education, ethical training, and professional development contribute to ethical competence and decision-making among educators and learners?

RQ3. What ethical challenges and dilemmas emerge in professional, institutional, and data-intensive educational practices?

MATERIALS AND METHODS

This review used the PRISMA 2020 framework to support transparent and reproducible reporting of study identification, screening, eligibility assessment, and inclusion (Page et al., 2021). The literature-search component was additionally documented with reference to PRISMA-S reporting principles so that databases, search strings, limits, and search dates are stated as explicitly as possible (Rethlefsen et al., 2021). Scopus and ERIC were selected because they provide complementary coverage of interdisciplinary scholarship and education-focused research. The review focused on recent peer-reviewed journal literature in order to capture contemporary ethical issues associated with rapidly changing digital technologies.

Search Strategy

Searches were conducted in January 2026, and the complete database-specific strings and limits are reported below to support reproducibility. The Scopus and ERIC search strategies combined terms for digital ethics with terms for educational settings. The review was restricted to English-language peer-reviewed journal articles published in 2024 and 2025. A total of 560 records were identified, comprising 408 records from Scopus and 152 from ERIC.

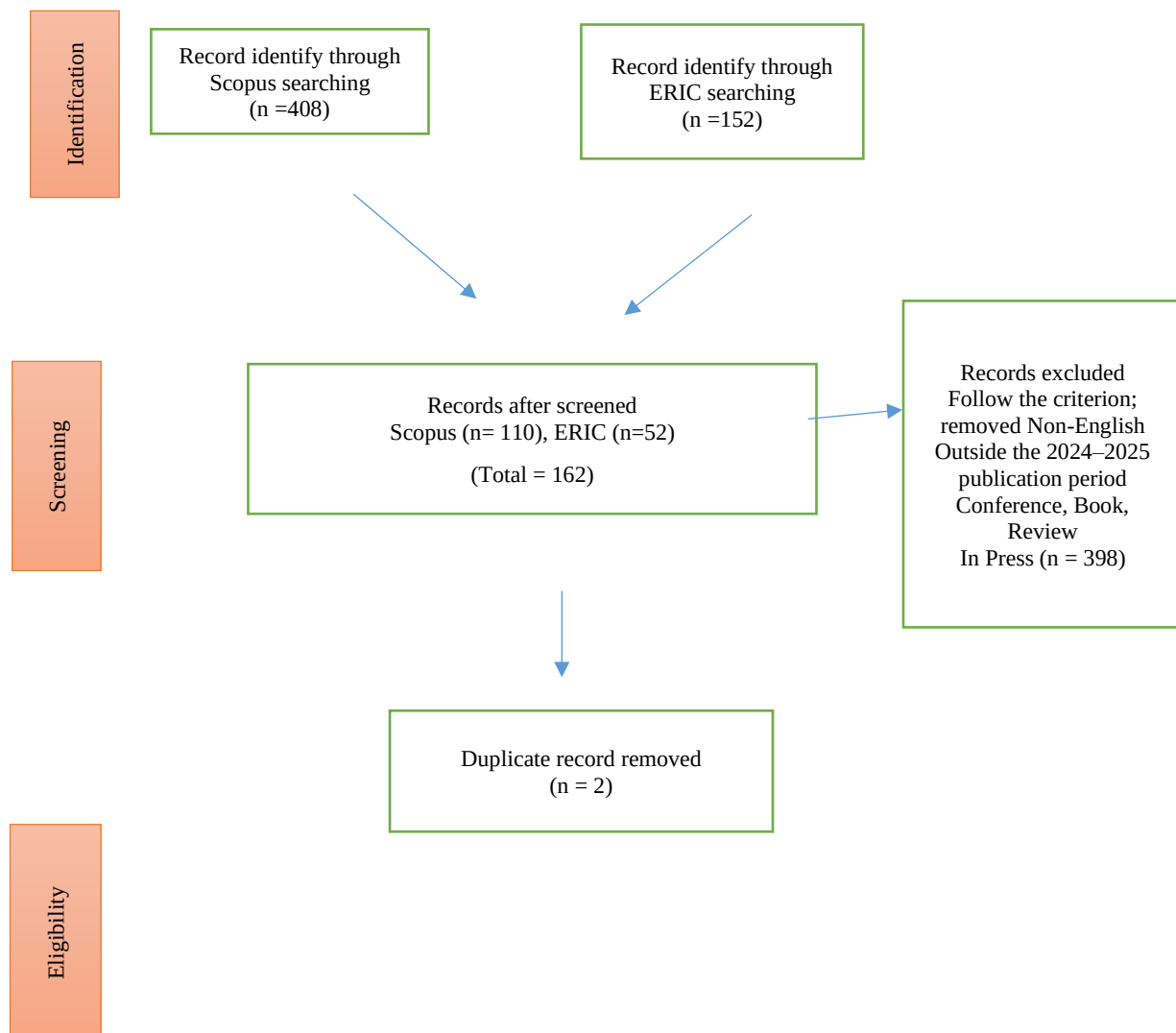
Database	Search string / parameters
Scopus	TITLE-ABS-KEY(("digital ethics" OR "ethical issues" OR "digital morality" OR "online ethics" OR "cyber ethics") AND (education OR "educational settings" OR "learning environments" OR academic OR school* OR university)); article; English; final publication stage; 2024–2025.
ERIC	("digital ethics" OR "ethical issues" OR "digital morality" OR "online ethics" OR "cyber ethics") AND (education OR "educational settings" OR "learning environments" OR academic OR school* OR university); 2024–2025; English; journal articles.

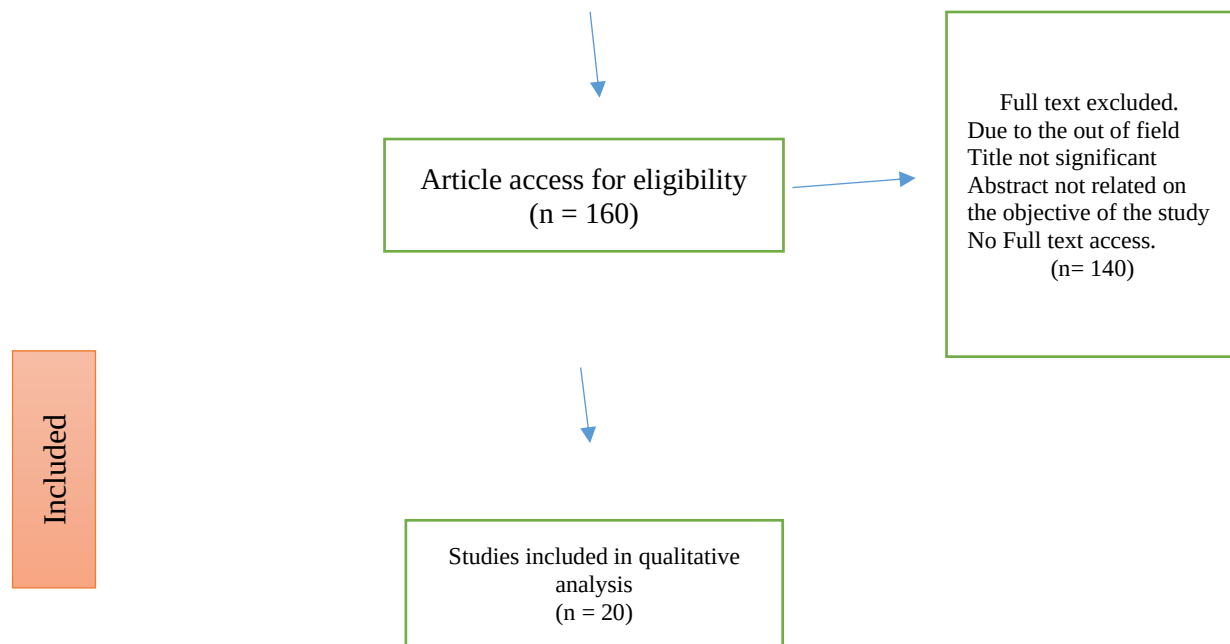
Eligibility Criteria and Study Selection

Studies were eligible when they were English-language journal articles published in 2024 or 2025 and addressed ethical issues, ethical education or training, professional ethics, AI ethics, data ethics, or related digital-ethics concerns within an educational or education-related professional context. Conference papers, books, review articles, in-press items, records outside the publication window, and studies without substantive relevance to the review questions were excluded. The retrieved records were screened by title and abstract, followed by full-text eligibility assessment. After the complete selection process and quality appraisal, 20 primary studies were retained for qualitative synthesis.

Criterion	Inclusion	Exclusion
Language	English	Non-English
Publication period	2024–2025	Outside 2024–2025
Document type	Peer-reviewed journal article	Conference paper, book, review, other non-journal source
Publication status	Final publication	In press
Topical relevance	Digital ethics in education or education-related professional practice	Outside the review questions or educational context

PRISMA 2020 Flow Template





Data Extraction and Thematic Synthesis

Data extraction focused on study purpose, educational context, ethical issue, methodological approach, principal findings, and implications. The studies were compared iteratively to identify recurring concepts, convergence, divergence, and contextual differences. Themes and subthemes were developed collaboratively by the authors, cross-checked for conceptual overlap, and refined through discussion. A reflexive log was used to document analytical decisions and emerging interpretations, strengthening transparency and auditability. To preserve the integrity of the predefined PRISMA corpus, additional 2024–2025 studies identified during manuscript revision were used only as contextual and corroborative literature in the Introduction and Discussion; they were not added retrospectively to the 20 studies included in the thematic synthesis.

Quality Appraisal

Study quality was assessed using six pragmatic criteria adapted from Abouzahra et al. (2020): clarity of purpose, usefulness, methodological clarity, conceptual definition, comparison with related work, and acknowledgement of limitations. Each criterion was scored as Yes (Y = 1), Partly (P = 0.5), or No (N = 0). The 20 studies scored between 3.0 and 5.5 out of 6.0, indicating acceptable to high quality across the final corpus. In the appraisal table, QA1–QA6 correspond to the six criteria in the order listed above.

Paper	QA1	QA2	QA3	QA4	QA5	QA6	Total
PS1	Y	Y	Y	Y	P	N	4.5
PS2	Y	Y	Y	Y	P	N	4.5
PS3	Y	Y	Y	Y	P	N	4.5
PS4	Y	Y	P	Y	N	N	3.5

PS5	Y	Y	Y	Y	P	Y	5.5
PS6	Y	Y	P	Y	P	N	4.0
PS7	Y	Y	P	Y	N	N	3.5
PS8	Y	Y	P	Y	N	N	3.5
PS9	Y	Y	P	Y	N	N	3.5
PS10	Y	Y	N	Y	N	N	3.0
PS11	Y	Y	Y	Y	P	N	4.5
PS12	Y	Y	Y	Y	P	N	4.5
PS13	Y	Y	P	Y	P	N	4.0
PS14	Y	Y	P	Y	P	N	4.0
PS15	Y	Y	Y	Y	P	N	4.5
PS16	Y	Y	P	Y	N	N	3.5
PS17	Y	Y	Y	Y	P	N	4.5
PS18	Y	Y	P	Y	N	N	3.5
PS19	Y	Y	P	Y	N	N	3.5
PS20	Y	Y	Y	Y	P	N	4.5

RESULTS AND FINDINGS

The thematic synthesis produced three interrelated themes that directly correspond to the three research questions. Together, the themes show that digital ethics in education operates across technological, pedagogical, professional, and institutional levels rather than as a single category of compliance. The findings in this section are restricted to the 20 studies retained through the reported screening and quality-appraisal process.

Theme 1: Ethical Implications of AI and Generative AI in Education

The reviewed literature consistently identifies privacy, data protection, algorithmic bias, transparency, accountability, and human agency as central ethical concerns associated with AI-enabled education. Wang et al. (2025) report heightened privacy concerns among university students using generative AI, while Floridi (2024) distinguishes between exacerbated, renewed, and unprecedented ethical problems created by AI. In regional analysis, Wakunuma and Eke (2024) show that generative AI risks are also shaped by culture, labour conditions, and intergenerational justice. Across these studies, ethical risk is therefore not reducible to a single technical defect; it emerges through interactions among data practices, system design, human agency, and sociocultural context.

Bias and epistemic influence constitute a second major concern. Van Poucke (2024) shows that learner-chatbot interactions can reproduce ideological bias, raising questions about neutrality, representation, and critical thinking. Chenneville, Duncan, and Silva (2024) similarly identify ethical concerns related to competence, informed consent, and professional responsibility in psychology-related uses of generative AI. Misiejuk et al. (2025) extend these concerns to learning analytics, where increasing personalization may reduce some forms of unfair comparison while simultaneously intensifying surveillance, privacy, autonomy, and data-ownership risks. The common thread is that personalization and automation may improve educational functionality while simultaneously

redistributing control over information, judgment, and learner agency.

The literature also converges on a governance gap. Dwihadiah et al. (2024) propose a context-specific digital ethics model for the use of ChatGPT in Indonesian higher education, while Kamila and Jasrotia (2025) emphasize privacy, bias, trust, transparency, and human-AI interaction as interconnected governance challenges. Pregowska and Perkins (2024) similarly argue for trustworthy AI approaches in medical education. Taken together, the evidence supports adaptive and context-sensitive governance that combines technical safeguards with human oversight, ethical literacy, clearly assigned responsibility, and institutional accountability.

Theme 2: Ethics Education, Ethical Training, and Professional Development

Ethics education emerges as a foundational element of professional preparation. In initial teacher education, Bonifácio et al. (2025) and Carvalho et al. (2025) show that students attach high importance to ethics and favour its explicit integration into teacher preparation. Vincenzes et al. (2024) further demonstrate the value of case-based learning for strengthening ethical self-efficacy. Collectively, these studies suggest that ethical competence develops more effectively when ethical reasoning is integrated across curricula, pedagogical practice, and experiential learning rather than delivered as isolated theoretical content. The emphasis is therefore on the capacity to recognise, deliberate on, and respond to ethical problems in situated practice.

Applied ethical training is also important in complex professional contexts. Bedzow et al. (2025) describe a model that moves ethics education from awareness toward actionable ethical leadership, while Poandl et al. (2025) illustrate the practical value of ethical decision-making models in counselor education. Robertson and Jalilzadeh (2025) highlight the need for ethical and legal competence in online group facilitation. These studies converge on the view that ethical competence requires repeated practice, reflection, scenario-based learning, and alignment with professional standards, rather than one-time exposure to abstract principles.

Professional development must also adapt to technological change. Pregowska and Perkins (2024) argue that AI-related ethical literacy should accompany technical competence, and the wider evidence suggests that ethical preparedness cannot be treated as a one-time educational outcome. Instead, it is an ongoing professional obligation supported by curricula, institutions, supervisors, and regulatory structures. This positions continuing professional learning as part of the ethical infrastructure of digital education, not merely as optional technical upskilling.

Theme 3: Ethical Challenges in Professional, Institutional, and Data-Intensive Practice

Ethical dilemmas frequently emerge when professional responsibilities, institutional rules, and individual rights come into tension. Kassam et al. (2025) show how residency education during the COVID-19 pandemic generated conflicts among personal safety, educational needs, public-health responsibilities, and workload fairness. Matsumoto and Aikyo (2024) similarly show that policy solutions intended to address rural physician shortages may create ethical tensions involving autonomy, personal freedom, and collective benefit. These studies demonstrate that ethical problems are often structural rather than purely individual and therefore cannot be resolved solely through personal moral judgment.

Interprofessional and institutional collaboration introduces further complexity. Chenneville,

Haskett, et al. (2024) identify recurring concerns involving competence, confidentiality, informed consent, and multiple professional relationships. Wessels and Swart (2024) show that school psychologists' ethical decisions are shaped by resource limitations, systemic inequality, institutional expectations, and professional boundaries. The evidence therefore suggests that ethical competence depends not only on individual judgment but also on clear institutional responsibilities, supportive supervision, coherent professional standards, and feasible conditions for ethical practice.

Data-intensive and emerging research practices extend these dilemmas beyond conventional professional boundaries. Misiejuk et al. (2025) show that idiographic learning analytics may intensify privacy, autonomy, data ownership, and surveillance concerns as learner data become more individualized. Newland (2024) illustrates related tensions in smartphone-based academic filmmaking, where procedural consent may not fully address the ethical implications of recording, editing, recontextualization, and reuse of digital material. Across these contexts, ethical practice requires situational judgment, proportionality, transparency, meaningful consent, and continuous reflection rather than reliance on static rules alone.

DISCUSSION

This review clarifies a field that is often fragmented across AI ethics, professional ethics, educational practice, and institutional governance. The three themes show that the central challenge is not simply whether digital technologies are ethical or unethical, but how educational actors develop the capacity to make defensible judgments within changing sociotechnical contexts. Ethical risk arises from interactions among technology design, human agency, professional obligations, institutional power, and sociocultural conditions. Recent empirical evidence identified during revision reinforces this interpretation: concerns about privacy, bias, transparency, autonomy, and fairness are experienced by learners and educators as interconnected rather than isolated problems (Al-Zahrani, 2024; Lünich et al., 2024; Xu et al., 2025).

The first contribution of the review is conceptual integration. AI-related risks such as privacy, bias, transparency, and accountability are frequently discussed as technical governance problems, whereas ethics education is often treated as a curriculum issue and professional dilemmas as matters of codes or compliance. The synthesis shows that these domains are interdependent. For example, effective AI governance requires ethically competent users and institutions, while ethical competence itself must include the ability to interpret data practices, algorithmic influence, and changing professional responsibilities. This is consistent with Yang et al. (2025), who found that undergraduates differentiated among ethical dimensions such as autonomy, justice, beneficence, non-maleficence, and explicability, and with Sabbaghan and Eaton (2025), who showed that academic integrity, human agency, authorship, and originality become intertwined in generative-AI-mediated scholarship.

The second contribution concerns educational practice. The evidence supports a shift from ethics as declarative knowledge toward ethics as applied competence. Across teacher education, counselling, healthcare education, and digital research practice, stronger approaches emphasize case-based learning, reflective judgment, professional supervision, contextual awareness, and continuing development. Corroborating evidence from AI-ethics education shows that explicit-reflective instruction can improve ethical knowledge, awareness, and problem-solving among science and engineering students (Usher & Barak, 2024), while internship and experiential exposure can shape

students' ethical perceptions of social media, AI, and ChatGPT (Cheng & Lee, 2024). At the educator level, Kamali et al. (2024) found inconsistent awareness and application of AI-ethics principles, reinforcing the need for targeted professional development and stronger alignment between personal ethical standards and institutional expectations. Educational institutions should therefore embed ethics across curriculum design, professional learning, digital strategy, and governance rather than assigning responsibility to a single module or policy document.

The third contribution concerns policy and institutional governance. The findings indicate that ethical issues become more difficult when technologies evolve faster than institutional rules. Static compliance mechanisms are therefore insufficient. Institutions need transparent procedures for data use, human oversight, accountability, informed consent, and review of emerging AI and analytics practices. Policy analyses conducted across leading universities show that institutions are increasingly addressing ethical use, accuracy, academic integrity, data privacy, AI literacy, and equity, but important gaps remain in comprehensive governance, transparent management of sensitive information, and equitable access (Jin et al., 2025; Wang et al., 2024). Such governance should be adaptive enough to respond to changing technologies while remaining anchored in human dignity, fairness, autonomy, and professional responsibility. This direction is consistent with UNESCO's human-centred approach to AI ethics and generative AI in education, which emphasizes rights, transparency, accountability, and human oversight (UNESCO, 2021; Miao & Holmes, 2023).

At the same time, the evidence base remains uneven. Qualitative and conceptual studies are prominent, while empirical validation of ethical frameworks, longitudinal evaluation, and policy-effectiveness research remain limited. The literature is also context-sensitive: findings from particular professions, countries, and institutions cannot automatically be generalized to all educational systems. Recent student-focused studies illustrate this contextual variation, including differences in ethical priorities and concerns about data leakage, exploitative data practices, and algorithmic bias (Yang et al., 2025; Xu et al., 2025). Future scholarship should therefore test ethical frameworks in diverse settings and examine not only what ethical principles are proposed, but how they influence actual decisions, behaviours, institutional practices, and learner outcomes.

LIMITATIONS AND FUTURE RESEARCH

This review has several limitations. It relied on two databases, Scopus and ERIC, included only English-language journal articles, and focused on the narrow publication period of 2024–2025. These decisions strengthened recency and topical focus but may have excluded relevant studies indexed elsewhere, published in other languages, or appearing before the selected period. In addition, the source corpus spans heterogeneous educational and professional contexts, which limits broad generalization. A further limitation is that literature identified during manuscript revision was used only to contextualize and corroborate the Discussion and was not retrospectively added to the PRISMA corpus; consequently, the thematic findings remain based on the original 20 included studies. Future reviews should expand database and language coverage, include longer time horizons where appropriate, and examine geographical and disciplinary differences more systematically. Empirical research is also needed to develop, implement, and evaluate integrated ethical frameworks, including their effects on professional judgment, institutional policy, learner protection, and responsible AI adoption.

CONCLUSION

Digital ethics has become a core educational concern because digital transformation increasingly shapes learning, professional practice, research, and institutional decision-making. This systematic review identifies three connected areas of concern: the ethical implications of AI and generative AI; the role of ethics education and professional development; and ethical dilemmas within professional, institutional, and data-intensive practice. The synthesis shows that responsible digital transformation requires more than technical compliance. It requires ethical competence, context-sensitive judgment, transparent governance, and sustained human oversight. The review contributes an integrated thematic structure that connects technological, pedagogical, and institutional dimensions of digital ethics and highlights persistent gaps in empirical validation and policy evaluation. Future research should move from principle formulation toward testing ethical frameworks in diverse educational contexts and evaluating whether they improve real-world decisions and outcomes.

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