

When AI Education Moves Faster Than Teaching Practice: Teacher Labour Alienation in the Transitional Phase of AI Integration

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Abstract. Existing research on Artificial Intelligence in Education (AIED) has largely presupposed a mature landscape in which AI is fully embedded within schooling, whilst overlooking the initial transitional phase from conventional to AI-enabled instruction. Grounded in Marxist philosophy, this paper examines the central contradiction of this transitional period: namely, that social consciousness regarding the incorporation of AI into teaching has run considerably ahead of the material reality of instructional practice. From this disparity, three progressively intensified forms of alienation are derived: instructional performativity, wherein AI is reduced to a demonstration prop for open classes; the symbolic reification of AI, whereby it degenerates from a pedagogical aid into vacuous evaluative metrics; and reverse discipline over teachers by AI, such that quantifiable indicators come to serve as the primary measure of professional competence. Collectively, these three dimensions instantiate a Marxian cycle of alienation, characterised by a thoroughgoing estrangement from labour processes, labour products and species-being. The argument advanced here is that resolution of this crisis depends not upon further technological refinement, but rather upon restoring AI to its proper status as a productive force mediated by the historical agency of teachers themselves. Whilst the integration of AI into education presents a significant opportunity for pedagogical transformation, ultimate educational authority must remain vested in human practitioners. Focusing upon the alienation of teacher labour during this transitional moment, this study uncovers structural vulnerabilities latent within the AIED ecosystem via an analysis of these stratified alienated forms.

Keywords: Artificial Intelligence in Education, Teacher labour alienation, Marxist philosophy, Educational transition.

1. Introduction

The global education landscape is currently undergoing a full-scale transformation driven by AI integration. National governments and UNESCO have successively unveiled development strategies for AIED. Scholars have developed multiple analytical perspectives on AI education. Sociotechnical and ethical research reveals structural risks stemming from mismatched institutional investment and educational practice, yet it merely diagnoses external systemic hazards without examining teachers' inner labour alienation [1, 2]. Research on teacher AI literacy provides survey data and competency frameworks, and a small number of works criticize technologism, but they stop short of unpacking how evaluation systems alienate teachers [3, 4, 5]. Empirical comparisons between TAIK (teacher AI knowledge) and TPAIK (teacher pedagogical AI knowledge) clarify teaching knowledge's value to students, ignoring the alienating effects of performance-oriented AI assessment [6]. Collectively, existing literature prioritizes instrumental and practical analysis, while few systematically interpret layered teacher labour alienation in the AI transition phase through Marxist alienation theory.

Empirical survey findings from Xiao et al [4] confirm that teachers' AI adoption follows a trajectory of "high attention – preliminary application – entrenched difficulty in deep integration"; the bottleneck stems not only from technical barriers, but more critically from a lack of support for cognitive restructuring and a robust practical ecosystem. Based on this empirical backdrop, this paper focus on the transitional stage of AIED: a structural misalignment in which institutional pressure for deep integration substantially outpaces the readiness of both technological infrastructure and teachers' professional knowledge architecture, creating a persistent gap between mandated depth and

superficial instructional practice. This paper's core contention is that the severe risks of AIED in its early transitional stage stem not from deeply embedded technology, but from the disjuncture between superficial classroom practice and rigid institutional mandates. While AI literacy has been formally integrated into instructional mandates at the institutional level, teachers' routine AI-enabled teaching practices remain persistently superficial.

The root of this superficial implementation, however, lies not merely in hardware access or technical skills, but in structural mismatches in teachers' professional knowledge architecture and the compound constraints of the early transition phase — findings validated by recent empirical model research. Based on the model research by Shen et al. [6], teachers' mere TAIK can hardly empower instructional practice and may even exert adverse impacts on fostering students' SAISG (students' perceptions of AI for social good). Only context-adapted TPAIK can generate positive learning outcomes. Moreover, teachers in the initial adaptation period are persistently confronted with dual internal and external constraints, including insufficient technological resources, misconceptions of AI, and resistance to AI instructional practices.

Drawing on Marx's theory of social change, this paper delineates the imbalanced state between the transformation of material practice and ideological development in AIED, affirms the historical necessity of AIED development, and meanwhile focuses on the hidden risks of alienation in the transitional process. Adopting a dialectical deduction research method, this paper grounds its analysis in the structural contradiction of "advanced institutional cognition of AI alongside lagging teaching practice". Following the deductive logic of Marx's theory of alienation, it extracts core issues from the fragmented symptoms identified in existing empirical research, and systematically deduces three progressively deepening latent forms of alienation in the initial stage of AIED transformation: instructional performativity, symbolization of AI, and reverse discipline over teachers by AI. In so doing, it reveals the endogenous structural risks underlying the distortion of the AIED ecosystem.

2. Theoretical Framework: Based on Marxist Dialectics of Practice and the Theory of Alienation

2.1. Dialectical Relationship between Practice and Consciousness

A vulgarized reading of the Marxist materialist conception of history reduces the relation between the material economic basis and the superstructure to static one-way mechanical determination, failing to capture the dynamic complexities of transitional periods. In phases where old material practices disintegrate and new ones have not yet matured, ideological advancement typically precedes material development. Returning to Marx recuperates the dialectical essence of historical materialism and dismantles mechanistic determinism.

Marx formulates the fundamental methodological principle for analyzing social transformation: "In studying such transformations it is always necessary to distinguish between the material transformation of the economic conditions of production, which can be determined with the precision of natural science, and the legal, political, religious, artistic or philosophic—in short, ideological forms in which men become conscious of this conflict and fight it out." [7, Vol.29, p. 263]

Marx's notion of "distinction" does not establish a mechanical causal sequence but affirms the analytical priority of material production transformations. The structural contradictions of material life, rather than dominant social ideology, constitute the fundamental basis for judging epochal change. As Marx states, "so one cannot judge such a period of transformation by its consciousness". [7, Vol.29, p. 263]

This paper's methodological framework derives precisely from this dialectical understanding. Social consciousness originates from material practice, yet their dialectical unity does not entail synchronous equilibrium but a dynamic interplay of disjuncture, temporal lag, and anticipatory projection. As a newly emerging productive force, AI penetrates educational domains while its corresponding ideological apparatus—including policy discourse, evaluation norms, and teacher

professional development frameworks—often develops in a preemptive “perfect tense”, treating unrealized future practices as already accomplished realities.

This anticipatory inflation of ideology forms the logical starting point for diagnosing structural pathologies in transitional AIED. Such disjuncture is not a contingent subjective bias but an inevitable structural symptom arising when educational relations of production adapt to emergent productive forces. Nevertheless, once institutional power solidifies this ideological precedence, the superstructure begins to constrain and dominate material educational practice. This structural tension constitutes the fundamental generative matrix of alienation in transitional AI education.

2.2. The Technological Fetishism of AI Evaluation Metrics: A Critical Analytical Framework

As Marx reveals in *Capital*: "A commodity is therefore a mysterious thing, simply because ... the relation of the producers to the sum total of their own labour is presented to them as a social relation, existing not between themselves, but between the products of their labour." [8, Vol.35, pp. 82–83] Commodities appear as autonomous entities possessing their own independent logic and value-determining mechanisms, thereby concealing the social relations of production embodied within them. The essential feature of commodity fetishism is therefore not merely the domination of things over people, but the transformation of historically specific social relations into apparently objective and natural relations between things.

Within AI-mediated educational evaluation systems, quantitative indicators such as the “AI utilisation rate” increasingly assume a fetishistic character analogous to commodity fetishism. Rather than being understood as neutral representations of educational practices, these indicators become institutionalised as seemingly objective measures of pedagogical quality and technological advancement. When classroom AI integration is simplified into quantifiable, gradable assessment data and established as the core criterion for evaluating schools and teachers, this indicator acquires autonomous evaluative force.

As these indicators become dominant criteria of institutional evaluation, educational actors increasingly reorganise their practices according to the logic embedded in measurement systems. Consequently, teachers’ professional judgement and pedagogical creativity are gradually subordinated to the requirements of data visibility and algorithmic accountability. Data indicators increasingly function as symbolic markers of educational innovation and pedagogical modernisation, while their relationship with actual instructional effectiveness becomes increasingly mediated and obscured. Ultimately, the problem is not that quantitative data replace educational relations in a literal sense, but that data representations acquire an autonomous governing power that obscures the social relations, professional judgements, and human interactions underlying educational practice. Through this process, the logic of measurement transforms from a tool for supporting education into an external evaluative force that shapes and constrains pedagogical activity.

3. Three Progressive Modalities of AI Alienation in Teaching During the Transitional Period

3.1. Instructional Performativity: Teaching as Algorithm-Oriented Labour

As articulated by Merton [9]: The emphasis on bureaucratic discipline initiates the displacement of goals, wherein rule adherence shifts from an instrumental value to a terminal value, generating organizational rigidities and culminating in technicism or red tape that obstructs the original purposes of the institution. This theoretical lens reveals latent risks within early AI-education integration. If current normative expectations are institutionalized into formal assessment requirements for teachers’ demonstrated use of AI, explicit external constraints will take shape. Nevertheless, teachers are trapped in the practical bottleneck of deep integration: technical barriers, cognitive constraints and inadequate practical support make genuine AI-enabled pedagogy difficult to implement. This tension would push teachers to adopt performative AI practice, limiting AI application merely to public and

showcase lessons to meet potential evaluative demands through formal displays, rather than integrating technology into routine teaching. Such conduct represents the initial phase of goal displacement. The practical value of AI as a pedagogical tool is set aside, and AI is reduced to an evaluative symbol, which may ultimately hinder the in-depth integration of AI and education.

Performative practice directly triggers a binary split within teachers' labour processes, constituting the primary modality of alienation. Teachers' authentic labour—those unrecorded daily instructional practices filled with trial and error, hesitation, and impromptu AI-driven adjustments—is systematically devalued. Invisible to institutional surveillance, such practices cannot be recognized as valid labour credentials within the assessment system. By contrast, meticulously choreographed performative activities, namely polished uncertainty-free AI-integrated demonstration lessons designed for public exhibition, acquire disproportionate rewards within educational evaluation.

This dynamic generates a divided subjectivity among teachers. One dimension of the teacher-self performs in response to rating scales and prevailing social expectations: in public scenarios, teachers demonstrate AI's functions in learning diagnosis and personalized resource delivery as disciplined performers executing standardized routines. The other dimension recedes into private instructional spheres. Freed from camera surveillance and the evaluative gaze, teachers tend toward two orientations: they either adhere rigidly to the officially prescribed modes of AI, refraining from independent exploratory practice, or set aside technological experimentation entirely and revert to conventional lecturing. The ontological rupture between these two fragmented selves epitomises the alienation of labour processes.

More tragically, while all performative educational activities are designed merely to conform to the innovation benchmarks set by evaluation systems, the top-down assessment logic underpinning such systems continuously erodes the scope for autonomous inquiry and stifles authentic educational innovation. Genuine pedagogical innovation is rooted in what Marx describes as "free, conscious activity is man's species-character." [10, Vol.3, p. 276], which enables teachers to engage in instructional practice freely and consciously; yet the logic of performativity pursues certainty, immediately visible outcomes and flawless presentation. When "AI innovation" is itself inscribed into the standardised scripts dictated by the logic of quantitative evaluation, it is hollowed out of all substantive content of innovation, reduced to a repetitive mimicry of the mere formal appearance of innovation, and further exacerbates the symbolic reification of AI.

3.2. Symbolization: AI as Fetishized Signifier

When performativity, no longer an individual's makeshift response to pressure, is normalized by institutional reward structures, it undergoes sedimentation. Performative acts crystallize into symbolic assets, forming the second stage of the deductive chain: the symbolization of AI. Through institutional incentives and sanctions, repeated performative displays of AI in teaching condense into accumulable symbolic capital [11] —for instance, in promotion reviews, bonus points for "information-based teaching competence," or "smart education application rate" rankings in school assessments. Open class certificates and awards in teachers' files are converted by institutional mechanisms into storable symbolic capital.

A critical logical transposition follows: symbolic value becomes detached from its original pedagogical practice. The label "having used AI," once a mere by-product of exploratory teaching, evolves under institutional incentives into a teacher's personal asset independent of actual learning outcomes. This is the fetishism of symbolic capital: the concrete pedagogical relation between teachers and AI appears as a relation between institutionally sanctioned symbols—labels of "innovation," "informatization," and "modernization." Lesson quality is judged less by its ability to resolve students' cognitive barriers and foster deep dialogue than by its standing within the "AI integration indicators" evaluative coding system.

Marx shows how commodity fetishism masks social relations as relations between things. Educational symbolic capital fetishism extends this logic to a more abstract level: it strips pedagogical interactions of human substance, reducing them to hollow exchanges among indicators, rankings, and

labels. This symbolic alienation runs deeper than commodity fetishism, because evaluative symbols—lacking physical carriers—circulate in a closed, self-referential loop within the assessment system. Hence, authentic classroom exchanges centered on knowledge and confusion are displaced by a hollow matching exercise between "AI integration" metrics and formal "innovation" grades. Administrators defer to statistical data rather than direct observation. Unsymbolizable pedagogical surplus—intellectual epiphanies, spontaneous dialogues, teachers' on-the-spot judgments—remains invisible and systematically excluded from symbolic circulation.

Whereas performativity produces alienation of the labour process, symbolization achieves a deeper, more fundamental alienation: alienation from the product of labour—the first dimension of Marx's alienation framework, now manifest in education. The AI-integrated lesson, as the product of a teacher's labour, becomes an alien entity. It no longer reflects the teacher's pedagogical judgement, professional commitments and educational care, but belongs to the symbolic economy dictated by the evaluation system. The lesson is produced as a commodity, its value determined not by professional merit, but by its "AI integration scale" score, observation count and award tier.

3.3. Reverse Disciplining: When Tools Measure the Labourer

Performativization and symbolization alienate the labour process and the product of teachers' labour respectively, while reverse discipline closes the cycle of alienation by extending alienation to the labourer himself.

For Foucault, discipline refers to a set of micro-techniques of power that render bodies both docile and useful, with hierarchical observation, normalizing judgment and examination as its core mechanisms. [12, pp. 136,170] When AI application is integrated into the evaluation system and formalized as quantitative assessment, a typical operational logic of discipline emerges: teachers are perpetually rendered visible through traceable data, their conduct is continuously documented and fully circumscribed by assessment rubrics, and the external gaze generated by evaluation is gradually internalized by individuals. Marx's contribution lies in uncovering the profound logic of "inversion" underlying this disciplinary apparatus: discipline is not merely the training of bodies by power, but above all the domination of "living labour" by "dead labour" [8, Vol.35, p. 426]. The synthesis of these two theoretical strands constitutes the theoretical core of "reverse discipline".

In his analysis of the capitalist application of machinery, Marx incisively identifies the dialectical inversion that takes place in the factory: "In handicrafts and manufacture, the workman makes use of a tool, in the factory, the machine makes use of him." [8, Vol.35, p. 425] A tool is supposed to be an extension of the labourer's organs, a medium through which the subject transforms the object; yet under specific social relations, the tool in turn becomes a fixed, independent organism that dominates the labourer and organizes labour. The reverse discipline of AI in education is precisely the contemporary reenactment of this dialectical inversion in the sphere of cognitive labour. Its emergence hinges on a critical threshold: when "using AI" shifts from a developmental competence that teachers can learn and master, into an evaluative criterion that teachers are required to meet.

This inversion is logically completed through three steps. Fetishistic symbols such as "AI innovation" are institutionally converted into quantitative indicators on scoring scales; through repeated implementation and universal enforcement, these indicators solidify into an inherent norm that "quality teaching necessarily integrates AI"; ultimately, the norm is internalized into a pervasive disciplinary apparatus, whereby teachers not only comply passively during appraisal processes, but also conduct self-examination and self-regulation accordingly in daily practice. AI is thereby transformed from an auxiliary tool into a "quasi-subject" endowed with discursive authority, occupying a dominant position in pedagogical evaluation.

A deeper form of alienation occurs at the level of teachers' self-cognition. When external evaluative standards operate over the long term and are closely bound to rewards, teachers internalize these standards as their own criteria for professional judgement. No longer relying on external inspection, teachers habitually scrutinize themselves through the logic of the system: Does my AI integration level meet the standard? Has my data ranking declined? These technical questions have

escalated into existential questions of self-worth judgement. Teachers become overseers of themselves, and the internalized evaluative measure—derived from the simplified projection of algorithmic logic and managerial indicators—in turn defines what counts as an “excellent teacher”.

At this point, the cycle of alienation closes: performativization alienates the labour process, symbolization alienates the product of labour, and reverse discipline alienates the labourer himself. Teachers become estranged from their own professional judgement and educational intuition, and from the pedagogical wisdom that can only grow in everyday classrooms and is permeated with uncertainty. The subjectivity of teachers in freely and consciously planning instruction is replaced by an abstract mirror image composed of symbols and data—an image that bears greater “authenticity” within the institution than the real teacher, who gradually recedes in the act of serving the tool. The threefold alienation is thus fully accomplished: teachers are no longer masters of the teaching process, no longer authors of the pedagogical product, and ultimately, no longer the subjects of their own professional practice.

4. Conclusion: The Re-enchantment of Teaching in the Age of AI

The deductive argumentation of this paper delineates an alienation trajectory that originates from structural contradictions and culminates in systemic domination. Grounded in the nascent transitional phase of AIED, we proceed from a core contradiction—that evaluative consciousness far outstrips practical reality—and logically derive three latent forms of alienation it may engender: the performativization of teaching, whereby instruction is reduced to a prop for AI display; the symbolization of AI usage, which solidifies into a metric for teacher evaluation; and the reverse discipline exerted by quantifiable symbols, which ultimately invert into a measure of teachers’ very being. These three forms close the Marxist cycle of alienation: the complete estrangement of teachers from their own labour process, labour product, and species-being.

Accordingly, this paper delivers a core warning: amid AI’s transitional integration into schooling, the greatest peril is not technological replacement of teachers, but institutional subjugation. Educators are graded and disciplined under AI’s symbolic banner, trapped by a dehumanising evaluation system that colonises teachers’ living labour through rigid, lifeless quantitative metrics, rather than allowing AI to operate merely as a supportive pedagogical tool.

Nevertheless, dialectics never culminates in pessimistic fatalism. Marx’s exposition of alienation is precisely intended to amplify the subjective conditions that propel alienation toward its sublation. The very same rift can serve both as a breeding ground for alienation and as a point of rupture for subjectivity. As teachers grow increasingly weary of performative displays, hollow symbols, and oppressive discipline, a new historical consciousness may germinate from this soil of fatigue. Teaching ought to constitute a re-enchantment of the intersubjective encounter between teacher and student—a realm of wonder, perplexity, and moments of insight that unfolds ceaselessly in practice and can never be fully exhausted in advance by the symbolic order.

Thus, the ultimate success of AI in education should not be measured by its pervasive, omnipresent application, but precisely by the inconspicuousness of its integration. To mitigate AI-induced alienation, three targeted principles directly counter performativity, symbolization, and reverse discipline: (1) evaluate teaching by students’ cognitive gains, not by AI’s visible presence; (2) replace high-stakes performative demonstrations with low-stakes, formative inquiry grounded in daily classroom evidence; (3) reinstate teachers’ professional judgement as the ultimate authority—metrics may inform but never override their situated pedagogical decisions. Guided by these principles, an AI thoroughly mediated by teachers’ professional judgement, educational care, and contextual wisdom will cease to be a fetishistic object, a performative prop, or a disciplinary yardstick. It will revert to its modest essence: a tool integral to the craft of teaching, operating silently and reliably in the labourer’s hands, its own lustre fully subsumed within the grandeur of education as a profound human endeavour.

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