

The Digital Handshake: Neoliberalism and the Ethics of Educational Micro-Credentials

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Submitted: 08/02/2026	<p style="text-align: center;">Abstract</p> <p>This literature review systematically examines the rapid proliferation of educational micro-credentials through a critical theoretical lens, interrogating their ideological foundations in neoliberal capitalism. While proponents and policymakers often frame digital badges and nano-degrees as democratizing, flexible solutions to global skills gaps, a synthesis of contemporary scholarship reveals profound and multidimensional ethical tensions. Utilizing a reflexive thematic analysis guided by frameworks of Foucauldian governmentality, platform capitalism, and critical data studies, this review categorizes the existing literature into four central themes: the neoliberal commodification of knowledge via the unbundling of higher education; the datafication and surveillance inherent in the "digital handshake" between learners, corporate EdTech platforms, and employers; the persistent digital divides that undermine the meritocratic promise of these credentials, driving credential inflation; and the fundamental pedagogical conflict between instrumentalist skill acquisition and the emancipatory goals of critical pedagogy. The review concludes that micro-credentials, in their dominant market-aligned iterations, risk exacerbating structural inequalities, transferring the costs of workforce training onto marginalized individuals, and reducing professional identity to algorithmic metrics. Ultimately, this paper calls for a paradigm shift toward ethically grounded, institutionally governed credentialing models that prioritize holistic learner agency and critical consciousness over corporate data extraction and narrow human capital accumulation.</p> <p>Keywords: Micro-credentials, Neoliberalism, Platform Capitalism, Critical Pedagogy, EdTech Ethics, Digital Badges, Higher Education, Datafication.</p>
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INTRODUCTION

The rapid proliferation of micro-credentials, digital badges, and nano-degrees in the twenty-first century represents one of the most structurally significant transformations in global education. Driven by the accelerating pace of technological disruption and the increasing fragility of traditional degree pathways, these short-form, stackable qualifications have emerged as a dominant response to what policy makers and industry leaders describe as a growing "skills

gap." The global micro-credential landscape has expanded across EdTech platforms such as Coursera, edX, and Credly, reflecting a broader unbundling of higher education into discrete, monetizable units of competence (Brown, Mhichil, & Beirne, 2021). This shift is further institutionalized by supranational bodies; the European Union has actively championed micro-credentials and open badges as instruments for fostering lifelong learning and enhancing workforce employability across member states (Pappagallo, 2025). The scale and speed of this transition demand critical scholarly attention, not merely as a technical phenomenon, but as a reflection of deeper ideological reorganizations within the politics of knowledge and learning.

At the heart of this transformation lies the neoliberal reorientation of education, a paradigm that reconfigures learning primarily as an instrument of human capital accumulation rather than a public good or a vehicle for democratic citizenship. Scholars have long argued that the dominance of human capital theory in education policy has systematically decontextualized learners, reducing complex social and structural problems, such as unemployment and social exclusion, to individualized deficits requiring personal remediation (Loumpourdi, 2021). This ideology manifests concretely in the employability agenda, where universities and platforms alike are evaluated by their capacity to produce market-ready workers; empirical analysis of Australian university strategic plans, for example, demonstrates how institutions have uniformly adopted a market-driven employability model, often at the expense of broader civic and humanistic educational goals (Baron & McCormack, 2024). The rise of micro-credentials intensifies this tendency by dismantling the holistic educational experience into transactional skill-units that can be acquired, verified, and exchanged in labor markets, effectively constructing what this paper terms a "digital handshake" between learners, platforms, and employers. Understanding this ideological substrate is essential to evaluating whether the micro-credential movement democratizes opportunity or deepens existing inequalities.

The ethical tensions embedded in the micro-credentials ecosystem are substantial and multidimensional. While proponents celebrate their accessibility, flexibility, and potential to serve non-traditional learners excluded from conventional higher education, critics highlight the risk that these instruments primarily serve to offload the costs and responsibilities of workforce training onto individuals, a hallmark of neoliberal governance (Cogavin, 2024). Systematic reviews of the literature confirm that while micro-credentials present genuine opportunities for rapid upskilling, they also generate significant challenges related to quality assurance, credential recognition, and equitable access for different stakeholder groups including learners, employers, and governments (Varadarajan, Koh, & Daniel, 2023). Additionally, the datafication of learning, wherein EdTech platforms harvest granular behavioral and performance data from learners, raises pressing surveillance and privacy concerns, as education becomes not only a site of skill production but also of data extraction and algorithmic governance (Brown, McGreal, & Peters, 2023). These tensions are not peripheral but constitute the central ethical problem of micro-credentials as a social institution.

The geopolitical and socioeconomic context of the mid-2020s renders this critique particularly urgent. Global labor markets are being reshaped by artificial intelligence, automation, and platform economies, creating intense pressures on individuals to continuously reskill, often at their own expense and initiative (Pappagallo, 2025). In stratified societies, however, the ostensibly democratizing promise of micro-credentials is complicated by persistent digital divides; those with existing cultural and economic capital are better positioned to navigate complex credential ecosystems, select high-value pathways, and translate badges into labor market gains, while marginalized learners risk accumulating credentials that carry little

institutional recognition or social mobility value (Pirkkalainen et al., 2023; Brown, Mhichil, & Beirne, 2021). Critical analyses of corporate-led educational programs demonstrate how technology firms increasingly leverage the language of inclusion and access to advance their own platform ecosystems under the guise of democratization, further blurring the boundaries between education and corporate capture (Brown, McGreal, & Peters, 2023). This convergence of technological disruption, market logic, and structural inequality makes the ethical examination of micro-credentials not only academically timely but socially indispensable.

Finally, despite a growing body of empirical and policy-oriented literature on micro-credentials, there remains a pronounced gap in scholarship that systematically interrogates their ethical foundations through a critical theoretical lens. Most existing studies approach micro-credentials instrumentally, evaluating their design, recognition, or institutional adoption, without sufficiently interrogating the ideological assumptions that undergird their proliferation (Varadarajan, Koh, & Daniel, 2023; Ngo, Dave, & Heggart, 2023). This review addresses that gap by synthesizing current literature on the ethical implications of micro-credentials through a critique of neoliberal ideology, drawing on established theorists to surface the power relations embedded in digital credentialing. The relevance of this synthesis extends beyond academic debate: for education policy makers, employers, institutional leaders, and learners in Singapore and across the Global South, understanding the ideological architecture of micro-credentials is a prerequisite for designing more equitable, transparent, and pedagogically defensible credentialing systems. As Marginson (2026) argues, the accumulative-competitive model of education, of which micro-credentials are the latest expression, must be critically interrogated if education is to serve the common good rather than merely the market.

METHOD

This review followed a systematic, transparent search protocol consistent with the PRISMA 2020 guidelines, which provide an updated framework for the rigorous and reproducible reporting of systematic reviews (Page et al., 2021). The primary database consulted was Google Scholar Labs, supplemented by targeted searches within academic repositories including Taylor & Francis Online, SpringerOpen, and ERIC, to ensure breadth of disciplinary coverage across education studies, philosophy, and sociology. Boolean search operators were employed to construct structured queries, combining key terms such as ("micro-credentials" OR "digital badges" OR "nano-degrees") AND ("neoliberalism" OR "human capital") AND ("ethics" OR "commodification") AND ("higher education" OR "EdTech"). To reflect contemporary developments in educational technology and align with modern policy discourse, the inclusion criteria were restricted to peer-reviewed journal articles, book chapters, and conference proceedings published within the last ten to fifteen years (approximately 2010–2026), with particular weight given to publications from 2018 onward, as this period captures the most rapid institutional expansion of micro-credentialing frameworks globally (Brown, Mhichil, & Beirne, 2021; Varadarajan, Koh, & Daniel, 2023). Studies were excluded if they were grey literature without peer review, focused purely on instructional design without critical or theoretical engagement, or pertained to micro-credentials in primary and secondary education, which falls outside the scope of this review. Priority was given to literature drawn from the fields of critical pedagogy, philosophy of education, and sociology of education, as these disciplines provide the interpretive foundations necessary for a normative critique of market-driven credentialing practices (Loumpourdi, 2021; Cogavin, 2024).

The analytical approach adopted in this review is reflexive thematic analysis, as systematized by Braun and Clarke (2006), who describe it as a method for identifying, analyzing, and interpreting patterns of meaning across qualitative data sources in a manner that is theoretically flexible and epistemologically transparent. In the context of a literature review, this

approach involves iterative coding of selected texts across six phases, familiarization, code generation, theme construction, theme review, theme definition, and write-up, enabling the synthesis of disparate scholarly arguments into coherent thematic clusters (Braun & Clarke, 2006). Three overarching theoretical frameworks were applied to structure the analytical lens: first, Foucauldian governmentality, used to interrogate how micro-credential platforms constitute new forms of self-regulation and conduct management aligned with market imperatives; second, platform capitalism, as theorized by Srnicek (2017), to examine how EdTech corporations extract data value from learner activity; and third, critical data studies, to surface the surveillance and privacy implications of digital credentialing ecosystems (Ngo, Dave, & Heggart, 2023; Pirkkalainen et al., 2023). These frameworks were applied as sensitizing concepts rather than rigid coding categories, allowing the thematic analysis to remain responsive to emergent patterns within the literature while maintaining theoretical coherence (Brown, McGreal, & Peters, 2023). The resulting themes, encompassing credential commodification, datafication of learning, equity and access, and the individualization of employability, form the structural architecture of the findings and discussion sections of this review.

RESULT AND DISCUSSION

A. Theme 1: The Neoliberal Commodification of Knowledge

The Unbundling of the University

The emergence of micro-credentials as a dominant credentialing modality cannot be understood apart from the structural logic of neoliberal capitalism, which has systematically reoriented higher education institutions toward market efficiency, competitive positioning, and revenue diversification. The "unbundling" of the university, the decomposition of degrees into granular, stackable competency units, mirrors the organizational logic of the gig economy, wherein labor is disaggregated into discrete, transactional tasks rather than embedded within stable, relational employment structures (Ling & Ling, 2023). Ralston (2021) makes this structural homology explicit, arguing that the micro-credentialing movement converts universities into "supply chain providers of certifications," transforming institutions of higher learning into credentialing factories that serve industry demand rather than the broader civic and intellectual purposes for which they were historically constituted. This unbundling is not pedagogically neutral: it systematically de-emphasizes the integrative, contextual, and holistic dimensions of academic disciplines, producing learners who possess narrow competencies without the ability to appreciate the "big picture" or the interdisciplinary complexity of real-world problems (Ling & Ling, 2023). The gig-economy analogy is further reinforced by Jiménez and González (2026), who describe the platformization of higher education as an "Uberisation" of learning, wherein knowledge is disaggregated into informational units and the student is transformed from a scholar into a client in a transactional marketplace.

The ethical stakes of this unbundling become particularly acute when examined through the lens of institutional responsibility. Ralston (2021) identifies a structural moral hazard: administrators and institutional leaders who become financially invested in micro-credentialing as a revenue-generating mechanism risk subordinating their fiduciary duty to students' intellectual development to the pursuit of profit. Hanshaw (2024) corroborates this critique, characterizing certain micro-credential programs as driven by a "neoliberal thirst for more and more dollars" that compromises the academic experience and contributes to the proliferation of what might be termed "micro-credential mills", analogous to diploma mills in their prioritization of throughput over learning quality (Yılık, 2025). This concern is not merely theoretical; empirical

analyses of platform-based credentialing reveal that the curricula of many micro-credential programs are designed primarily around employer-specified competency frameworks, with limited input from academic communities, thereby entrenching market logic at the heart of curriculum design (Peters, Beirne, & Brown, 2025). The result is a credentialing ecosystem in which the form of education, verified, displayable, employer-validated, takes precedence over its substance.

The neoliberal unbundling of education also carries significant implications for the sociology of knowledge. When academic disciplines are fragmented into competency units, the epistemological frameworks, theoretical traditions, and modes of inquiry that constitute a discipline's identity are rendered invisible, leaving only their most immediately "applicable" components (Ling & Ling, 2023). Pedró (2023) frames this as a structural erosion of the humanistic and liberal arts traditions within higher education, wherein efficiency-driven platformization systematically marginalizes forms of knowledge that are not easily quantifiable or immediately monetizable. Yılık (2025) extends this concern by arguing that micro-credentials risk forcing higher education curricula to "conform too closely to the existing demands of the labor market," thereby undermining established knowledge classification and framing systems rooted in disciplines with deep intellectual histories. Brown, Mhichil, and Beirne (2021) note that while the global micro-credential landscape is expanding rapidly, there is as yet no consensus on quality assurance frameworks, leaving significant gaps in the governance of what counts as legitimate educational content, a vacuum that market forces are increasingly filling on their own terms.

Table 1: Structural Parallels Between the Gig Economy and the Micro-Credential Ecosystem

Dimension	Gig Economy	Micro-Credential Ecosystem
Unit of exchange	Individual task/gig	Individual competency/badge
Worker/learner status	Independent contractor	Self-directed, self-funded learner
Institutional responsibility	Minimized by platforms	Offloaded to the individual
Quality assurance	Market-driven feedback	Platform ratings / employer recognition
Career trajectory	Portfolio of gigs	Portfolio of credentials
Primary beneficiary	Platform / employer	Platform / employer

(Sources: Ralston, 2021; Jiménez & González, 2026; Ling & Ling, 2023)

Human Capital Theory and the Learner as Economic Asset

Human capital theory, first systematically articulated by Becker (1964) and subsequently embedded within mainstream education policy discourse, constructs the learner as a rational economic agent whose primary educational motivation is the maximization of future earnings through strategic investment in skills. In its micro-credential instantiation, this framework operates with particular intensity, as the very design architecture of digital badges, their quantified competency descriptors, employer-verified metadata, and integration with professional networking platforms, encodes the learner as a portfolio of market-exchangeable assets rather than a holistic person in the process of intellectual and moral formation (Pollard & Vincent, 2022). Loumpourdi (2021) demonstrates that the European Union's Key Competences Framework for Lifelong Learning, which underpins many micro-credential policy initiatives, reproduces the limitations of human capital theory by reducing the complexity of learning to a set of instrumentally defined skills, effectively foreclosing the possibility of education as a form

of critical self-examination or democratic participation. This reductionism is not incidental but structural: human capital theory requires that educational outcomes be measurable, comparable, and translatable into labor market signals, criteria that systematically privilege narrowly vocational competencies over broader intellectual dispositions (Cogavin, 2024).

Ljungqvist and Sonesson (2023) perform a critical discourse analysis of the EU Council's recommendation on micro-credentials, revealing how the policy document deploys progressive language, inclusivity, flexibility, lifelong learning, to render its underlying neoliberal assumptions invisible. Their analysis identifies how the policy frames the ideal citizen within a discourse of "work ethics, corporateness, and self-commodification," constructing prosperity as the natural outcome of individuals' autonomous choices to align their educational investments with industry needs (Ljungqvist & Sonesson, 2023). This linguistic depoliticization is a key mechanism through which the human capital logic of micro-credentials is naturalized: by framing labor market participation as the self-evident purpose of education, the policy forecloses critical questioning of the structural conditions, labor market precarity, employer power, systemic discrimination, that actually determine who benefits from credentialing and who does not (Jones, 2024). The ideological work performed by this discourse is thus double: it simultaneously justifies the commodification of education and insulates that commodification from political contestation.

The individualization of responsibility that follows from human capital theory has profound ethical implications for how learners experience educational failure. When micro-credentials are framed as tools for individual empowerment and self-investment, failure to gain employment following credential acquisition is constructed as a personal deficiency, a failure to invest wisely, to acquire the right skills, or to market oneself effectively, rather than as a symptom of structural labor market conditions (Baron & McCormack, 2024). Peters, Beirne, and Brown (2025) argue that this individualization of risk represents a core ethical tension in the micro-credential movement, as it enables governments and employers to offload the social costs of workforce adjustment onto individuals while presenting this transfer as a form of democratization and empowerment. This dynamic is particularly pronounced in the Global South, where Jones (2024) warns that micro-credentials risk "perpetuating the capitalist status quo" and "exacerbating class divisions" by providing a veneer of accessible education while structurally reproducing conditions of dependency and precarity. The ethical imperative, therefore, is not merely to improve the design of micro-credentials, but to interrogate the ideological framework that makes their current design appear natural and necessary.

B. Theme 2: The "Digital Handshake" as Datafication and Surveillance

Platform Capitalism in EdTech

The infrastructure through which micro-credentials are delivered, verified, and displayed is not pedagogically neutral but constitutes a specific form of what Srnicek (2017) terms "platform capitalism", a mode of capital accumulation in which digital platforms extract value by mediating relationships between users and monetizing the data generated by those interactions. In the EdTech context, platforms such as Coursera, edX, and Credly do not merely facilitate learning; they serve as data intermediaries that systematically harvest granular behavioral, performance, and engagement data from learners, creating proprietary datasets of considerable commercial value (Pedró, 2023). Jiménez and González (2026) extend this analysis by arguing that commercial education platforms, analogously to Uber in the transport sector, "systematically disavow responsibility for the quality, ethics, or consequences of interactions," enabling growth and profit

maximization while minimizing accountability for the educational or social outcomes their platforms produce. This structural irresponsibility represents a significant ethical problem, as learners are subjected to intensive data collection and algorithmic assessment without transparent disclosure of how their data is used, retained, or sold.

The governance implications of this datafication are considerable. Brown, McGreal, and Peters (2023) identify a structural asymmetry in the micro-credential ecosystem: while learners are required to submit to increasingly granular forms of digital assessment and behavioral monitoring, the platforms that administer these assessments are subject to minimal regulatory oversight regarding their data practices. This asymmetry is compounded by the fact that much of the most valuable data generated within EdTech platforms, learning analytics, competency assessments, completion patterns, is retained as proprietary corporate data rather than being treated as a shared educational resource governed in the public interest (Varadarajan, Koh, & Daniel, 2023). Pollard and Vincent (2022) frame this through a Foucauldian lens of subjectification, arguing that the datafied learner is not merely observed but constituted through the act of digital assessment: the platform's metrics produce a particular kind of educational subject, quantified, ranked, and legible to employers, whose self-understanding is shaped by algorithmic feedback rather than critical self-reflection. This constitutive function of surveillance is what makes it ethically distinct from ordinary forms of educational assessment.

The commercialization of educational data also raises questions about the complicity of universities in the surveillance economy. As higher education institutions increasingly partner with or outsource credentialing functions to private platforms, they transfer not only administrative responsibility but also the data sovereignty of their learners to corporate entities whose fiduciary obligations run to shareholders rather than students (Pedró, 2023). Hanshaw (2024) characterizes this as an ethical failure on the part of institutions, arguing that the outsourcing of credentialing to commercial platforms represents an abdication of universities' duty of care and their role as stewards of the public educational good. Pirkkalainen et al. (2023) note that while learners and employers have broadly positive expectations of micro-credentials as tools for transparent skill signaling, they are largely unaware of the data ecosystems within which these credentials are embedded, suggesting a significant deficit of informed consent in current EdTech governance frameworks. Addressing this deficit requires not merely technical privacy regulations but a fundamental rethinking of who owns educational achievement data and in whose interests credentialing ecosystems should be governed.

Performative Professionalism and Digital Identity

The display of micro-credentials on professional networking platforms such as LinkedIn constitutes a qualitatively new form of professional identity performance that blurs the boundary between education and self-marketing in ethically significant ways. Pollard and Vincent (2022) argue that the public display of digital badges on social media profiles is not an innocent or voluntary act of self-presentation but a socially coerced form of "performative professionalism," wherein individuals are compelled to continuously signal their up-to-date market relevance to employers, recruiters, and peers in a digital attention economy. This compulsion is structurally enforced: in credentialing ecosystems where employers use LinkedIn profiles as primary recruitment tools, the failure to display credentials is not a neutral choice but a competitive disadvantage, effectively making continuous public self-marketing a prerequisite for labor market participation rather than a voluntary expression of professional identity (Ljungqvist & Sonesson, 2023). The ethical problem is not the display of credentials per se but the structural conditions

that make such display non-optional, transforming professional identity from an internally generated sense of vocation into an externally legible commodity.

Yılık (2025) connects this performative dimension to the broader phenomenon of "self-commodification" within neoliberal subjectivity, wherein individuals internalize market logics and apply them reflexively to the management of their own professional identities. The LinkedIn-mediated digital badge functions as a precise instantiation of this self-commodification: it quantifies, standardizes, and publicly displays the learner's human capital stock in a format optimized for employer consumption, producing a professional self that is permanently on display, permanently subject to comparative evaluation, and permanently responsible for its own market position (Pollard & Vincent, 2022). This dynamic has significant implications for professional wellbeing and identity formation; research on the psychological dimensions of credential-display culture suggests that the requirement of continuous visible self-marketing generates anxiety, imposter syndrome, and instrumental rather than intrinsic orientations toward learning (Pirkkalainen et al., 2023). The "digital handshake" metaphor captures precisely this transactional logic: professional credibility is constituted not through sustained relationships, institutional trust, or demonstrated practice but through the rapid, algorithmically mediated exchange of standardized digital signals.

Ralston (2021) situates this performative professionalism within the broader "neoliberal learning economy," arguing that the LinkedIn-badge nexus is the cultural expression of a political economy in which education has been fully subordinated to the continuous production and reproduction of employable subjects. The ethical stakes of this subordination extend beyond individual wellbeing to the social function of professional communities: when professional identity is constituted primarily through the accumulation and display of individually acquired credentials, the collective, relational, and ethical dimensions of professional practice, mentorship, collegial trust, shared disciplinary standards, are systematically marginalized (Ling & Ling, 2023). Peters, Beirne, and Brown (2025) suggest that this fragmentation of professional community is one of the most underappreciated long-term consequences of the micro-credential movement, with potentially significant implications for the social capital and institutional knowledge that sustain professional fields over time. A critical ethics of digital credentialing must therefore attend not only to individual data rights and privacy but to the collective goods that are eroded when professional identity is reduced to a portfolio of badges.

Table 2: Dimensions of Platform Capitalism in the EdTech Micro-Credential Ecosystem

Platform Function	Educational Value	Ethical Concern
Credential issuance & verification	Transparency, portability	Corporate data ownership of achievement records
Learning analytics	Personalized feedback	Behavioral surveillance without informed consent
Badge display (LinkedIn)	Employer-learner signaling	Coercive self-commodification
Algorithmic recommendation	Personalized upskilling pathways	Reinforcing existing inequalities via filter bubbles
Revenue model (subscription/course fees)	Access to credentials	Commodification of educational achievement

C. Theme 3: Equity, Access, and the Digital Divide

The Illusion of Meritocracy

One of the most persistent rhetorical claims advanced in support of micro-credentials is their democratizing potential: by disaggregating education from the time, cost, and institutional barriers associated with traditional degree programs, micro-credentials ostensibly make high-quality skill development accessible to learners who have historically been excluded from higher education, working adults, first-generation students, learners in the Global South (Brown, Mhichil, & Beirne, 2021). However, a growing body of critical scholarship challenges this meritocratic narrative, arguing that the accessibility of micro-credentials is differentially distributed in ways that reproduce rather than dismantle existing social hierarchies. Jones (2024) warns that micro-credentials, far from leveling the playing field, risk creating "a cheaper, secondary tier of education for marginalized groups," effectively stratifying the higher education ecosystem into a prestige tier of research-intensive degrees for the affluent and a market-responsive credential tier for those who cannot afford full qualifications. This structural stratification is not incidental but follows logically from the market logic underlying micro-credential design: credentials optimized for employer utility will tend to serve employers' interests in a stratified labor market, which means reproducing the skill hierarchies and wage differentials that characterize that market.

Ljungqvist and Sonesson (2023) demonstrate that the depoliticization of inequality through progressive policy language is central to the reproduction of this stratification. By framing micro-credentials as instruments of "inclusion" and "flexibility," EU policy documents systematically render invisible the structural conditions, unequal internet access, differential cultural capital, racialized labor markets, that determine who can actually convert micro-credentials into economic mobility (Ljungqvist & Sonesson, 2023). This rhetorical maneuver is particularly consequential in postcolonial contexts; Marginson (2026) argues that the global expansion of platform-based credentialing reproduces colonial knowledge hierarchies by privileging credentials issued by Global North institutions and platforms, irrespective of learners' geographic location or institutional affiliation. The equity implications are further compounded by digital infrastructure inequalities: Varadarajan, Koh, and Daniel (2023) note that access to reliable broadband, digital devices, and the technical literacy required to navigate complex credential platforms remains deeply unequal across and within nations, meaning that the "democratization" of education through digital credentials is structurally limited to those who already possess significant digital capital. The meritocratic promise of micro-credentials is thus, at least in part, an ideological construct that obscures the persistence of structural inequality beneath the surface of ostensible accessibility.

Pedró (2023) extends the equity critique by examining the role of platform algorithms in shaping learner pathways within micro-credential ecosystems. Algorithmic recommendation systems, which direct learners toward particular credential pathways based on their prior activity and inferred demographic characteristics, risk reproducing and amplifying existing inequalities by channeling learners from marginalized backgrounds toward lower-value credential pathways while directing more privileged learners toward high-demand, high-return qualifications (Pedró, 2023). This algorithmic reproduction of inequality is structurally invisible, it presents itself as personalization and efficiency, but its cumulative effect is the digital entrenchment of social stratification (Hanshaw, 2024). Jones (2024) argues that for micro-credentials to genuinely serve a social justice agenda, they must be evaluated not merely by metrics of access and completion

but by their actual impact on social mobility, labor market equity, and the redistribution of educational opportunity, metrics that current platform-dominated credentialing ecosystems are neither designed nor incentivized to optimize.

Credential Inflation

The paradox of credential inflation, wherein the proliferation of credentials raises rather than lowers barriers to labor market entry, is a structural feature of market-driven credentialing systems that has been extensively documented in the context of traditional degree qualifications and is now emerging with renewed intensity in the micro-credential ecosystem. As the supply of micro-credentials expands rapidly across EdTech platforms, the signal value of any individual credential diminishes, compelling learners to accumulate ever-larger portfolios of badges to maintain their relative market position, a dynamic that Brown, Mhichil, and Beirne (2021) describe as a "credentialing arms race" with no structural equilibrium. Ralston (2021) connects this dynamic explicitly to the logic of neoliberal competition, arguing that in a credentialing marketplace governed by supply and demand rather than educational standards, the incentive structures favor credential proliferation over credential quality, producing an abundance of low-value certificates that confuse employers, burden learners with debt and time costs, and ultimately fail to deliver the promised employment outcomes. This inflationary logic is self-reinforcing: as credential inflation drives down the signal value of individual badges, platforms and institutions are incentivized to issue more credentials rather than fewer, compounding the very problem they purport to solve.

Yılık (2025) identifies the risk of "micro-credential mills" as the institutional expression of this inflationary dynamic, drawing an explicit parallel with the diploma mill phenomenon in traditional higher education. Just as diploma mills monetized the demand for credentials without providing genuine educational value, micro-credential mills exploit the structural pressure to credentialize by issuing badges at scale with minimal pedagogical investment or quality assurance (Yılık, 2025). The absence of robust international frameworks for micro-credential recognition exacerbates this problem: without standardized quality assurance mechanisms, employers and learners face significant uncertainty about the relative value of credentials issued by different platforms, institutions, and national contexts, creating conditions in which brand recognition rather than educational quality determines credential value (Pirkkalainen et al., 2023). Peters, Beirne, and Brown (2025) argue that this quality-assurance vacuum is not merely a technical problem but an ethical one, as it places the burden of navigating a complex and opaque credential marketplace disproportionately on learners who lack the cultural capital and social networks to make informed credentialing decisions.

The distributional consequences of credential inflation are deeply inequitable. Learners from privileged backgrounds, with access to career advisors, professional networks, and institutional prestige, are better positioned to identify and pursue high-value credential pathways, while learners from marginalized backgrounds risk investing significant time and financial resources in credentials of limited or declining market value (Jones, 2024; Hanshaw, 2024). Cogavin (2024) argues that this dynamic represents a structural intensification of the educational inequalities that micro-credentials were ostensibly designed to address: rather than providing a ladder of opportunity for those excluded from traditional degree pathways, credential inflation creates a treadmill on which marginalized learners must run ever faster simply to maintain their current position. The ethical imperative, therefore, is for policy makers, institutions, and platforms to develop robust quality assurance frameworks, transparent

credential value information, and structural supports for learners navigating complex credentialing ecosystems, not as optional enhancements but as fundamental conditions for the ethical legitimacy of micro-credential systems.

Table 3: Equity Dimensions of the Micro-Credential Ecosystem

Equity Dimension	Optimistic Narrative	Critical Reality
Access	Open, online, affordable	Digital divide excludes marginalized learners
Recognition	Universal, portable credentials	Global North platforms dominate signal value
Employability outcomes	Merit-based advancement	Structural labor market inequalities persist
Credential value	Skill-based, employer-aligned	Credential inflation dilutes signal value
Algorithmic pathways	Personalized, efficient	Reproduce and amplify existing inequalities
Social mobility	Ladder of opportunity	Secondary credential tier for marginalized groups

D. Theme 4: Pedagogical and Curricular Ethics

The most fundamental pedagogical tension in the micro-credentials debate concerns the relationship between education and the formation of critical, democratic subjectivity. Since Paulo Freire's (1970) foundational critique of the "banking model" of education, in which students are conceived as passive receptacles for the deposit of pre-determined knowledge, critical pedagogy has argued that genuine education must cultivate critical consciousness, political agency, and the capacity for ethical reflection rather than merely transmitting technical competencies (Freire, 1970, as cited in Pollard & Vincent, 2022). Micro-credentials, in their dominant market-aligned form, instantiate precisely the banking model that Freire condemned: they reduce education to the transmission of pre-specified, employer-defined competencies, assess learning through standardized, algorithmically scored assessments, and evaluate educational success exclusively through labor market outcomes (Ralston, 2021). Pollard and Vincent (2022) deploy Foucault's work on subjectification to argue that this instrumentalism is not merely pedagogically impoverished but constitutively harmful, producing a neoliberal educational subject whose relationship to knowledge is fundamentally extractive, learning is valuable insofar as it can be deployed in the service of labor market positioning, and has no intrinsic worth beyond its exchange value.

Yılık (2025) argues that the prioritization of easily measurable "hard skills" in micro-credential design reflects a deeper curricular ethics failure, wherein the complexity and uncertainty inherent in genuine intellectual inquiry are systematically suppressed in favor of competencies that can be verified, badged, and exchanged. This suppression is not accidental but structurally driven: platforms and employers require credentials that are legible, comparable, and verifiable, criteria that systematically disadvantage forms of learning, ethical reasoning, civic engagement, aesthetic sensibility, political critique, that resist standardization and quantification (Ling & Ling, 2023). Jones (2024) frames this as a fundamental tension between the "functionalist focus" of micro-credentials, which serves the neoliberal employment agenda, and the university's

historical mission of creating critical citizens capable of contributing to the public interest and democratic governance. Pedró (2023) situates this tension within the broader phenomenon of platformization, arguing that the structural incentives of commercial EdTech platforms, toward scale, efficiency, and employer alignment, are fundamentally incompatible with the pedagogical conditions required for critical, reflective learning, including time for deliberation, space for intellectual risk-taking, and relationships of trust between teachers and learners.

The counter-narrative literature offers a constructive response to this instrumentalism, identifying principles for the ethical design of micro-credentials that could partially reconcile their accessibility advantages with the demands of critical pedagogy. Pollard and Vincent (2022) propose three design principles derived from their Foucauldian analysis: embedding micro-credentials within broader academic curricula rather than offering them as standalone market products; aligning them with the full educational mission of the institution, including civic and democratic goals; and incorporating critical and reflective pedagogies that cultivate learners' capacity for self-examination and critical judgment. These principles are not merely aspirational but have concrete institutional implications: they require that micro-credential design be led by academic communities rather than employer advisory boards, that assessment frameworks include qualitative and reflective components alongside competency verification, and that institutional leaders resist the commodifying pressures that drive micro-credential programs toward efficiency maximization at the expense of educational depth (Ralston, 2021; Yılık, 2025). Peters, Beirne, and Brown (2025) conclude that the ethical legitimacy of any micro-credential system ultimately depends on the extent to which it preserves, rather than extinguishes, the learner's capacity for critical self-determination, the capacity that Freire identified as the irreducible core of genuinely humanizing education.

Table 4: Instrumentalism vs. Critical Pedagogy in Micro-Credential Design

Dimension	Instrumentalist Micro-Credential	Critical Pedagogical Alternative
Purpose of education	Human capital accumulation	Critical consciousness and democratic citizenship
Curriculum design	Employer-specified competency frameworks	Academic and civic mission-aligned
Assessment	Standardized, algorithmically scored	Reflective, qualitative, context-sensitive
Learner identity	Economic asset / self-marketing portfolio	Critically reflexive, civic subject
Knowledge conception	Discrete, measurable skills	Integrated, contextual, contested
Success metric	Labor market outcomes	Holistic intellectual and civic development

CONCLUSION

This systematic review reveals that educational micro-credentials function as a profound double-edged sword: while they nominally offer flexible and rapid access to specialized knowledge, they simultaneously embed neoliberal labor dynamics deeply into the core of the learning experience. The literature demonstrates that the "unbundling" of the university mirrors

gig-economy structures, effectively transforming holistic educational trajectories into discrete, transactional commodities. Under the guise of human capital theory, learners are increasingly conceptualized as self-managing economic assets whose sole educational imperative is market utility (Loumpourdi, 2021). Furthermore, the infrastructure of micro-credentialing constitutes a new frontier for platform capitalism, wherein EdTech corporations utilize the "digital handshake" between learners and employers as an opportunity for vast data extraction and algorithmic surveillance without adequate ethical oversight (Srnicek, 2017; Jiménez & González, 2026). This review also establishes that despite optimistic claims regarding democratization, the micro-credential movement risks entrenching existing digital divides, replacing traditional educational barriers with algorithmically driven credential inflation that relegates marginalized learners to a secondary tier of education (Jones, 2024). Pedagogically, the ascendance of micro-credentials represents a victory for functionalist instrumentalism over critical pedagogy, prioritizing easily quantifiable "hard skills" while structurally marginalizing critical consciousness and civic engagement.

The ethical tensions identified in this review necessitate an immediate and robust structural response from educators, institutional leaders, and policy makers. First, there is a critical need for universities to reclaim sovereignty over curriculum design and student data from corporate platforms. Institutional leaders must resist the financial allure of "micro-credential mills" by ensuring that short-form courses are embedded within a broader academic mission that champions qualitative, reflective learning rather than mere competency verification (Ralston, 2021; Pollard & Vincent, 2022). Second, policy makers must develop stringent, standardized quality-assurance and data-governance frameworks that apply to both public institutions and private EdTech providers. This includes mandating transparent disclosures regarding how learning analytics and assessment data are monetized. Finally, to truly serve an equity agenda, micro-credential design must move beyond the illusion of meritocracy by actively providing structural supports, such as digital literacy training and equitable broadband access, ensuring these pathways lead to genuine social mobility rather than reinforcing a precarious labor force.

While the theoretical and critical literature on micro-credentials is mathematically robust, a prominent limitation in the current field is the relative scarcity of longitudinal, empirical studies assessing their actual long-term labor market impact. Much of the analyzed literature relies on policy discourse analysis, philosophical critique, or short-term case studies. There remains a significant gap regarding the actual economic mobility provided by digital badges over a five-to-ten-year horizon. Furthermore, while the literature robustly critiques the hegemony of Global North platforms, there is a deficit of localized empirical research exploring how micro-credentials are created, consumed, and resisted within the diverse socioeconomic contexts of the Global South.

To address these limitations, future research must shift toward empirical investigations of learner agency and resistance within highly datafied educational environments. Studies should explore how learners actively navigate, subvert, or co-opt digital badges beyond their intended employer-signaling functions. There is also a pressing need for scholarship investigating alternative, non-corporate models of credentialing, such as open-source, community-led, or union-backed peer-recognition systems, that might operate outside the paradigm of platform capitalism. Finally, educational sociologists should prioritize mixed-methods research that tracks the career trajectories of marginalized learners engaged in micro-credentialing, rigorously testing whether these "digital handshakes" genuinely disrupt structural inequality or merely digitize it.

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