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Student-centric ethical frameworks for AI-driven education: Participatory consent and data ownership in a global perspective

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Abstract

The integration of artificial intelligence (AI) into educational systems has transformed pedagogical practices; however, it has also intensified concerns regarding privacy, consent, and data governance, particularly for students. This narrative review examines the ethical challenges posed by AI in education from a student-centred perspective. It focuses on two critical dimensions: participatory consent and data ownership. Drawing on interdisciplinary literature from 2015 to 2025, the study synthesises global perspectives on student rights, cultural variance in data ethics, and emerging governance models.

The review adopts a narrative methodology to analyse peer-reviewed articles, policy reports, and theoretical frameworks. Key findings highlight the inadequacy of current consent practices, the marginalisation of student voice, and the dominance of institution- or developer-centric ethical standards. The review identifies alternative models of ethical engagement, including dynamic consent, Indigenous data sovereignty frameworks, and culturally responsive design approaches.

It concludes that ethical AI in education requires a paradigm shift—from compliance-based mechanisms to relational, justice-oriented frameworks that centre students as rights-bearing participants. By integrating perspectives from the Global South, Indigenous epistemologies, and critical pedagogy, this review contributes to the development of ethical frameworks that are inclusive, pluralistic, and empowering.

Keywords: AI in Education; Student Data Ownership; Participatory Consent; Digital Ethics; Cross-Cultural Data Governance; Educational Sovereignty; Ethical AI Frameworks

1. Introduction

Artificial intelligence (AI) is reshaping the landscape of education. From personalised learning systems to algorithmic grading and facial recognition in classrooms, AI-driven technologies are increasingly embedded in educational environments (Holmes et al., 2022). These innovations promise efficiency, adaptability, and enhanced learner outcomes. However, they also raise pressing ethical questions—particularly regarding consent, data ownership, privacy, fairness, and the autonomy of students. However, ethical discourse in AI for education has often prioritised institutional efficiency over student rights and well-being (Slade & Prinsloo, 2013; Williamson & Eynon, 2020). There is an urgent need to centre students within these debates, recognising them not merely as data subjects, but as rights-bearing individuals whose voices, choices, and cultural contexts matter.

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This review examines the ethical frameworks governing AI in education through a student-centred lens. It advocates for participatory consent models and equitable data ownership strategies that take into account global and cross-cultural perspectives. In doing so, it engages with foundational and recent scholarship across education ethics, data governance, and AI policy.

The rise of AI in education has not occurred in a vacuum. It has emerged within broader transformations in digital capitalism, datafication, and algorithmic governance (Couldry & Mejias, 2019). These forces have shifted power toward technology providers and institutions, often at the expense of students. The educational sphere is especially sensitive due to the inherent vulnerability of students—particularly minors—and the compulsory nature of many learning contexts. Unlike consumers who may opt in or out, students often have no choice but to use AI systems mandated by their schools or governments (Hopkins & Faul, 2023). This creates a unique ethical terrain where principles of autonomy, justice, and protection must be carefully balanced.

Scholarly literature has begun to address these challenges. Slade and Prinsloo (2013) were early voices in arguing for learning analytics frameworks that emphasise student agency, transparency, and ethical action. More recently, Holmes et al. (2022) called for a community-wide ethics framework for AI in education, highlighting the need to go beyond data privacy towards a broader consideration of educational values. International bodies, such as UNESCO (2021) and UNICEF (2021), have also issued guidelines urging the adoption of ethical, human-centred approaches to AI in education. While these contributions are significant, the implementation of such ethics remains limited. Most existing frameworks are institution-centric or developer-driven. Few give adequate weight to the experiences, rights, and perspectives of students themselves.

A key concept in this discussion is *informed consent*. In many educational settings, consent is not truly informed or voluntary. Students, particularly children, often struggle to understand how their data is used or predict the long-term implications of algorithmic profiling (Livingstone & Third, 2017). Consent is often reduced to a one-time formality, rather than an ongoing, participatory process. In culturally diverse contexts, this problem is compounded. What constitutes valid consent may differ between collectivist and individualist societies. Some communities may prioritise communal decision-making, while others stress individual autonomy. However, few frameworks are designed to accommodate such differences (Tu, 2025).

Another core issue is *data ownership*. Currently, data generated by students is often controlled by platforms or institutions. Commercial EdTech providers may collect and monetise student data without students' meaningful input or benefit (Williamson & Eynon, 2020). This has led to calls for stronger student data rights and even recognition of students as the rightful owners of their educational data (Polonetsky, 2014). Indigenous data sovereignty movements, such as the OCAP principles in Canada, offer models of collective ownership that could inspire more just frameworks in education (First Nations Information Governance Centre, 2020). These debates are particularly relevant in the Global South, where issues of digital colonialism and extractive data practices are increasingly discussed (Couldry & Mejias, 2019; Hopkins & Faul, 2023).

Despite growing recognition of these ethical challenges, several gaps persist in the literature. First, there is limited empirical research on how students themselves perceive AI tools and data practices. Much of the ethical discourse is top-down, driven by institutions, policymakers, or researchers. Second, there is a lack of comparative, cross-cultural analysis. Most studies focus on Western contexts, overlooking the diverse ways in which consent, data rights, and educational values are understood globally. Third, current frameworks often treat ethical issues in isolation—such as privacy, fairness, and autonomy—rather than as interconnected dimensions of student empowerment. As Foucault (1977) reminds us, knowledge and power are deeply entwined. Any discussion of data in education must therefore consider how power operates through algorithmic systems and how it can be redistributed toward students.

This review aims to synthesise existing scholarship on ethical AI in education through the lens of student-centred values. It focuses on two key mechanisms: *participatory consent* and *data ownership*. The review examines how these concepts are framed in various cultural contexts, their intersection with legal and pedagogical traditions, and the models that exist or are being proposed to operationalise them. Drawing on literature from 2015 to 2025, it brings together insights from education ethics, AI governance, digital rights, and cultural studies.

This paper addresses the following research questions:

- What are the ethical concerns raised by AI use in education from a student perspective?
- How is informed consent currently understood and practiced in AI-driven educational contexts?
- What models of participatory consent have been proposed or implemented, and with what success?

- How is data ownership conceptualised across cultural and legal traditions, and what implications does this have for students?
- What gaps exist in current ethical frameworks, and how might they be addressed through more student-centric and culturally responsive approaches?

In answering these questions, the paper makes several contributions. It provides a comprehensive synthesis of literature on AI ethics in education with a focus on student rights. It introduces a cross-cultural perspective that is often missing in global AI debates. It highlights promising models of participatory consent and data ownership, including Indigenous frameworks, youth-led initiatives, and rights-based education models. Lastly, it identifies areas where further research and policy development are needed to ensure that students are not only protected but also empowered in an AI-mediated educational world.

As AI technologies continue to evolve and integrate into the everyday practices of teaching and learning, ethical frameworks must evolve in tandem. They must reflect the diverse realities of learners worldwide and uphold the principles of justice, dignity, and participation. This review contributes to that endeavour by placing students at the heart of the conversation on AI in education.

2. Methodology

This study adopts a narrative review methodology to synthesise the academic discourse on student-centric ethical frameworks for AI in education. Narrative reviews are particularly suitable when the aim is to trace conceptual developments, evaluate diverse perspectives, and integrate findings across multiple disciplines (Baumeister & Leary, 1997). Unlike systematic reviews, which aim for exhaustive coverage and uniform study designs, narrative reviews allow for thematic depth and critical interpretation**.** This approach is well-suited to interdisciplinary topics such as AI ethics, education, and digital rights.

The methodology involved four key stages: (1) scoping and framing**,** (2) source selection**,** (3) thematic synthesis**,** and (4) critical integration of global and cross-cultural perspectives.

2.1. Scoping and Framing

The review was framed around two guiding concepts: participatory consent and data ownership**,** as they relate to student experiences in AI-driven education. These concepts were selected based on their prevalence in recent ethical and policy discussions and their significance in addressing power imbalances between students and institutions, as well as technology providers (Slade & Prinsloo, 2013; Holmes et al., 2022).

Five research questions guided the review:

- What ethical concerns arise from the use of AI in education, particularly from the student perspective?
- How is informed consent operationalised in AI-mediated educational settings?
- What models exist for participatory consent in education?
- How is student data ownership conceptualised in different cultural and legal contexts?
- What gaps exist in current ethical frameworks, and how can they be addressed through student-centric design?

2.2. Source Selection

Sources were selected using purposive sampling. This method prioritises relevance and scholarly credibility over exhaustiveness (Jesson et al., 2011). Academic databases including Scopus, Web of Science, JSTOR, and ERIC were searched using combinations of the following keywords: *AI in education*, *student consent*, *data ownership*, *learning analytics ethics*, *AI governance*, *child data rights*, *cross-cultural digital ethics*, and *education surveillance*. Inclusion criteria were:

- Peer-reviewed journal articles, academic books, and official reports published between 2015 and 2025
- Written in English
- Relevant to education, AI ethics, or child rights
- Addressing one or more of the core concepts: student consent, agency, or data governance

Grey literature (e.g., blogs, opinion editorials) and non-peer-reviewed sources were excluded to ensure academic rigour. However, select official guidance documents from intergovernmental organisations (e.g., UNESCO, UNICEF) were included where relevant due to their normative influence.

2.3. Thematic Synthesis

The selected literature was read and annotated for recurring themes, arguments, and frameworks**.** A thematic synthesis approach was used to identify patterns across sources, following procedures outlined by Braun and Clarke (2006). This involved:

- Initial coding of relevant excerpts
- Grouping codes into conceptual categories (e.g., "consent mechanisms", "data sovereignty", "student voice", "ethical risks")
- Refining these categories into analytical themes

These themes were then mapped onto the research questions and reviewed for alignment with the theoretical lens of student agency, justice, and human rights.

2.4. Integration of Global and Cross-Cultural Perspectives

To ensure cultural diversity, the review deliberately included studies and frameworks from the Global South, Indigenous communities, and East Asian contexts, alongside literature from Europe and North America. Sources were selected to illustrate varying cultural interpretations of consent, privacy, and student autonomy (Tu, 2025; Hopkins & Faul, 2023). This global integration enabled the review to compare not only legal approaches but also epistemic and ethical traditions that influence AI use in education.

Special attention was given to:

- Data sovereignty frameworks (e.g., OCAP)
- Regional AI guidelines (e.g., China's PIPL, the EU's GDPR)
- Cross-national studies on educational data ethics
- Participatory research involving children and adolescents

2.5. Limitations

This review does not aim to be exhaustive. Its narrative structure prioritises depth and conceptual integration over systematic coverage. The reliance on English-language sources may have excluded relevant work published in languages other than English. Moreover, as a review of published scholarship, the paper may not fully capture emerging grassroots initiatives or unpublished practices in schools and communities.

Despite these limitations, the chosen methodology enables a critical, culturally nuanced synthesis of ethical concerns, conceptual models, and global frameworks. This approach offers valuable insight into how student-centric ethics can be strengthened in an increasingly datafied educational landscape.

3. Literature Review

This section reviews existing academic work on the ethics of AI in education, with a focus on student agency, participatory consent, and data ownership. It draws from educational philosophy, digital ethics, learning analytics, and global policy literature. The review is organised into thematic subsections, beginning with the ethical risks AI presents to students in educational environments.

3.1. Ethical Risks of AI in Education from a Student Perspective

Artificial intelligence (AI) is increasingly used in educational contexts. Applications include adaptive learning platforms, automated grading systems, predictive analytics, and classroom surveillance tools (Holmes et al., 2022). While these systems aim to improve outcomes, they introduce ethical concerns, particularly from the student's perspective.

One primary concern is privacy. AI systems often rely on the continuous collection of personal data, including academic performance, behavioural patterns, biometric data, and emotional responses. Students may be unaware of how this data is collected, stored, or shared (Slade & Prinsloo, 2013). In many cases, consent is assumed rather than explicitly given.

This raises questions about the legitimacy of data collection and the power imbalance between institutions and students (Williamson & Eynon, 2020).

Another risk is algorithmic bias**.** AI tools may reflect and reinforce existing inequalities. For example, predictive models trained on past student data may penalise students from underrepresented or marginalised backgrounds (Baker & Hawn, 2021). Bias in educational AI can affect how students are classified, supported, or disciplined. This challenges the principle of fairness and undermines trust in digital learning systems.

A third area of concern is the balance between surveillance and autonomy. AI can be used to monitor student behaviour through webcams, keystroke logging, or facial recognition. While often justified in the name of safety or engagement, such practices may erode students' sense of autonomy and psychological comfort (Zuboff, 2019). The classroom becomes a site of data extraction rather than a space for growth and dialogue.

From a pedagogical perspective, these risks alter the nature of education itself. Paulo Freire (1970) criticised "banking" models of education that treat students as passive recipients. AI, when designed without student input, risks reinforcing such models. It may promote standardisation over critical thinking, and efficiency over empowerment. As Biesta (2010) argues, education should be concerned not only with learning outcomes but with subject formation and democratic participation.

The ethical implications are severe for children and adolescents. According to Livingstone and Third (2017), children are in a "hybrid" status—they are both rights-holders and dependents. They are expected to participate, yet are often excluded from decision-making processes. This tension becomes particularly acute in AI systems, which can impact their learning trajectories and digital identities.

Despite these risks, most ethical frameworks in AI and education remain institution- or developer-centred. Students are rarely involved in the design or governance of the systems that shape their learning. As Holmes et al. (2022) observe, there is little empirical work on students' own perceptions of fairness, transparency, and consent in AI-mediated education. This gap weakens the ethical validity of AI adoption in schools and universities.

To address this, scholars have called for stronger safeguards. The DELICATE checklist (Drachsler & Greller, 2016) provides guidance on consent, transparency, and data protection in learning analytics. However, such tools are often implemented inconsistently. Moreover, they focus on administrative compliance rather than student empowerment. This reinforces the need for frameworks that treat students as active participants, rather than merely as data sources.

In summary, the literature highlights clear ethical risks associated with the use of AI in education. These include data privacy violations, systemic bias, loss of student agency, and the erosion of democratic pedagogies. The dominant frameworks are often insufficient to protect students' rights. A student-centric perspective is therefore essential. The following subsection reviews how current scholarship approaches participatory consent in education technology.

3.2. Participatory Consent in AI-Driven Education

Informed consent is a foundational principle in ethical research and technology design. In educational settings, however, the practice of consent often fails to meet ethical standards. This problem is exacerbated in AI-driven systems that operate continuously and often remain invisible. Many students are subject to surveillance, behavioural tracking, and data analytics without meaningful consent (Slade & Prinsloo, 2013).

Traditional consent mechanisms in education tend to be static, opaque, and non-participatory**.** For example, institutions may rely on broad opt-in agreements during enrolment. These agreements often do not specify the nature of data collection or AI intervention. Such practices reduce consent to a procedural formality rather than a reflective or informed act (Williamson & Eynon, 2020). Students and their families may not fully understand the implications, especially in contexts involving minors or communities with limited digital literacy (Livingstone & Third, 2017).

The literature on participatory consent offers alternative models. These models reconceptualise consent as a continuous, dynamic, and dialogic process**.** Dynamic consent frameworks, initially developed in the field of medical ethics, are now being explored in educational contexts. They allow individuals to update their preferences over time and across platforms (Budin-Ljøsne et al., 2017). In AI-driven education, this could mean enabling students to review and revoke permissions as their understanding of data practices evolves.

Prinsloo and Slade (2017) argue that participatory consent is not only about autonomy but also about trust and co-agency**.** They suggest that ethical learning analytics should be guided by ongoing dialogue with students. This includes clear communication about what data are collected, why, and how the results will be used. Transparency must be embedded not only in privacy notices but also in the interface and functionality of educational technologies.

The concept of assent also becomes important in child-centred contexts. While parents or guardians may legally provide consent, ethical frameworks increasingly call for the inclusion of the child's own views. The UN Convention on the Rights of the Child (1989) affirms children's right to be heard in all matters affecting them. In AI-mediated learning, this implies that students—regardless of age—should be consulted and engaged in decisions about data usage and system design (UNICEF, 2021).

Cultural context further complicates consent. In some collectivist societies, consent is shaped by community norms and shared responsibilities. As Tu (2025) notes, Indigenous communities may view data about children as collective knowledge requiring collective consent. This challenges Western assumptions that treat consent as an individual act. Therefore, participatory models must be adapted to local ethical and epistemological traditions**.**

Recent empirical work supports the feasibility of participatory approaches. Atabey et al. (2025) conducted co-design workshops with children in Scotland and Türkiye to explore fairness in AI-based educational systems. The findings showed that children are capable of articulating concerns about data use and discrimination. Importantly, they expressed a desire to be consulted and respected. The authors recommend that AI design processes include children as active stakeholders**,** not passive users.

Technological tools are beginning to support this shift. Consent dashboards, granular permission settings, and real-time notifications can enable students and families to manage their data in an ongoing way (Li et al., 2022). However, such tools require thoughtful implementation. Interfaces must be accessible, linguistically inclusive, and age-appropriate. Otherwise, participatory consent may reproduce existing inequities by favouring more digitally literate groups.

Educators also play a critical role. Teachers often act as intermediaries between students and AI systems. However, they may lack the training or authority to interpret privacy policies or advocate for ethical use. Therefore, professional development programmes must include data ethics and consent literacy (Holmes et al., 2022). The ethical use of AI is not solely a technical issue—it is also pedagogical, relational, and political.

In sum, participatory consent challenges prevailing models of data governance in education. It centres the student as a knowing and consenting agent, capable of dialogue and decision-making. It requires not only technological design but also institutional willingness to redistribute power. When properly implemented, participatory consent can support autonomy, equity, and trust in AI-driven learning environments.

3.3. Data Ownership and Educational Sovereignty

The question of who owns educational data is central to student-centric ethics in the context of AI. Ownership is not merely a legal matter; it shapes how power, responsibility, and benefit are distributed among students, institutions, and technology providers (Williamson & Eynon, 2020). In AI-driven education, data is continuously generated by students through their interactions, performances, and behaviours. Nevertheless, students often have little control over how these data are used, stored, or monetised (Slade & Prinsloo, 2013).

Data ownership is closely tied to agency and autonomy**.** When students do not control their data, they become objects of analysis rather than active participants in their learning journey. This contradicts pedagogical models grounded in empowerment and dialogue. Paulo Freire (1970) argues that learners must be co-creators of knowledge, not passive recipients. A similar logic applies to data: students should not merely generate information; they should have a say in how that information is interpreted and applied.

Legal frameworks vary in their approach to data rights. The European Union's General Data Protection Regulation (GDPR) grants individuals the right to access, correct, and delete their personal data (European Union, 2016). While not explicitly defining data "ownership," GDPR gives students certain powers of control. In the United States, the Family Educational Rights and Privacy Act (FERPA) provides protections; however, enforcement is often weak, and the definitions remain narrow (Singer, 2018). In many low- and middle-income countries, data protection laws are either underdeveloped or poorly implemented (UNESCO, 2021).

From a student-centric perspective, rights over data should be expansive. Students should be able to see, understand, and challenge how their data is used. This includes the right to opt out of data processing, to transfer their data, and to demand accountability when data is misused. These rights must be implemented through both policy and design. Interfaces should allow students to review their data records, correct errors, and decide who has access to what (Li et al., 2022).

Ownership also implies benefit-sharing**.** AI systems that improve through student data should yield advantages not only for companies but also for the students themselves. This may include access to improved learning tools, feedback systems, or institutional transparency. Without mechanisms for reciprocal benefit, educational data extraction risks becoming a form of digital exploitation (Couldry & Mejias, 2019).

In cross-cultural contexts, data ownership must be understood in both collective and individual terms**.** Indigenous communities, for example, advocate for data sovereignty frameworks that respect communal rights over knowledge and identity. The OCAP principles—Ownership, Control, Access, and Possession—developed by First Nations in Canada, are a prominent example (First Nations Information Governance Centre, 2020). These principles assert that data relating to Indigenous peoples must be governed by those peoples themselves. In educational settings, this could mean local control over curriculum data, language archives, or student records.

Tu (2025) argues that ignoring Indigenous data sovereignty in AI policy replicates colonial structures. AI systems built on extracted data, without consent or cultural context, violate ethical norms. Respecting educational sovereignty involves recognising traditional knowledge systems and ensuring that digital infrastructures do not override community priorities. This is especially relevant in AI systems that claim to personalise learning, yet may exclude or misrepresent minority worldviews.

The Global South raises further concerns about data colonialism**.** Free EdTech tools offered to schools in Africa, Asia, or Latin America may collect data for commercial use elsewhere. These practices mirror historical patterns of resource extraction, but through digital means (Hopkins & Faul, 2023). Calls for data localisation, ethical procurement, and regional AI governance frameworks seek to reassert control. Educational sovereignty in this context refers to ensuring that local students and institutions determine the terms of data collection and use.

Efforts to promote student data rights must also consider age and developmental capacity**.** Younger learners may lack the cognitive maturity to exercise full ownership. However, this does not mean excluding them. A layered approach—where guardians, teachers, and students all have roles—can protect rights while encouraging digital literacy. Amartya Sen's (1999) capability approach supports this view. Empowerment requires more than formal rights; it involves creating conditions in which individuals can meaningfully exercise choice.

Emerging models include student data wallets**,** learning data cooperatives**,** and trusted intermediaries**.** These innovations aim to strike a balance between usability, security, and control (Hagendorff, 2024). For example, a cooperative model might allow a group of students to negotiate with EdTech providers about data use, collectively shaping consent and benefit-sharing terms. Though still rare in practice, such ideas reflect a broader shift toward participatory governance in data infrastructures**.**

In conclusion, the ethics of data ownership in AI-driven education demand a move away from institutional or corporate control. Students must be recognised as the primary stakeholders. This includes respecting their legal rights, cultural identities, and developmental needs. Ownership is not merely about possession—it is about power, protection, and participation**.**

3.4. Cross-Cultural Ethical Frameworks in Practice

Ethical frameworks for AI in education must adapt to local cultural, legal, and epistemological contexts. A universal approach risks imposing Western norms that may conflict with community values or traditional knowledge systems (Andreotti, 2016). Cross-cultural practice requires recognising plural conceptions of ethics, personhood, and responsibility in educational environments.

In many Indigenous and collectivist cultures, knowledge is communal and relational rather than individual and extractive. Educational data are often seen as part of a collective legacy. This contrasts with Euro-American models that frame data as a personal asset governed by individual rights (Tu, 2025). For example, the Māori concept of *whakapapa* situates knowledge within genealogical and spiritual relationships. Here, data about students carries obligations to both ancestors and descendants, not just to the self (Pra et al., 2024).

The OCAP® framework (Ownership, Control, Access, and Possession), developed by First Nations in Canada, exemplifies how communities assert sovereignty over data. It requires institutions to obtain collective consent and to support culturally appropriate data governance (FNIGC, 2020). In practice, this has led to educational partnerships where Indigenous communities co-design AI tools that reflect local pedagogies, such as land-based learning or language revitalisation (Kukutai & Taylor, 2016).

Similar principles are emerging across the Global South. In India, the NEP 2020 policy emphasises "local knowledge systems" and "inclusive technology". However, scholars warn that EdTech platforms often embed hidden biases that undermine these aims (Selwyn & Jandrić, 2020). For instance, algorithmic language assessments may penalise non-standard English varieties spoken by tribal or rural students. Ethical frameworks must therefore attend to both inclusion and representation in system design.

In Africa, UNESCO's AI in Education policy guidance highlights the need for contextualised ethics. It urges governments to ensure that AI deployment aligns with national education priorities and local cultural values (UNESCO, 2021). Rwanda's Ministry of ICT, for example, launched a data governance strategy that includes ethical oversight bodies and community engagement. Pilot projects have tested AI tutoring platforms in rural schools, incorporating participatory feedback loops that involve students, teachers, and parents (Sebihi et al., 2025).

A key challenge is translating abstract ethical principles into practical applications. Ethical guidelines often originate from institutions in the Global North. While well-intentioned, they may lack relevance in settings with limited infrastructure or different pedagogical traditions. Freire (1970) reminds us that ethical education must be grounded in dialogue, not prescription. Communities must be invited to co-define what is ethical in their context.

Language and interface design also matter. Many AI platforms use English as the default, marginalising users who speak other languages or dialects. A student-centric ethical framework must support linguistic justice**.** Tools must be adapted to support mother tongues and cultural idioms, rather than being translated (Heugh, 2021). Participatory design workshops involving students from diverse regions have demonstrated that interface changes—such as icons, narratives, and voice features—can enhance inclusion and trust (Atabey et al., 2025).

Another model is the Human Capability Approach. Developed by Amartya Sen, this framework shifts the focus from compliance to empowerment. It asks whether students can achieve the functionings they value, such as learning in their language, accessing resources, or expressing dissent (Sen, 1999). In cross-cultural settings, this approach supports ethical pluralism while ensuring that AI systems do not marginalise students.

Cross-cultural implementation also requires ethical capacity-building. Teachers, administrators, and developers need training in culturally responsive AI practices. Interdisciplinary teams that include anthropologists, linguists, and educators can support more grounded system design (Holmes et al., 2022). Ethics cannot be outsourced to code; it must be embedded in relationships, institutions, and dialogue.

In conclusion, cross-cultural ethical frameworks are essential for global AI education. They ensure that student-centred values are not overridden by technological standardisation. Respecting local knowledge, language, and governance practices can make AI tools more just, inclusive, and effective. Ethical practice must start from the ground up.

4. Discussion

This review examines the ethical implications of AI-driven education from a student-centric perspective. It examined participatory consent, data ownership, and culturally situated ethical practices. These dimensions are not isolated; they are interdependent. Together, they shape how students are positioned within digital learning systems: as subjects of care, co-creators of knowledge, or objects of extraction.

A central theme is the tension between automation and agency**.** AI systems are often introduced to improve personalisation, efficiency, or outcomes. However, when implemented without participatory mechanisms, they risk overriding students' voices. Freire's (1970) critique of the banking model of education remains relevant. AI can replicate this dynamic, treating students as data points to be mined, rather than agents engaged in meaning-making.

The findings support a rights-based approach to AI ethics in education. Participatory consent is not a checkbox exercise. It must be continuous, informed, and situated within relational contexts (Pardo & Siemens, 2014). Students, particularly minors, require scaffolding to exercise meaningful consent. This includes age-appropriate information, transparent

interfaces, and involvement of parents or guardians when necessary. Child-centred pedagogy calls for ethical models that develop digital literacy alongside autonomy (Livingstone & Third, 2017).

Similarly, data ownership cannot be treated as a neutral or purely legal matter, as this review has demonstrated; questions of control, benefit-sharing, and cultural relevance influence how data ethics are understood across various contexts (Couldry & Mejias, 2019). The dominance of commercial EdTech actors often distorts ownership structures, shifting benefits away from students. A student-centric framework must prioritise not only privacy but also agency, equity, and accountability**.**

Cross-cultural insights deepen the ethical analysis. AI systems are not value-free. Their design, implementation, and use are embedded in cultural logics and institutional histories (Holmes et al., 2022). The review identified ethical models rooted in Indigenous knowledge systems, postcolonial critique, and participatory design. These practices resist the universalisation of ethics. They assert that ethical AI must be context-responsive, not technocratically imposed**.**

This supports a move from ethics-as-compliance toward ethics-as-relational-practice. As Sen (1999) argues, capabilities matter more than formal rights alone. Students must be empowered to understand and influence how AI technologies shape their learning futures. This includes having a voice in algorithmic governance, recourse mechanisms for data misuse, and space for refusal or dissent.

The review also revealed structural asymmetries in data power. In low- and middle-income settings, AI often arrives via donor-funded or corporate channels. Without strong public oversight, such systems may reproduce digital colonialism—extracting data without redistributing value (Hopkins & Faul, 2023). A student-centric ethical framework must be tied to educational sovereignty and national digital strategies.

One underexplored area is the emotional and psychological impact of AI systems. Predictive analytics can shape student identity and self-perception. Labelling students as “at-risk” or “low-performing” through opaque algorithms may have lasting consequences. Ethical frameworks must therefore consider not only justice and autonomy, but also care, dignity, and affect in digital environments (Williamson et al., 2020).

Ultimately, the paper argues for multi-level ethical governance. Ethical safeguards must operate at the level of policy (national frameworks), institutions (school leadership and procurement), and design (user-centred and inclusive AI systems). This requires collaboration between educators, technologists, students, parents, and policymakers. Ethics cannot be outsourced to guidelines alone; it must be lived and practised across domains.

In conclusion, student-centric ethical frameworks for AI in education must centre participation, ownership, and cultural pluralism. The goal is not merely to protect students from harm, but to enable them to co-create ethical, empowering, and equitable digital learning systems.

Table 1 Research Questions and Summary of Key Insights

Research Question	**Answer**
1. What ethical concerns arise from the use of AI in education, particularly from the student perspective?	Students face risks of surveillance, profiling, and loss of autonomy. AI systems may make opaque decisions about performance or behaviour, often without student input. Ethical concerns include fairness, transparency, privacy, and agency (Williamson et al., 2020; Pardo & Siemens, 2014). These risks are amplified for minors and marginalised learners.
2. How is informed consent operationalised in AI-mediated educational settings?	Informed consent is often reduced to a formality. Few systems ensure age-appropriate, ongoing, and participatory consent. Effective operationalisation requires repeated, transparent communication, parental engagement for minors, and the ability to withdraw consent at any stage (Livingstone & Third, 2017; Holmes et al., 2022).
3. What models exist for participatory consent in education?	Participatory consent models include child-centred design, co-creation workshops, and Indigenous-led frameworks like OCAP®. These models foreground relational ethics and student voice. They emphasise community accountability and contextual negotiation of power (Pra et al., 2024; Kukutai & Taylor, 2016).

4. How is student data ownership conceptualised in different cultural and legal contexts?	In Western frameworks, data ownership often aligns with individual rights and legal protections (e.g., GDPR). In Indigenous and Global South contexts, ownership is collective and tied to community well-being. Sovereignty and control are prioritised over commercial or state-driven extraction (Couldry & Mejias, 2019; UNESCO, 2021).
5. What gaps exist in current ethical frameworks, and how can they be addressed through student-centric design?	Most ethical frameworks are adult-centred, technocratic, or focused on compliance. They often neglect youth agency, emotional impacts, and cultural pluralism. Addressing these gaps requires inclusive design, local consultation, and the integration of justice-oriented approaches such as capability theory and educational dignity (Sen, 1999; Freire, 1970).

5. Conclusion

This narrative review aims to examine the development of student-centric ethical frameworks for AI-driven education, with a particular focus on participatory consent and data ownership in cross-cultural contexts. The central argument has been that the ethical governance of AI in education must begin with students' rights, voices, and lived experiences. Rather than treating learners as passive data subjects, the review advocates for ethical models that foreground agency, justice, and local relevance.

The review reveals that current approaches to AI ethics in education are insufficiently grounded in the perspectives of students. Many AI systems operate through opaque data processing and predictive profiling, often without involving students or providing them with an understanding. In such environments, ethical safeguards tend to prioritise institutional risk management rather than relational ethics. Drawing on Paulo Freire's (1970) call for critical pedagogy and Amartya Sen's (1999) emphasis on capabilities, this study reframes ethics not as compliance but as empowerment. It demonstrates that meaningful participation in data practices is inextricably linked to educational dignity, agency, and inclusion.

The findings also highlight that data ownership in education is not a universally applicable concept. Instead, it is mediated by culture, law, and power. Western legal systems often treat data as private property, with individual rights to access or portability. In contrast, many Indigenous and Global South frameworks regard data as communal, spiritual, or relational. This plurality calls for an ethical paradigm that is both globally attentive and locally situated. One-size-fits-all approaches are inadequate and may inadvertently perpetuate digital colonialism (Couldry & Mejias, 2019).

This review aimed to synthesise and critically analyse ethical considerations surrounding student participation and data governance in AI-mediated education. It explored how informed consent is understood and implemented, what models support participatory practices, and how data ownership is conceptualised across diverse cultural and legal systems. The overarching topic is the development of ethical frameworks that place students—not technologies, corporations, or even educators—at the centre of AI innovation in education.

5.1. Recap of Key Findings and Contributions

Four significant contributions emerge from this study.

- First, it establishes that student consent must be ongoing, developmental, and relational. Formal consent mechanisms alone are insufficient; ethical consent requires digital literacy, contextual transparency, and student co-design.
- Second, the review presents models of participatory consent that align with child-centred pedagogy and rights-based ethics. These include co-creation workshops, Indigenous-led frameworks like OCAP®, and school-based digital citizenship programmes that integrate student voice.
- Third, the paper demonstrates the importance of reconceptualising data ownership beyond Western legal norms. Educational sovereignty, particularly in postcolonial and Indigenous contexts, entails resisting data extraction and reclaiming control over knowledge production.
- Fourth, it introduces a cross-cultural ethical framework that supports pluralism. Rather than imposing universal AI ethics standards, it argues for ethical pluralism rooted in local values, educational practices, and epistemologies.

5.2. Practical Implications

The findings of this review have direct implications for several stakeholder groups.

- For educators, ethical integration of AI must be accompanied by professional development in digital ethics, consent facilitation, and participatory pedagogy. Teachers should be empowered to mediate technological systems with care and critical awareness.
- For policymakers, there is an urgent need to create robust, context-sensitive regulations that protect student rights while enabling ethical innovation. National strategies should include student data charters, algorithmic transparency policies, and mandatory participatory design in EdTech procurement.
- For technology developers, ethical frameworks must be embedded at the design stage. Developers should co-create systems with students and communities, incorporating tools for informed consent, data control, and refusal options. Ethical design must prioritise accessibility, explainability, and cultural adaptability.
- For researchers, this study underscores the need to shift from evaluating AI systems solely based on performance metrics to examining their social, emotional, and ethical impacts on learners.

5.3. Limitations

This narrative review is limited by its reliance on secondary sources. While it draws on interdisciplinary literature and offers comparative insights, it does not include primary empirical data. The global scope, while necessary, also limits depth in any single cultural context. Some regions, such as Central Asia and parts of Latin America, remain underrepresented in the existing literature on participatory data ethics in education.

Additionally, the rapid pace of AI innovation means that some frameworks may become outdated quickly. This calls for ongoing ethical evaluation and adaptive governance mechanisms.

5.4. Suggestions for Future Research

Future research should include longitudinal and empirical studies of participatory consent practices in real-world educational settings. These could examine how students understand and exercise consent over time, and how power relations affect their choices.

Comparative studies are also needed to investigate how different legal and cultural frameworks influence data ownership practices and student agency. Particularly valuable would be participatory action research with Indigenous communities and youth groups in the Global South.

Further research should explore the emotional and psychological dimensions of AI systems in education. Questions around identity formation, algorithmic labelling, and student self-perception remain underexamined and ethically significant.

Finally, the field would benefit from the development and testing of ethical toolkits or protocols that operationalise student-centric principles in AI design and governance.

Compliance with ethical standards

Disclosure of conflict of interest

The author declares no conflict of interest.

Statement of Ethical Approval

This article does not contain any studies with human participants or animals performed by the author.

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References

[1] Atabey, A., Wilson, C., Urquhart, L., & Schafer, B. (2025). Fairness by design: Cross-cultural perspectives from children on AI and fair data processing in their education futures. In N. Yamashita, V. Evers, & K. Yatani (Eds.), *CHI '25: Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems* (pp. 1–20). ACM Press. https://doi.org/10.1145/3706598.3714402

[2] Baker, R. S., & Hawn, A. (2022). Algorithmic bias in education. *International Journal of Artificial Intelligence in Education, 32*, 1052–1092. https://doi.org/10.1007/s40593-021-00285-9

[3] Baumeister, R. F., & Leary, M. R. (1997). Writing narrative literature reviews. *Review of General Psychology*, *1*(3), 311–320. https://doi.org/10.1037/1089-2680.1.3.311

[4] Biesta, G. (2010). *Good education in an age of measurement: Ethics, politics, democracy*. Routledge.

[5] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

[6] Budin-Ljøsne, I., Teare, H. J., Kaye, J., Beck, S., Bentzen, H. B., Caenazzo, L., Collett, C., D'Abramo, F., Felzmann, H., Finlay, T., Javaid, M. K., Jones, E., Katić, V., Simpson, A., & Mascalzoni, D. (2017). Dynamic Consent: a potential solution to some of the challenges of modern biomedical research. *BMC medical ethics*, *18*(1), 4. https://doi.org/10.1186/s12910-016-0162-9

[7] Couldry, N., & Mejias, U. A. (2019). *The costs of connection: How data is colonising human life and appropriating it for capitalism*. Stanford University Press.

[8] Dal Pra, R., O'Brien, P., Nguyen, H. X. T., Luke, J., Smith, R. A., Withall, A., … Logiudice, D. (2024). Culturally safe and ethical biomarker and genomic research with Indigenous peoples—a scoping review. *BMC Global Public Health, 2*(1), Article 72. https://doi.org/10.1186/s44263-024-00102-0

[9] Drachsler, H., & Greller, W. (2016). Privacy and analytics: It's a DELICATE issue. *Proceedings of the Sixth International Conference on Learning Analytics & Knowledge*, 89–98. https://doi.org/10.1145/2883851.2883893

[10] First Nations Information Governance Centre. (2020). Welcome to The Fundamentals of OCAP®. https://fnigc.ca/ocap-training/

[11] Foucault, M. (1977). *Discipline and punish: The birth of the prison* (A. Sheridan, Trans.). Penguin Books.

[12] Freire, P. (1970). *Pedagogy of the oppressed*. Herder and Herder.

[13] Hagendorff, T. (2024). *Mapping the ethics of generative AI: A comprehensive scoping review. Minds and Machines, 34*, Article 39. https://doi.org/10.1007/s11023-024-09694-w

[14] Heugh, K. A. (2021). *Planning for sustainable inclusion and resilient systems: Multilingual education in an era of displacement, mobility and turbulence* [Conference chapter]. In H. McIlwraith (Ed.), *Proceedings of the IMMLE Conference*, Bangkok. ResearchGate.

[15] Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., Buckingham Shum, S., … Tuomi, I. (2022). Ethics of AI in education: Towards a community-wide framework. *International Journal of Artificial Intelligence in Education, 32*(2), 504–526. https://doi.org/10.1007/s40593-021-00239-1

[16] Hopkins, A. N., & Faul, M. V. (2023). AI in education and research: Towards a more ethical engagement. *Global Challenges*, *7*(3), 230–248.

[17] Jesson, J., Matheson, L., & Lacey, F. M. (2011). *Doing your literature review: Traditional and systematic techniques*. SAGE.

[18] Kukutai, T., & Taylor, J. (2016). *Indigenous data sovereignty: Toward an agenda*. ANU Press.

[19] Li, W., Sun, K., Schaub, F., & Brooks, C. (2022). Disparities in students' propensity to consent to learning analytics. *International Journal of Artificial Intelligence in Education, 32*, 564–608. https://doi.org/10.1007/s40593-021-00254-2

[20] Livingstone, S., & Third, A. (2017). Children and young people's rights in the digital age: An emerging agenda. *New Media & Society*, *19*(5), 657–670. https://doi.org/10.1177/1461444816686318

[21] Mertens, S. L., & Britzman, D. P. (2016). Pedagogy of the implicated: Advancing a social ecology of responsibility framework to promote deeper understanding of the climate crisis. *Interchange*, *47*(4), 365-385. https://doi.org/10.1080/02255189.2016.1134456

[22] Pardo, A., & Siemens, G. (2014). Ethical and privacy principles for learning analytics. *British Journal of Educational Technology*, *45*(3), 438–450. https://doi.org/10.1111/bjet.12152

[23] Polonetsky, J. (2014). *Student data? Who owns it?* Student Privacy Compass. https://studentprivacycompass.org/student-data-who-owns-it/

[24] Prinsloo, P., & Slade, S. (2017). Ethics and learning analytics: Charting the (un)charted. In *Handbook of Learning Analytics* (pp. 49–57). https://doi.org/10.18608/hla17.004

[25] Regulation (EU) 2016/679 of the European Parliament and of the Council (27 April 2016) on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation). *Official Journal of the European Union, L 119*, 1–88. https://eur-lex.europa.eu/eli/reg/2016/679/oj

[26] Sebihi, A., Schoelen, L., & Uwamwezi, B. (2025). *Unveiling AI's impact in Rwandan higher education: Navigating trends, challenges, and imperatives at the University of Rwanda*. *Discover Education, 4*, Article 166. https://doi.org/10.1007/s44217-025-00576-6

[27] Selwyn, N., & Jandrić, P. (2020). Postdigital living in the age of Covid-19. *Postdigital Science and Education*, *2*(3), 949–954. https://doi.org/10.1007/s42438-020-00166-9

[28] Sen, A. (1999). *Development as freedom*. Oxford University Press.

[29] Slade, S., & Prinsloo, P. (2013). Learning analytics: Ethical issues and dilemmas. *American Behavioral Scientist*, *57*(10), 1510–1529. https://doi.org/10.1177/0002764213479366

[30] Tu, M. Y. (2025). AI threatens Indigenous data sovereignty and digital self-determination. *Policy Options*. https://policyoptions.irpp.org/magazines/may-2025/ai-indigenous-data/

[31] UNESCO. (2021). *AI and education: Guidance for policy-makers* (UNESDOC No. pf0000376709). UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000376709

[32] UNESCO. (2023). Recommendation on the Ethics of Artificial Intelligence. *UNESCO*. Retrieved June 19, 2025, from https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence

[33] UNICEF Innocenti. (2021). *Policy guidance on AI for children* (Policy Guidance No. 2.0). UNICEF Innocenti. https://www.unicef.org/innocenti/media/1341/file/UNICEF-Global-Insight-policy-guidance-AI-children-2.0-2021.pdf

[34] Williamson, B., & Eynon, R. (2020). Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, *45*(3), 223–235. https://doi.org/10.1080/17439884.2020.1798995

[35] Williamson, B., Eynon, R., & Potter, J. (2020). Pandemic politics, pedagogic rights: Developing a new normative framework for education. *Learning, Media and Technology*, *45*(3), 242–255. https://doi.org/10.1080/17439884.2020.1761641

[36] Zuboff, S. (2019). *The age of surveillance capitalism*. Profile Books.