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Information Ethics Perspective and the Reconceptualization of Data Privacy in Digital Learning Environments

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ABSTRACT

The post-pandemic era has witnessed the institutionalization of digital learning environments (DLEs) as a core component of global education systems. While these technologies enabled pedagogical continuity during COVID-19, their continued use has intensified ethical concerns surrounding data privacy, surveillance, and algorithmic governance. This study critically examines data privacy challenges in post-pandemic digital learning environments through an information ethics perspective. Drawing on established ethical frameworks and recent empirical literature, the paper explores how datafication, learning analytics, and artificial intelligence reshape power relations between learners, institutions, and technology providers. The study identifies persistent ethical risks related to informed consent, autonomy, equity, and accountability, arguing that regulatory compliance alone is insufficient to address these concerns. The paper proposes an ethically grounded governance framework that integrates information ethics principles into institutional policy, system design, and educational practice. The findings contribute to ongoing scholarly discourse on ethical digital education and provide practical insights for policymakers, educators, and educational technology developers.

Keywords: Data Privacy, Digital Learning Environments, Post-Pandemic Education, Information Ethics, Learning Analytics, Educational Technology Governance

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1. INTRODUCTION

The COVID-19 pandemic triggered an unprecedented transformation in educational delivery worldwide. Educational institutions rapidly transitioned from traditional face-to-face instruction to emergency remote teaching, heavily reliant on digital learning environments (Hodges et al., 2020). Although initially perceived as a temporary response, digital platforms have since become embedded within mainstream educational systems, marking a structural shift in how learning is organized, delivered, and monitored (Williamson & Hogan, 2020).

This rapid digitalisation has amplified concerns regarding data privacy. Digital learning environments collect extensive volumes of personal and behavioural data, including login patterns, interaction logs, assessment records, biometric identifiers, and communication metadata. In the post-pandemic era, these data practices persist, often expanding through advanced learning analytics, artificial intelligence (AI), and predictive modelling (Ifenthaler & Yau, 2020). Despite the educational benefits of data-driven systems, such developments raise profound ethical questions. Students increasingly occupy surveilled learning spaces where data extraction occurs continuously, frequently without meaningful consent or transparency (Selwyn, 2019). This paper argues that addressing these challenges requires more than technical safeguards or legal compliance; it necessitates an **information ethics approach** that foregrounds moral responsibility, human dignity, and social justice.

2. DIGITAL LEARNING ENVIRONMENTS AND EDUCATIONAL DATAFICATION

2.1. Expansion of Data-Driven Education

Digital learning environments encompass learning management systems (e.g., Moodle, Canvas), video conferencing platforms, adaptive learning software, and AI-powered assessment tools. These systems operate through continuous data collection to personalise instruction, track engagement, and predict academic outcomes (Ferguson, 2019). The post-pandemic period has intensified this trend, with institutions seeking to leverage data analytics to improve retention, performance, and institutional efficiency (Pardo & Siemens, 2014). However, this transformation has also normalized datafication, where educational processes are increasingly quantified, monitored, and algorithmically governed.

2.2. Surveillance Capitalism and Education

Scholars warn that educational data practices increasingly align with broader models of surveillance capitalism, where personal data are monetized or repurposed beyond their original educational context (Zuboff, 2019). Third-party vendors frequently retain ownership or access to student data, creating ethical tensions between institutional responsibility and commercial interests (Williamson, 2021).

3. POST-PANDEMIC DATA PRIVACY CHALLENGES

3.1. Informed Consent and Power Asymmetry

Meaningful informed consent remains elusive in educational contexts. Students often lack the option to opt out of digital platforms essential for course participation, undermining autonomy and voluntariness (Solove, 2021). This power asymmetry is ethically significant, particularly for minors and vulnerable populations.

3.2. Remote Proctoring and Biometric Data

Remote assessment tools introduced during the pandemic employ facial recognition, gaze tracking, and environmental scanning. Research indicates these systems disproportionately affect students with disabilities and marginalized backgrounds, raising concerns about discrimination, dignity, and psychological harm (Bach, 2021; Swauger, 2020).

3.3. Algorithmic Bias and Educational Inequality

Predictive analytics and AI-driven recommendations risk reinforcing historical inequalities. Algorithms trained on biased datasets may misclassify or disadvantage certain learner groups, conflicting with ethical principles of fairness and justice (O'Neil, 2016; Eubanks, 2018).

4. THEORETICAL FRAMEWORK: INFORMATION ETHICS

Information ethics examines moral issues arising from the life cycle of information, including its creation, processing, dissemination, and governance (Floridi, 2013). Unlike traditional privacy frameworks focused on legal rights, information ethics emphasizes **relational responsibility** and **contextual integrity**.

Key ethical principles applied in this study include:

- **Respect for autonomy:** learners' rights to control personal data
- **Justice:** equitable treatment in data-driven educational decisions
- **Beneficence:** educational technologies should promote learner well-being
- **Nonmaleficence:** avoidance of harm through excessive surveillance or misuse
- **Accountability:** clear responsibility for data governance and decision-making

Nissenbaum's (2010) theory of contextual integrity further supports the argument that privacy violations occur when information flows deviate from contextual norms, a frequent occurrence in digital education systems.

5. CONCEPTUAL FRAMEWORK

5.1 Conceptual Framework for Ethical Data Privacy in Digital Learning Environments

To operationalise the information ethics perspective adopted in this study, a conceptual framework is developed to explain the relationships between post-pandemic digital learning environments, educational data practices, data privacy challenges, ethical principles, governance mechanisms, and ethical outcomes. **Figure 1** presents the conceptual framework guiding this study.

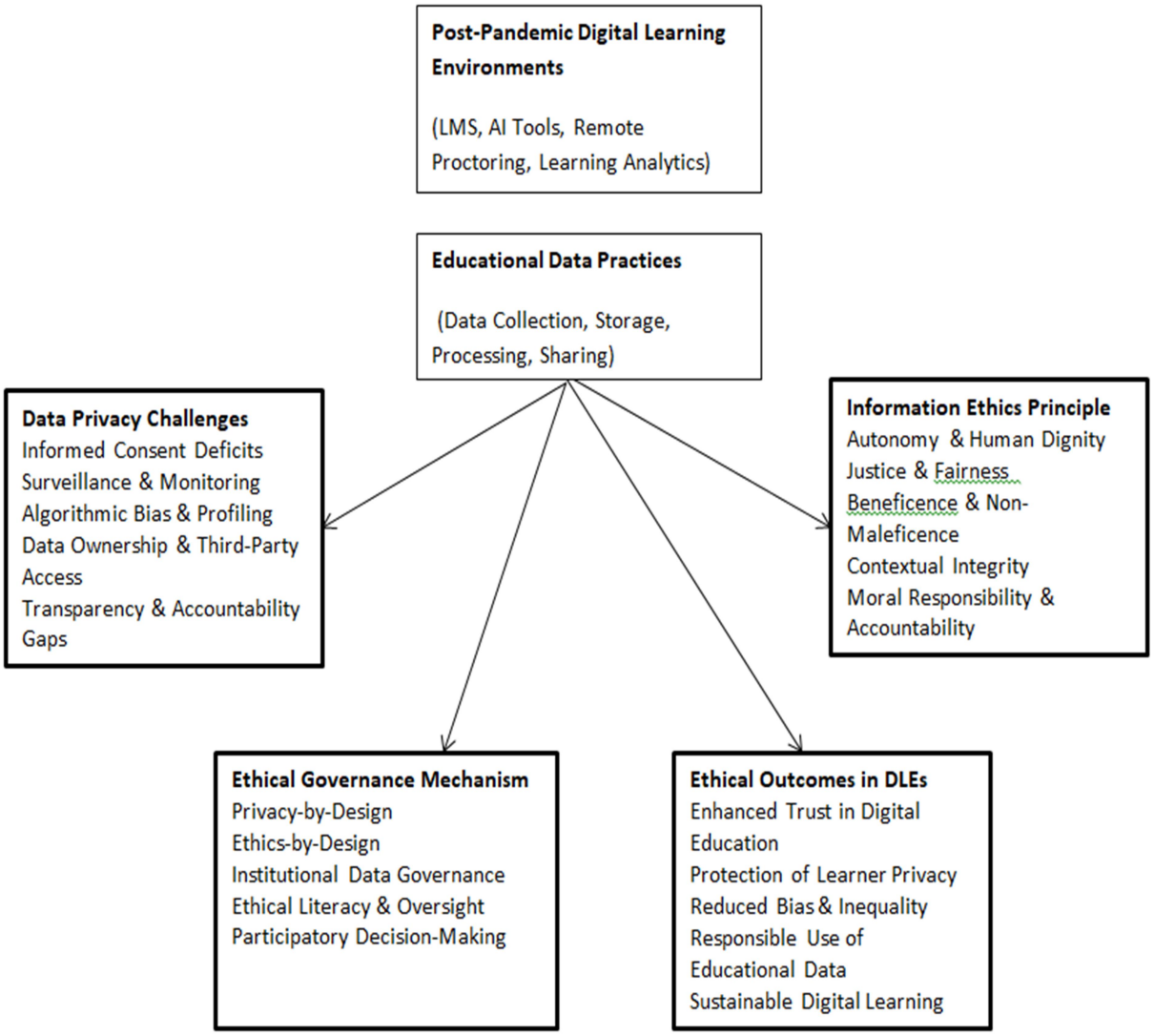

Figure 1: Conceptual Framework for Data Privacy in Post-Pandemic Digital Learning Environments

5. METHODOLOGY

This study adopts a **qualitative integrative literature review methodology**, synthesizing peer-reviewed journal articles, policy reports, and ethical frameworks published between 2015 and 2024. Sources were selected based on relevance to post-pandemic education, digital privacy, and information ethics. The interpretive approach enables conceptual integration and ethical analysis rather than empirical generalization.

6. ETHICAL GOVERNANCE OF DIGITAL LEARNING ENVIRONMENTS

6.1. Beyond Legal Compliance

While regulations such as the GDPR and FERPA provide baseline protections, scholars argue that ethical governance must extend beyond compliance toward proactive moral responsibility (Tene & Polonetsky, 2013).

6.2. Privacy by Design and Ethics by Design

Embedding ethical principles during system development—privacy by design and ethics by design—can reduce risks before deployment (Van den Hoven et al., 2015). This includes data minimization, transparency dashboards, explainable AI, and participatory design involving educators and students.

6.3. Institutional Accountability and Ethical Literacy

Institutions must develop ethical literacy among staff and students, supported by clear governance structures, data stewardship roles, and independent oversight committees (Prinsloo & Slade, 2017).

7. DISCUSSION

The post-pandemic normalization of digital learning demands a reorientation of ethical priorities. Information ethics provides a normative lens that challenges technocratic approaches to educational innovation. Without ethical intervention, digital learning environments risk eroding trust, autonomy, and equity. Ethical governance should be viewed not as a constraint but as an enabler of sustainable, human-centered digital education.

8. CONCLUDING REMARKS

This paper has examined data privacy challenges in post-pandemic digital learning environments through an information ethics perspective. It argues that ethical considerations must be embedded at institutional, technological, and pedagogical levels. Future research should empirically explore student and educator experiences of data governance and assess the effectiveness of ethics-driven design frameworks across diverse educational contexts.

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