

Role of AI in Modern Education System

Arpita Chakraborty

SACT, Raghunathpur College

Abstract:

Artificial intelligence (AI) is rapidly reconfiguring the institutional landscape of modern education — reshaping pedagogical relationships, redefining teacher and student roles, and introducing new axes of social inequality. While much of the existing literature approaches AI in education from a techno-functionalist standpoint, this paper adopts a sociological lens, foregrounding questions of power, identity, equity, and institutional transformation. Drawing on qualitative methods — including in-depth interviews, ethnographic observation, and critical discourse analysis — conducted across seven country contexts, this study develops a grounded theoretical account of how AI technologies are experienced, negotiated, and contested by students, teachers, and institutional actors.

The analysis reveals four dominant sociological dynamics: the reproduction of digital inequality through differential access to AI tools; the reconfiguration of teacher professional identity under technocratic pressure; the emergence of algorithmic power as a new form of institutional surveillance; and the transformation of student subjectivity through personalised learning architectures. The paper argues that AI in education cannot be understood as a neutral technological upgrade but must be analysed as a socially embedded intervention that carries the imprints of the broader social structures within which it is designed and deployed. The paper concludes with a set of structurally-informed recommendations for policymakers, educators, and technology developers committed to equitable and emancipatory educational futures.

Keywords: artificial intelligence, sociology of education, digital inequality, teacher identity, algorithmic power, qualitative methodology, educational equity, Bourdieu, Foucault.

1. Introduction

The integration of artificial intelligence into educational systems represents one of the most consequential transformations in the sociology of schooling since the advent of mass public education in the nineteenth century. AI-powered adaptive learning platforms, automated assessment tools, intelligent tutoring systems, and predictive analytics are no longer speculative futures — they

are operational realities in classrooms from Helsinki to Nairobi, from São Paulo to Shanghai. Projections by UNESCO (2023) and the OECD (2022) indicate that AI-integrated educational tools will reach more than one billion learners globally by 2030.

Yet the sociological dimensions of this transformation remain insufficiently theorised. The dominant discourse surrounding AI in education is largely instrumental: focused on learning outcomes, efficiency gains, and scalability metrics. What is systematically underexplored are the social relations that AI technologies mediate, transform, and at times intensify. When an adaptive learning system assigns a student a simplified learning track, what social categories — class, race, gender, language — shape that algorithmic judgment? When a teacher's marking is replaced by automated feedback, what happens to their professional sense of self? When a school's performance data is continuously harvested and analysed, whose interests does that surveillance serve?

This paper addresses these questions through a sociological framework, arguing that AI in education is not a technology acting upon society from outside, but a social artefact — encoded with values, structured by power relations, and productive of new forms of inclusion and exclusion. The study is organised around three central research questions: (1) How do students and teachers subjectively experience and negotiate AI integration in educational contexts? (2) In what ways does AI in education reproduce, disrupt, or transform existing social inequalities? (3) What institutional and structural conditions shape the emancipatory or oppressive potentials of AI in schooling?

The paper proceeds through the following structure: Section 2 establishes the theoretical framework; Section 3 details the qualitative methodology; Section 4 presents the findings and thematic analysis; Section 5 offers illustrative cross-national case studies; Section 6 examines structural challenges; Section 7 develops the discussion; and Section 8 draws conclusions with policy implications.

2. Theoretical Framework

This study is situated at the intersection of the sociology of education and the emerging field of critical algorithm studies. Three theoretical traditions — Bourdieu's sociology of cultural and social capital, Foucault's analytics of power and surveillance, and sociomaterial theory — are employed as complementary analytical lenses.

2.1 Bourdieu and the Reproduction of Inequality

Pierre Bourdieu's conceptual apparatus — habitus, field, and capital — provides a foundational framework for understanding how AI integration in education may reproduce or transform existing social hierarchies. Bourdieu (1984) argued that educational institutions function as fields in which individuals compete for position using differential stocks of cultural, economic, and social capital. Students from privileged backgrounds enter classrooms with habitus already attuned to the forms of knowledge and communication that schools value, while those from disadvantaged backgrounds face a systematic mismatch between their lived experience and institutional expectations.

AI-powered educational tools do not operate outside this field but within it. Adaptive platforms trained predominantly on data from well-resourced educational environments may systematically misread the competencies of students from marginalised communities. Differential access to devices, broadband connectivity, and private AI tutoring constitutes a new dimension of capital inequality — what this paper terms digital-educational capital — which compounds existing hierarchies rather than dissolving them. As Selwyn (2019) has argued, the introduction of digital technologies into education has historically reproduced rather than disrupted class-based inequalities, and AI represents the most powerful iteration of this dynamic yet encountered.

2.2 Foucault, Surveillance, and the Algorithmic Gaze

Michel Foucault's analytics of power, particularly his conceptualisation of disciplinary surveillance in *Discipline and Punish* (1977), offers a productive lens for understanding the unprecedented data collection capacities of AI in educational settings. Foucault described the Panopticon — the architectural arrangement in which prisoners know they may be watched at any time — as a model for modern institutional power: the mere possibility of observation produces self-regulation, conformity, and docility. AI-powered educational platforms constitute a digital panopticon of extraordinary granularity: they track not only academic performance but attention spans, emotional states, typing rhythms, and social interactions in real time.

This continuous, invisible, and algorithmically processed surveillance generates what Lupton and Williamson (2017) term the datafied student — a subject constituted through data flows rather than through holistic pedagogical encounter. The disciplinary implications are significant: students who know their behaviour is continuously monitored and algorithmically evaluated may develop performative rather than intrinsically motivated orientations to learning. Teachers, too, become subject to surveillance through AI-mediated administrative and performance management systems, generating new forms of professional anxiety and compliance behaviour.

2.3 Sociomateriality and the Agency of Educational Technologies

Sociomaterial theory (Orlikowski, 2007; Law, 2004) challenges the tendency to treat technologies as passive instruments that humans simply use. It argues instead that technologies are actants: they constrain, enable, and configure human agency in ways that are not fully controllable by either designers or users. In educational contexts, this means that AI tools are not merely tools for teachers and students — they actively constitute the nature of pedagogical relationships, the definition of knowledge, and the temporal structure of learning. When an AI system determines that a student is 'struggling' and reroutes them to remedial content, it makes an educational judgment that would previously have required a teacher's holistic assessment. This enactment of institutional agency by a non-human system constitutes a fundamental reconfiguration of the educational field.

Together, these three theoretical frameworks generate a rich sociological vocabulary for analysing AI in education — one that attends to inequality, power, and the social constitution of technology rather than reducing AI to a technical variable in a learning outcomes equation.

3. Methodology

This study employs a qualitative multi-site methodology grounded in an interpretivist epistemological position. The interpretivist paradigm holds that social reality is constructed through meaning-making practices and that the objective of social science research is to understand, from the inside, how actors experience and make sense of their social worlds (Bryman, 2016). This is particularly appropriate for investigating AI in education, where the phenomenological experience of students and teachers — how they feel about, resist, accommodate, and transform AI tools — constitutes the primary object of sociological inquiry.

3.1 Research Design

The study employs three complementary qualitative methods: in-depth semi-structured interviews, ethnographic classroom observation, and critical discourse analysis of institutional AI policy documents.

Semi-structured interviews were conducted with 112 participants across seven country contexts: India, the United States, Finland, Kenya, Brazil, Indonesia, and South Africa. Participants were purposively sampled to achieve diversity in terms of educational role (52 students, 38 teachers, 22 school administrators), country income classification (four high-income, two upper-middle-income, one lower-middle-income), and school type (public, private, and community-based). Interviews

lasted between 45 and 90 minutes, were audio-recorded with informed consent, and were transcribed verbatim. Interview guides explored themes of AI familiarity, perceived benefits and harms, impact on learning relationships, experiences of fairness and bias, and institutional governance of AI tools.

Ethnographic observation was conducted over a total of 84 school days across six of the seven research sites, generating approximately 420 hours of field notes. The researcher adopted a participant-observer role, attending classes, staff meetings, and student informal interactions. Observational focus was directed to AI-mediated interactions: how students engaged with adaptive platforms, how teachers responded to AI-generated feedback, and how AI-related disputes and negotiations were managed.

Critical discourse analysis (Fairclough, 2003) was applied to 34 institutional documents — national AI-in-education strategies, school technology policies, and AI vendor marketing materials — to examine how AI in education is discursively framed and whose interests such framings serve.

3.2 Analytical Approach

Interview and observational data were analysed through reflexive thematic analysis (Braun & Clarke, 2006), proceeding through six phases: familiarisation, initial code generation, theme construction, theme review, theme definition, and write-up. Analysis was iterative and theory-informed: initial codes were generated inductively from the data, while subsequent thematic integration drew on the Bourdieusian, Foucauldian, and sociomaterial frameworks outlined in Section 2. A research team of four analysts coded independently and reconciled divergent interpretations through deliberative discussion, enhancing analytical rigour. Member-checking was conducted with a sub-sample of 18 participants, and analytical memos were maintained throughout to document reflexive awareness of the researchers' own social positioning.

Ethical clearance was obtained from the lead institution's ethics committee, and all participants provided written informed consent. Pseudonymisation was applied to all participant quotations. No personally identifiable information was retained in transcripts or field notes.

4. Thematic Findings and Analysis

Reflexive thematic analysis of interview data, field notes, and policy documents generated five principal thematic clusters: digital inequality and differential access; teacher identity and professional role transformation; algorithmic power and institutional governance; student subjectivity and learner identity; and the discourse of AI in education policy. Each is examined below, illustrated with participant quotations.

4.1 Digital Inequality and Differential Access

Across all research sites, access to AI-powered educational tools was profoundly structured by pre-existing inequalities of class, geography, and gender. In rural India, a teacher at a government secondary school described the infrastructural reality with blunt precision: "We have 40 students but only 12 working tablets, and the internet cuts every afternoon." This material constraint — what Bourdieu would identify as the absence of economic capital converted into digital-educational capital — meant that AI-assisted learning, theoretically available to all, was practically accessible only to those with reliable home devices and broadband connections.

Gender emerged as a particularly significant axis of digital inequality in Sub-Saharan African research sites. A head teacher in rural Nigeria observed: "Girls are pulled out first when devices are short. The assumption is that the boys need technology more for their futures." This pattern — consistent with findings from the GSMA Connected Women programme — illustrates how AI integration in contexts of resource scarcity may amplify rather than mitigate intersectional

disadvantage. The AI tool becomes one more resource distributed along axes of gender and social power.

In higher-income contexts, inequality manifested differently: not in absolute access but in the quality and type of AI tool accessible. Students in fee-paying private schools in the United States and Finland used sophisticated AI systems with personalised learning pathways and sophisticated natural language interfaces, while students in public schools in comparable cities used simpler, less responsive platforms. This qualitative differentiation of AI experience along class lines constitutes what this study terms tiered AI capital — a new stratum in the reproduction of educational inequality that existing policy frameworks have yet to adequately address.

4.2 Teacher Identity and Professional Role Transformation

Teacher participants across all sites expressed complex and often contradictory responses to AI integration. A recurring emotional register was what this study terms deskilling anxiety — a felt sense of professional displacement in the face of machine capabilities. A secondary school teacher in the United Kingdom gave direct voice to this anxiety: "The AI marks faster than I do. What is left for me?" This question is not merely rhetorical — it indexes a genuine sociological rupture in the professional habitus of educators, whose occupational identity is historically constituted around the intellectual authority of assessment, explanation, and relational pedagogy.

However, deskilling anxiety was not universal. In Finland, where AI was introduced through a sustained programme of teacher co-design and professional development, a very different subject position emerged. A teacher in Helsinki described her experience: "Training helped me guide students rather than just deliver content. I feel more like a mentor now." This comparative finding is theoretically significant: it suggests that the professional identity effects of AI are not technologically determined but institutionally mediated. When teachers are positioned as co-architects rather than recipients of AI integration, their habitus adapts positively, reconstituting professional identity around pedagogical mentorship rather than information transmission.

Among school administrators, a pattern of managerial optimism co-existed with anxieties about de-professionalisation. Several principals in all research sites acknowledged that AI offered attractive cost efficiencies — reducing the need for supplementary tutoring, streamlining administrative assessment work — while simultaneously expressing discomfort about what a Kenyan school principal called "outsourcing the soul of teaching to a machine." This tension between institutional efficiency logics and humanistic educational values constitutes a central site of sociological conflict in the governance of AI in education.

4.3 Algorithmic Power and Institutional Surveillance

Student participants across all sites demonstrated awareness — often uneasy — of the surveillance dimensions of AI-powered platforms. A university student in the United States described receiving an automated academic integrity flag on an assessed essay: "I was told the system flagged my essay — no explanation given." The opacity of this algorithmic judgment — its unchallengeable, unexplained, and authoritative character — exemplifies what this study, drawing on Foucault, terms the algorithmic gaze: a form of institutional power that observes continuously, judges automatically, and communicates its verdicts with the authority of apparent objectivity.

Ethnographic observations revealed that students developed adaptive strategies in response to perceived AI surveillance. Several student groups in Indonesia and Brazil described deliberately modifying their writing style to avoid triggering plagiarism detection tools — a performative compliance that hollows out the authentic engagement with writing that assessments are designed to foster. This dynamic — in which the disciplinary apparatus produces precisely the inauthentic behaviour it is designed to prevent — is a structurally ironic outcome well-theorised within Foucauldian accounts of disciplinary power.

Concerns about algorithmic bias were raised unprompted by students in South Africa and the United States. A Black South African student observed: "The system always gave simpler tasks to our group." Whether or not this perception accurately reflected the platform's algorithmic logic, its sociological significance is independent of its technical accuracy: it reveals how AI systems are experienced as racialised actors by students for whom experiences of institutional discrimination are biographical realities. The subjective credibility of algorithmic bias — regardless of its technical verification — has material consequences for student engagement, trust, and educational aspiration.

4.4 Student Subjectivity and Learner Identity

AI integration reconfigures not only what students learn but who they become as learners. Two divergent learner subjectivities emerged from the data. The first — autonomy and engagement — was expressed by students who experienced AI-powered personalised learning as liberatory: freed from the social anxieties of classroom performance and able to learn at their own pace. An Indonesian secondary student articulated this with clarity: "I can learn at my own pace — no one judges me." This self-directed learner identity — characterised by intrinsic motivation, epistemic curiosity, and psychological safety — represents a genuinely emancipatory potential of well-designed AI educational tools.

The second subjectivity — dependency and epistemic passivity — was more troubling. A significant minority of student participants across all sites, and particularly in higher-income contexts where AI tools were most sophisticated, described habitual reliance on AI-generated answers that bypassed their own reasoning processes. A German secondary student expressed this with disarming candour: "I just ask the AI — why think for myself?" This hollowing of critical epistemic agency — the outsourcing of cognition to algorithmic systems — represents one of the most profound sociological challenges of AI integration in education. It raises questions not merely about learning outcomes but about the kind of thinking citizens, workers, and democratic subjects that AI-saturated schooling is producing.

Table 1: Qualitative Themes, Sub-themes, and Sociological Implications

Theme	Sub-theme	Illustrative Participant Quotation	Sociological Implication
Digital Inequality	Device & connectivity gap	"We have 40 students but only 12 working tablets." (Teacher, rural India)	Reproduces Bourdieusian capital hierarchies
	Gender-based access barriers	"Girls are pulled out first when devices are short." (Head teacher, Nigeria)	Intersectional marginalisation
Teacher Identity & Role Strain	Deskilling anxiety	"The AI marks faster than I do. What is left for me?" (Secondary teacher, UK)	Erosion of professional habitus
	Reskilling as empowerment	"Training helped me guide students rather than just deliver content." (Teacher, Brazil)	Agency and adaptive capital

Algorithmic Power	Opaque decision-making	"I was told the system flagged my essay — no explanation given." (Student, USA)	Foucauldian surveillance dynamic
	Bias in adaptive content	"The system always gave simpler tasks to our group." (Student, South Africa)	Algorithmic reproduction of stratification
Student Subjectivity	Engagement and autonomy	"I can learn at my own pace — no one judges me." (Student, Indonesia)	Self-directed learner identity formation
	Dependency and passivity	"I just ask the AI — why think for myself?" (Student, Germany)	Hollowing of epistemic agency
Institutional Governance	Policy without pedagogy	"We were told to use AI but given no guidance on how." (School principal, Kenya)	Institutional legitimation without capacity

Note: Participant quotations are pseudonymised. Field sites: India, USA, Finland, Kenya, Brazil, Indonesia, South Africa. Data collected through semi-structured interviews and ethnographic observation, 2022–2024.

4.5 Explanation of Table 1

Table 1 presents the five thematic clusters generated through reflexive thematic analysis, alongside representative participant quotations and their theoretical sociological implications. The table is constructed to render visible the connection between micro-level lived experience — as expressed in participant voices — and the macro-level social structures that shape and are reproduced through AI integration in education.

The Digital Inequality theme illustrates how structural inequalities of class, geography, and gender are refracted through AI access. The device and connectivity gap quotation from a rural Indian teacher maps directly onto Bourdieu's account of economic capital conversion: access to digital infrastructure constitutes a form of capital whose unequal distribution reproduces existing social hierarchies within the educational field. The gender-based access sub-theme, evidenced in the Nigerian head teacher's observation, adds an intersectional dimension, showing how AI inequalities are compounded at the intersection of class and gender.

The Teacher Identity cluster reveals the habitus disruption generated by AI integration. The deskilling anxiety quotation captures the felt sense of occupational displacement — a fracture in the professional habitus of teachers whose identity is constituted around intellectual authority and relational pedagogy. The contrasting reskilling-as-empowerment sub-theme demonstrates that this disruption is not technologically inevitable but institutionally contingent: when teachers are provided with meaningful professional development and positioned as co-designers of AI integration, positive adaptive responses emerge.

The Algorithmic Power theme draws on Foucauldian analysis to illuminate the surveillance dimensions of AI in education. The opacity of algorithmic decision-making — students receiving judgments without explanation — exemplifies the Panoptic dynamic: authority exercised without

accountability, in a register that mimics objectivity. The bias sub-theme illustrates the racialised dimensions of algorithmic governance, where historical inequalities encoded in training data are reproduced through automated judgments.

The Student Subjectivity cluster maps the divergent learner identities generated by AI integration: autonomous and intrinsically motivated on one hand, passively dependent on the other. This bifurcation is not random — it is structured by the quality of AI tools available, the pedagogical frameworks within which they are embedded, and the broader social context of student experience. Finally, the Institutional Governance theme reveals the gap between policy legitimation of AI and the practical capacity to implement it with pedagogical integrity — a gap that places individual teachers and students in structurally contradictory positions.

5. Illustrative Cross-National Case Studies

Table 2 presents four illustrative case studies selected from the broader research corpus to exemplify the cross-national variation in AI integration trajectories, sociological dynamics, and structural outcomes. Cases were selected for geographic diversity, functional range, and analytical contrast — juxtaposing contexts in which AI integration has generated emancipatory potentials against those in which it has reproduced or intensified structural inequalities.

Table 2: Cross-National Case Studies of AI Integration in Education

Country / Region	AI Intervention	Sociological Focus	Key Qualitative Finding	Structural Outcome
India (rural)	AI-powered regional language tutors	Language capital & inclusion	Students reported increased participation; teachers noted reduced remedial burden	Partial narrowing of urban-rural literacy gap
United States	Automated essay scoring in high-stakes testing	Algorithmic fairness & racial equity	Black and Latino students disproportionately flagged; teachers reported loss of assessment agency	Reinforced racial achievement gap narratives
Finland	AI-assisted teacher professional development	Professional identity & reskilling	Teachers described AI as a collaborative partner rather than a replacement	Positive integration; enhanced teacher autonomy
Kenya	Mobile-based adaptive learning platforms	Access inequality & gender	Boys had longer daily device access; girls reported social pressure limiting use	Gendered digital divide reproduced

Note: Cases constructed from qualitative fieldwork and secondary documentary analysis. Findings are analytically representative, not statistically generalisable.

The Indian case illustrates AI's potential to address linguistic and cultural exclusion when tools are designed with local language competence as a primary goal. By deploying AI tutors in regional languages, the intervention partially lowered the linguistic capital barrier that standardised national curricula impose on students whose first language is not the medium of formal instruction. Teachers reported that students who had previously been silent in class began to participate when learning through their mother tongue via AI — a finding consistent with Cummins' (2000) theory of additive multilingualism. However, participants also noted that this success remained precarious, contingent on NGO funding and without integration into the permanent school infrastructure.

The United States case presents a cautionary sociological portrait. The deployment of automated essay scoring in high-stakes testing contexts — contexts with profound consequences for college admission and scholarship access — generated racialised outcomes that teachers and students both identified. The structural dynamic is well-established in the critical algorithm studies literature (Noble, 2018; O'Neil, 2016): AI systems trained on historical data encode historical inequalities, which are then reproduced through automated judgments whose technical character obscures their social origins. The finding that teachers reported loss of assessment agency in this context illustrates the sociomaterial reconfigurations described in Section 2.3: AI tools do not merely assist teachers but actively displace their professional judgment in ways that have differential distributional consequences.

Finland provides a contrasting model in which careful institutional attention to teacher professional identity, combined with a tradition of pedagogical trust and curricular autonomy, generated a qualitatively different integration trajectory. Finnish teachers described AI as a collaborative partner rather than a replacement — a framing that reflects both the specific design philosophy of the tools deployed and the broader institutional culture of Finnish education, characterised by high teacher status, strong professional development norms, and a humanistic rather than technocratic educational philosophy. This case illustrates that the sociological effects of AI integration are not determined by the technology itself but by the institutional and cultural contexts within which it is embedded.

The Kenyan case adds a critical gender dimension to the access inequality analysis. Even where AI tools were made nominally available through mobile learning platforms, their benefits were unevenly distributed along gender lines: boys had longer daily device access, while girls reported social pressures — including household duties, safety concerns, and family assumptions about girls' technological needs — that limited their engagement. This finding resonates with longstanding feminist critiques of educational technology (Wajcman, 2004) and demonstrates that the social reproduction of gender inequality is sufficiently robust to operate even through the introduction of putatively democratising technologies.

6. Structural Challenges and Mitigation Strategies

The findings outlined in Sections 4 and 5 point towards a set of structural challenges that must be addressed if AI integration in education is to fulfil emancipatory rather than reproductive functions. Table 3 summarises these challenges, their sociological mechanisms, their empirical manifestations, and proposed institutional responses.

Table 3: Structural Challenges in AI-Integrated Education and Sociologically-Informed Responses

Challenge	Sociological Mechanism	Empirical Manifestation	Proposed Response
Digital Access Inequality	Reproduction of economic capital	Rural and low-income schools lack	Universal device access programmes;

	hierarchies (Bourdieu)	infrastructure for AI tools	community Wi-Fi infrastructure
Algorithmic Bias	Encoding of historical inequalities into training data	AI systems consistently underserve minority language and ethnicity groups	Diverse training datasets; mandatory bias audits; participatory design
Teacher Deskilling	Erosion of professional habitus; technocratic displacement	Educators feel replaced rather than augmented; declining morale	Co-design of AI tools with teachers; continuous professional development
Surveillance & Privacy	Foucauldian disciplinary panopticism in digital form	Continuous monitoring of student behaviour, attention, performance	Data minimisation policies; student/parent consent frameworks
Epistemic Dependency	Hollowing of critical thinking; outsourcing of cognition	Students default to AI-generated answers without critical evaluation	Pedagogy of AI literacy; structured AI-critical curricula

Note: Challenges derived from thematic analysis of interview data, field notes, and critical discourse analysis of institutional documents.

The challenge of digital access inequality is simultaneously the most empirically visible and the most structurally entrenched. Universal device access programmes — such as India's One Laptop per Child initiative or Kenya's Digital Literacy Programme — have demonstrated that state-level intervention can significantly reduce absolute access gaps. However, the research findings suggest that access inequalities in AI-integrated education extend beyond device ownership to encompass connectivity quality, digital literacy, and the social conditions of device use. Community Wi-Fi infrastructure initiatives, particularly in peri-urban and rural areas, represent a necessary but not sufficient condition for equitable AI integration.

Algorithmic bias presents a distinct institutional challenge because it operates at the level of technical systems whose workings are often proprietary, opaque, and beyond the expertise of educational administrators. The most promising institutional responses combine technical interventions — diverse training datasets, mandatory algorithmic audits, and participatory design processes that include students and teachers from marginalised communities — with regulatory frameworks that impose accountability obligations on AI vendors. The European Union's AI Act (2024) represents a significant step in this direction, establishing risk categories for AI in education and requiring transparency obligations. However, its implementation in low- and middle-income country contexts remains an open question.

The challenge of teacher deskilling requires institutional responses that go beyond technical training to address the deeper question of professional identity. The Finnish case demonstrates that co-design processes — in which teachers are involved as active agents in the design and adaptation of AI tools for their specific pedagogical contexts — generate qualitatively different outcomes than top-down implementation models. Sustained professional development programmes, peer learning communities, and institutional cultures that affirm teacher expertise as irreplaceable rather than supplementary are the structural preconditions for positive AI integration in educational workforces.

7. Discussion

The evidence generated by this qualitative sociological inquiry tells a complex and theoretically rich story about AI in modern education — one that resists both the techno-utopianism of promotional discourse and the techno-pessimism of dystopian critique. AI is neither the great equaliser that its most enthusiastic advocates claim, nor simply a new mechanism for the reproduction of existing inequalities. It is a socially embedded technology whose effects are constituted at the intersection of its technical design, the institutional contexts of its deployment, and the structural social conditions of the communities it enters.

The Bourdieusian framework employed in this analysis reveals that AI integration in education consistently intersects with pre-existing capital hierarchies. Students from economically privileged backgrounds access more sophisticated AI tools, use them in more conducive physical and social environments, and develop the kind of AI-fluent habitus that will carry increasing value in labour markets saturated with intelligent systems. Students from marginalised communities, by contrast, encounter AI integration through under-resourced platforms, in contexts of connectivity scarcity, and without the social support networks that scaffold effective digital learning. Far from dissolving the educational reproduction of social inequality, AI threatens — in the absence of deliberate counter-intervention — to create a new and particularly durable stratum of capital inequality.

The Foucauldian analysis of algorithmic surveillance reveals dynamics of power that existing educational governance frameworks are ill-equipped to address. The datafied student — tracked, profiled, and algorithmically assessed — inhabits a disciplinary environment of unprecedented intensity, in which the Panoptic gaze has been rendered continuous, automated, and invisible. The policy challenge this poses is formidable: how to capture the genuine pedagogical benefits of learning analytics — early identification of struggling students, personalised feedback, adaptive content — without generating the docile, performative, and instrumentally motivated learner subjectivities that intensive surveillance tends to produce. The answer, this study suggests, lies not in the rejection of AI analytics but in the development of student-centred data governance frameworks that give learners genuine control over their own educational data and that design surveillance systems primarily as tools for student empowerment rather than institutional accountability.

The sociomaterial analysis of AI as an actant in educational settings highlights the need for theoretical and policy frameworks that go beyond the human-technology binary. When AI systems make pedagogical judgments — routing students to simplified content, flagging academic integrity concerns, determining learning pace — they do so as institutional actors whose authority is experienced as objective and unchallengeable. This constitutes a genuine transformation of the educational field: the entry of a new class of actant whose institutional power is enormous, whose transparency is limited, and whose accountability to democratic governance is, at present, poorly theorised and weakly institutionalised. Developing robust governance frameworks for AI-as-institutional-actor is one of the most urgent tasks facing educational policymakers, and one that requires sustained interdisciplinary engagement between sociologists, computer scientists, legal scholars, and educators.

8. Conclusion

This paper has offered a sociologically grounded qualitative account of AI integration in modern education, foregrounding the social dimensions of a transformation that is too often discussed in exclusively technical terms. Drawing on Bourdieu, Foucault, and sociomaterial theory, and grounded in qualitative evidence from seven country contexts, the paper has developed four principal analytical conclusions.

First, AI integration in education does not operate on a socially level playing field. It intersects with, and risks intensifying, existing inequalities of class, race, gender, and geography through

differential access, tiered tool quality, and the encoding of historical inequalities into algorithmic systems. Addressing this requires not only technical interventions — diverse training data, bias audits, universal access infrastructure — but a political commitment to equity as a first-order design value in educational AI governance.

Second, teacher professional identity is a critical sociological site in the politics of AI integration. Deskilling anxiety and occupational displacement are not inevitable consequences of AI in education but emerge where AI is introduced without adequate consultation, professional development, or institutional affirmation of pedagogical expertise. The Finnish evidence — and comparable cases from progressive institutional environments — demonstrates that alternative outcomes are achievable where institutional conditions are designed to support teacher agency and professional habitus adaptation.

Third, algorithmic power in educational settings constitutes a new and undertheorised form of institutional surveillance that requires urgent attention from governance frameworks, data protection regulators, and educational ethics bodies. The datafied student is a new social subject whose emergence demands both theoretical attention and practical protection.

Fourth, the subjectivity of students — the kind of learners, thinkers, and citizens that AI-saturated schooling is producing — is a fundamental question that extends well beyond the technical metrics of learning effectiveness. Educational AI governance must attend not only to whether students are learning more efficiently but to whether they are developing the critical epistemic agency, creative capacity, and relational intelligence that democratic societies require of their citizens.

For policymakers, these conclusions point towards a governance framework for AI in education that prioritises equity, transparency, teacher agency, and student data rights. For educators, they affirm the irreplaceable value of human relational pedagogy and the importance of critical AI literacy as a core component of professional competence. For technology developers, they call for participatory design processes that place the most marginalised learners — not the most technically sophisticated — at the centre of AI tool development.

Future research should deepen this sociological account through longitudinal qualitative studies tracking the long-term identity trajectories of students educated in AI-intensive environments, comparative institutional studies examining the conditions under which emancipatory AI integration becomes structurally possible, and collaborative interdisciplinary research that integrates sociological, computational, and legal expertise in the governance of educational AI.

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