

## Review Article

**Cite this article:** Manggalasari, L. C., Rosdiana, W., Lestari, Y., Narot, P. & Kiattikunwong, N. (2025). From Centralized Control to Co-Creation: Rethinking Educational Governance in the Digital Era. *Educational Process: International Journal*, 16, e2025321. <https://doi.org/10.22521/edupij.2025.17.321>

Received May 2, 2025

Accepted June 20, 2025

Published Online July 10, 2025

**Keywords:** Digitalization, educational governance, co-creation, institutional trust, comparative education

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## From Centralized Control to Co-Creation: Rethinking Educational Governance in the Digital Era

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### Abstract

**Background/purpose.** The sustainability of educational systems in the digital era requires not only technological innovation but also a fundamental restructuring of governance to ensure long-term equity, adaptability, and inclusion. This study examines Indonesia's educational transition through Belajar.id, the national digital platform introduced under the Merdeka Belajar ("Freedom to Learn") initiative, which seeks to disrupt hierarchical governance and foster multi-stakeholder co-creation. The study's main purpose is to explore whether digital platforms like Belajar.id can meaningfully advance sustainable educational transformation or risk reinforcing existing bureaucratic constraints.

**Materials/methods.** This research employs a conceptual analysis approach, integrating theories of network governance, value co-creation, game theory, and trust-building to construct a multi-dimensional framework. The study synthesizes these perspectives to examine the strategic interactions among administrators, teachers, and policymakers, providing a theoretical lens to assess the opportunities and challenges embedded in Indonesia's digital educational reforms.

**Results.** The analysis reveals that while Belajar.id has the potential to democratize decision-making, enhance resource distribution, and enable collaborative innovation, its impact is constrained by persistent challenges, including digital inequity, cultural resistance, and fragmented policy implementation. The study highlights how trust dynamics, incentive structures, and cultural adaptation are critical determinants of whether digital reforms catalyze meaningful co-creation or devolve into superficial technological upgrades.

**Conclusion.** The study concludes that sustainable digital educational transformation requires a holistic strategy that aligns governance structures, builds institutional and interpersonal trust, and embeds culturally responsive policies. The Indonesian case offers valuable insights for international audiences seeking to leverage digital innovation to promote equitable and adaptive educational ecosystems.



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## 1. Introduction

The evolution of educational administration has traditionally been dominated by centralized, top-down models rooted in Weber's (1947) conception of bureaucratic order. While such frameworks have historically ensured standardization and regulatory compliance, scholars such as Tyack and Cuban (1995) have critiqued them for curbing innovation and responsiveness. Fullan (2013) and Hargreaves (2020) further argue that rigid systems often fail to incorporate real-time feedback or foster co-creative dynamics, leaving little room for professional agency or local adaptability. In large-scale systems, curriculum control and policy decisions remain concentrated at the top, limiting teacher autonomy and creating conditions for passive compliance or active resistance (Hood, 2011; Yuan, 2017). New paradigms of governance that emphasize collaboration, flexibility, and co-creation increasingly challenge this orthodoxy and are being widely adopted across the globe (Bovaird, 2007; Lund, 2018). Yet, while digital transformation is reshaping education globally, existing literature lacks a deep conceptual understanding of how centralized systems might evolve into co-creative governance structures. Assessing Belajar.id's role as a tool for shifting Indonesia's educational governance from centralized control to a co-creative, decentralized paradigm is the aim of this study. This study seeks to enhance the comprehension of how digital change in platforms might promote sustainable educational systems that are inclusive, equitable, and suited to specific needs.

Responding to these limitations, contemporary governance paradigms increasingly emphasize sustainability through collaboration, flexibility, and co-creation. In alignment with the United Nations Sustainable Development Goal 4 (SDG 4), which advocates inclusive and equitable quality education and lifelong learning opportunities for all, these emergent models seek to embed sustainability into the very fabric of educational systems. This shift is vividly exemplified in Indonesia's Merdeka Belajar ("Freedom to Learn") movement, which aims to democratize education, reduce bureaucratic constraints, and enhance institutional resilience, specifically through digital transformation. Its flagship initiative, the national platform Belajar.id, exemplifies this vision by facilitating administrative streamlining, resource sharing, and stakeholder participation. Rather than simply digitizing bureaucracy, Belajar.id aspires to recalibrate governance structures through data transparency, real-time feedback, and personalized learning pathways. This reorientation reflects a new conceptualization of technology—not merely as a functional tool but as a mechanism for restructuring stakeholder relationships, empowering educators, decentralizing decision-making, and enabling local innovation (Antoniou et al., 2023). Yet, as Giroux (1988) and Freire (1970) caution, meaningful transformation requires more than the adoption of new tools; it demands a critical interrogation of entrenched power dynamics and a redefinition of educational agency. This study addresses this gap by examining how Belajar.id embodies a shift from centralized control to co-creation, providing a conceptual analysis that situates Indonesia's reform experience within broader debates about sustainable educational governance.

Despite these promising advances, transitioning from hierarchical governance to digitally enabled sustainable education remains complex. Belajar.id faces significant challenges in three critical domains: cultivating institutional trust, addressing digital inequality, and empowering teachers. Institutional trust is contingent upon transparent communication, reliable infrastructure, and assurances that digital platforms are designed to support collaboration rather than surveillance. Many educators remain skeptical of digital monitoring and may hesitate to fully engage with the system without clearer guidelines and sustained capacity-building efforts. Moreover, addressing digital inequities is central to sustainable educational transformation. Substantial disparities remain between urban and rural areas in terms of infrastructure, device availability, and connectivity, which directly constrain the ability of students and teachers to engage with platforms like Belajar.id. For instance, rural schools frequently report unreliable internet access and insufficient hardware,

exacerbating preexisting learning gaps. These infrastructural deficits have been widely documented in recent studies on remote learning and digital strategy development in Indonesia (Bodrogini et al., 2021; Meng et al., 2024; Fox et al., 2021). Similar findings underscore the importance of teacher training and institutional support in enabling equitable digital transformation (Timotheou et al., 2023; INTOSAI, 2023).

Equally important is the empowerment of teachers, not only through technical upskilling but also through the cultivation of pedagogical autonomy in digital environments. Without adequate training and clarity regarding their evolving roles, teachers may perceive digital tools as administrative burdens rather than enablers of innovation (Mhlongo et al., 2023; Collins & Halverson, 2009). As a result, even well-intentioned reforms risk becoming superficial add-ons to rigid systems unless accompanied by localized support structures and clearly articulated goals. To overcome these barriers, targeted investments are needed to enhance digital infrastructure, particularly in underserved regions, while culturally responsive professional development must empower educators to build both competence and confidence. Clear protocols on data governance and inclusive stakeholder engagement are equally vital to building trust and ensuring that digital platforms support innovation rather than reinforce compliance. If implemented thoughtfully, Indonesia's digital transition—embodied in Belajar.ID—offers valuable lessons not only for national education reform but also for other global contexts navigating the complex shift from hierarchical control to networked co-creation.

## 2. Literature Review

### 2.1. *Traditional Educational Administration Theories*

Traditional educational administration models, while introduced in the previous section, deserve further scrutiny for their structural logic and operational assumptions. Often grounded in centralized authority and rigid formalism (Weber, 1947), these systems rely on standardized procedures to regulate curriculum delivery and institutional accountability. While offering benefits in terms of coherence and equity across diverse regions (Bush, 2007), this top-down design leaves limited room for local adaptation and dynamic feedback. Understanding the internal mechanics of such models is essential to evaluating how they may constrain or enable digital innovation. While frequently criticized for its inflexibility, hierarchical governance has also been recognized as a practical and effective approach to promoting equity across broad and diverse national contexts. In countries with significant geographic, socio-economic, or infrastructural disparities, a centralized approach can help ensure equitable provision of resources, a consistent curriculum, and comparability of learning outcomes across regions (McGinn & Welsh, 1999; Bush, 2007). Starratt (2003) similarly notes that centralized systems can enhance accountability by offering clear policy frameworks that are uniformly applied, supporting the delivery of basic educational services even in underdeveloped or marginalized areas. This approach may also streamline decision-making in times of crisis, offering system-wide coherence in response to urgent policy needs.

Within this framework, ministries or central educational authorities act as the primary decision-makers, disseminating policies, allocating resources, and supervising implementation through multiple administrative layers. Local administrators and educators are primarily responsible for executing top-down mandates, often with limited autonomy to innovate or tailor instruction to local needs. While this structure ensures a standardized baseline of service delivery, it typically leaves little space for context-responsive pedagogy or real-time input from practitioners. Over time, this imbalance may erode professional agency and constrain the development of localized solutions to emerging challenges (Tyack & Cuban, 1995).

Standardized curriculum management is closely intertwined with hierarchical governance. Policymakers develop nationally mandated content and assessment frameworks designed to

promote accountability and equity across diverse learning contexts. Such uniform benchmarks allow for comparative evaluation and serve as instruments for monitoring teacher performance, institutional compliance, and student achievement. However, critics argue that this standardization often comes at the expense of pedagogical flexibility. Marzano (2003) warns that a one-size-fits-all curriculum fails to acknowledge the cultural, cognitive, and social diversity among learners. This tension is further echoed by Tyack and Cuban (1995), who observe that top-down mandates often lag behind classroom-level innovations. When teachers are required to follow prescriptive content with little room for adaptation, their ability to respond to students' distinct needs and local knowledge is diminished.

As educational systems grapple with rapid technological and societal shifts, the limitations of hierarchical models have become more pronounced. The rigidity of traditional structures often prevents timely adaptation to emergent pedagogical opportunities, such as digital learning platforms, collaborative technologies, and personalized instruction (Choi et al., 2020). Freire (1970) emphasizes that true learning requires dialogical engagement, yet systems focused on centralized control tend to favor rote memorization and rigid testing schemes over problem-solving and creativity. Darling-Hammond (2010) similarly highlights how grassroots innovations often fail to gain traction in such environments, even when they align with learner-centered goals. Modern economies increasingly demand skills such as critical thinking, digital fluency, and teamwork. Reimers and Chung (2019) argue that rigid governance structures, designed for uniform mass education, are poorly suited to foster these capabilities. The result is a widening gap between standardized policy prescriptions and the dynamic realities of classrooms, where local variation, technological disruption, and student agency increasingly shape the learning process. Digital platforms offer real-time analytics and peer collaboration, but their potential is undermined when institutional structures restrict feedback loops and discourage experimentation.

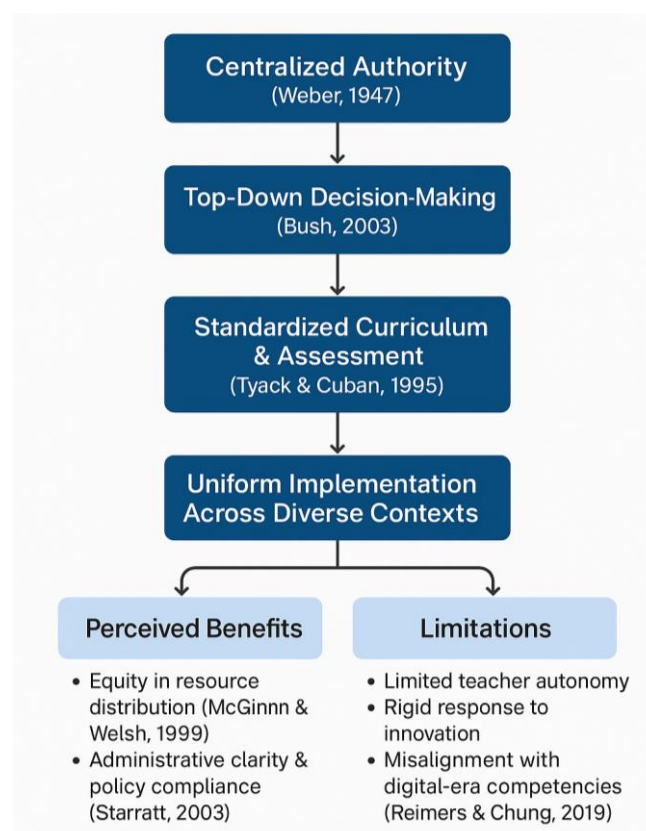


**Figure 1.** Structural Logic and Systemic Effects of Traditional Educational Administration  
(Source: author's own)

In sum, while hierarchical models historically offered stability, consistency, and equity, their limitations in the face of contemporary demands have become increasingly clear. The absence of adaptive mechanisms and participatory frameworks reduces responsiveness to change and constrains teacher innovation. These constraints prompt a need to explore alternative models that balance the benefits of centralization with the demands of flexibility, contextual responsiveness, and collaborative governance—principles that will be examined in the following sections.

## ***2.2. Emergence of Digital-Driven Educational Paradigms***

The limitations of hierarchical, top-down governance have prompted educational theorists and practitioners to seek more adaptive and inclusive models grounded in collaboration, agility, and digital synergy. Scholars such as Senge (2000), who introduced the notion of “learning organizations,” and Heifetz et al. (2009), who emphasized adaptive leadership, have underscored the necessity for educational systems to evolve beyond rigid command structures. Building on these ideas, paradigms centered around value co-creation, network governance, and agile methodologies have emerged as viable alternatives. These models challenge the premise that educational policy must always be centrally imposed, proposing instead that meaningful transformation is more likely when diverse actors—teachers, students, administrators, parents, and communities—engage in shared decision-making processes. (Ostrom, 1990) and Bovaird (2007) have argued that such co-creative approaches are essential for designing systems that are context-responsive, equitable, and sustainably innovative. This collaborative, multi-stakeholder approach is inherently aligned with educational sustainability by ensuring long-term resilience, equity, and adaptive responsiveness, essential to achieving sustainable development goals such as inclusive quality education (SDG 4) and reduced inequalities (SDG 10).

In this reimagined landscape, technology is positioned not as a peripheral aid but as a central enabler of inclusivity, transparency, and adaptability. Digital platforms serve as hubs for continuous dialogue, feedback, and peer-to-peer collaboration, shifting the logic of governance from vertical mandates to horizontal interactions (Brand & Rolland, 2018). Network governance disperses decision-making authority across stakeholders with distinct but complementary expertise, allowing for flexible and decentralized responses to local educational needs. Simultaneously, agile education systems, drawing from principles in the technology and business sectors, emphasize iterative processes, real-time feedback, and adaptive planning (Rigby et al., 2018; Cobb, 2015). Fullan (2013) and Hargreaves (2020) highlight how these innovations stand in contrast to bureaucratic models that delay change through prolonged approval chains and discourage local experimentation. In this decentralized setting, institutional trust and professional autonomy become essential to both safeguard educational quality and encourage localized innovation. By fostering rapid adaptability, agile education systems inherently support educational sustainability, enabling institutions to quickly adjust to societal and environmental changes, thus promoting continuous innovation and sustained equitable access to quality education.

Modern digital platforms operationalize these emerging paradigms by facilitating collaboration, personalization, and knowledge sharing across educational networks (Aithal & Maiya, 2023). Such platforms not only enhance immediate pedagogical effectiveness but also support sustainable educational transformation by fostering resource-sharing, reducing educational inequities, and building long-term institutional capacity. Teachers use interactive tools to co-develop lesson plans, exchange pedagogical strategies, and connect with colleagues across institutional and geographical boundaries (Brunetti et al., 2020; Räisänen et al., 2021). Students benefit from self-paced, personalized learning paths that accommodate individual interests and learning gaps, a practice aligned with Thomas and Brown’s (2011) vision of a “new culture of learning.” Administrators, supported by real-time analytics, can make evidence-based decisions that integrate both grassroots innovation and top-down directives. This interconnected ecosystem has the potential to dramatically

reduce the lag between policy formulation and implementation, fostering a more agile and inclusive approach to educational governance.

However, the promise of these platforms is tempered by the practical challenges that educators face. Issues of digital literacy, infrastructure deficiencies, and privacy concerns hinder meaningful participation. Teachers, particularly in rural or under-resourced areas, may lack access to reliable internet, updated devices, or culturally relevant training materials. Others may view digital platforms as instruments of surveillance rather than empowerment, especially if their use is tied to performance monitoring. These concerns underscore the importance of designing systems that provide clear, supportive policies and resources tailored to local realities (Aithal & Aithal, 2023).

Addressing these systemic challenges directly contributes to sustainable education by building institutional resilience, promoting long-term stakeholder commitment, and ensuring that technology-driven benefits are equitably and sustainably realized across diverse contexts. It requires a combination of equitable infrastructure investment, continuous professional development, and transparent data governance. When such foundational supports are in place, digital tools can empower educators to experiment, adapt, and refine teaching practices. Golden (2020) notes that technology-enhanced professional learning—when supported institutionally—boosts teacher motivation and enhances student engagement. Innovations emerging from one region can be shared across networks, creating a virtuous cycle of co-creation and distributed accountability. Rather than enforcing compliance, digital platforms can nurture a participatory culture where stakeholders take collective responsibility for improving learning outcomes.

As digital governance matures, these systems increasingly align with global imperatives to develop critical thinking, digital literacy, and collaborative problem-solving skills among learners. Reimers and Chung (2019) argue that traditional models—designed for standardization—are ill-suited for the demands of contemporary society. The shift toward digitally enabled, co-creative paradigms signals a broader transformation in how educational systems are conceived and managed. By embedding co-creation, agility, and trust into their design, these models offer a compelling vision for more democratic and responsive education. Although aspirational in many contexts, the accelerating adoption of digital platforms signals that this paradigm shift is already underway, offering new possibilities for addressing systemic inequalities and equipping learners with the competencies necessary to thrive in the 21st century (Johnson et al., 2022; Brown et al., 2021). By embedding principles of agility, inclusivity, and continuous stakeholder co-creation, these digitally driven educational paradigms represent powerful mechanisms for sustainable transformation, positioning education systems to effectively meet present and future global sustainability challenges.

### ***2.3. Critique of the Transition***

Shifting from a top-down administrative framework to a digitally driven, co-creative paradigm represents a significant departure from established norms of educational governance. While value co-creation, network governance, and agile education systems offer promising pathways for reform, these paradigms encounter formidable real-world challenges (Abdallah et al., 2024; McGrath, 2020). Beyond the technical and infrastructural demands of implementation, deeper cultural and institutional resistance often impedes meaningful transformation. Hierarchical traditions can persist beneath new policy rhetoric, subtly reasserting themselves even when digital platforms like *Belajar.id* are introduced under banners of decentralization and innovation. On a theoretical level, digital-driven paradigms challenge foundational assumptions about power distribution, stakeholder roles, and knowledge production. Network governance calls for decentralizing authority and redistributing responsibility among actors such as administrators, teachers, parents, and local communities. Yet, as this redistribution depends on system-wide buy-in, it is easily disrupted by bureaucratic inertia and hierarchical norms, especially in rural Indonesian contexts. Teachers often navigate conflicting

identities and obligations, caught between institutional expectations and emergent reforms. School leaders may hesitate to adopt platforms like Belajar.id for fear of repercussions or perceived overreach. This reluctance is exacerbated by ambiguity in national policies and cultural norms that emphasize deference to authority.

Practically, effective implementation requires adjustments to funding models, capacity-building frameworks, and incentive structures—all of which must align to foster long-term engagement with digital tools. Without such alignment, even the most visionary reforms risk becoming superficial add-ons. For instance, digital innovation in Indonesian education must be underpinned by robust policy coordination and localized investment strategies (Hapsari & Kismartini, 2023). When reforms proceed without coherent support structures, digital platforms like Belajar.id often operate parallel to legacy systems, resulting in fragmented, non-systemic experimentation. These challenges are particularly acute in rural settings, where inadequate digital infrastructure, rigid administrative protocols, and hierarchical oversight further obstruct systemic transformation. Despite growing momentum for digital transformation under Merdeka Belajar, several interrelated risks continue to undermine implementation. One major concern is the persistence of the digital divide. Disparities in infrastructure, connectivity, and digital skills can worsen educational inequalities. In under-resourced areas, Belajar.id may exist in name only, with little practical utility. Even where the platform is technically available, gaps in training and technical support often result in uneven adoption. Rolling out technology is merely the first step; without corresponding investments in professional development and policy alignment, educators may engage with these tools only superficially, undermining their transformative potential.

Teacher resistance presents another notable challenge. In hierarchical systems, educators may view digital tools as encroachments on their professional autonomy, particularly if the tools are associated with evaluative oversight rather than pedagogical support (Antonio, 2024). Meaningful reform requires that teachers be empowered to act as co-creators rather than passive implementers. Where accountability frameworks remain punitive and incentives unclear, engagement with reform efforts tends to falter. Compounding these barriers is administrative inertia. Bureaucratic processes often involve slow-moving approval mechanisms and outdated reporting structures that hinder the flexibility and responsiveness digital reforms are meant to enable. Even platforms designed to decentralize decision-making can become vehicles for enforcing old norms when absorbed into existing administrative routines (Putri & Hastjarjo, 2023). In Indonesia, these tensions manifest acutely. Cultural expectations grounded in high power-distance often clash with participatory models of governance. Respect for hierarchy remains culturally embedded, making local adaptations difficult without clear policy authorization. Compounding this, Indonesia's archipelagic geography generates disparities in infrastructure, digital readiness, and leadership cultures, creating a patchwork of innovation and stagnation. National policies may encourage experimentation, yet local administrators often interpret such flexibility cautiously, fearing that deviation could attract scrutiny. As a result, hybrid governance structures emerge, in which progressive policies coexist with rigid enforcement mechanisms. These arrangements may enable context-sensitive adaptations but also risk reinforcing fragmentation, as co-creation competes with institutional control.

The shift toward digital synergy in education requires more than technological deployment. It demands cultural recalibration, institutional trust, and coherent incentive structures. Unless these dimensions are addressed holistically, the potential of platforms like Belajar.id to democratize education and foster innovation will remain constrained. Recognizing these complex dynamics is essential to designing adaptive and context-sensitive strategies that bridge the gap between policy ambition and classroom realities.

### 3. Methodology

This study adopts conceptual analysis as its primary methodological approach. Conceptual analysis is widely recognized in the fields of public administration, governance, and educational research as an effective method for clarifying theoretical constructs and synthesizing existing knowledge to propose new frameworks or models that can guide future empirical investigation (Jaakkola, 2020; Gerring, 2012). Rather than collecting new empirical data, this method involves reviewing, selecting, and integrating relevant theories and models to address identified gaps within a particular domain. In addition, the method is particularly appropriate for research that seeks to cross-examine abstract governance problems, integrate theoretical perspectives across disciplines, and offer policy-relevant conceptual tools without empirical testing.

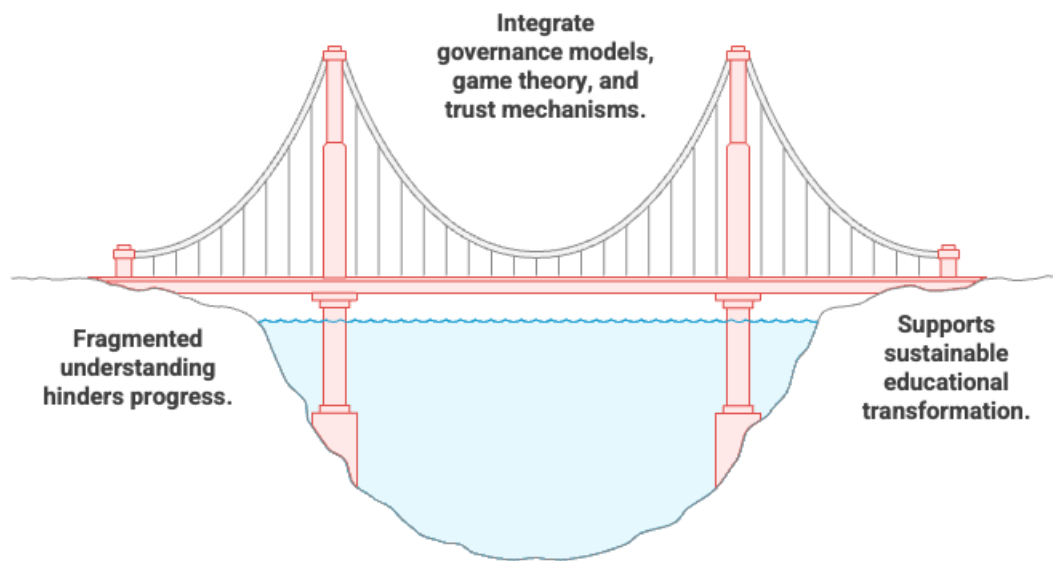


**Figure 2.** Conceptual Analysis Bridges Theoretical Gaps for Educational Transformation in Indonesia  
(Source: Author's Own)

For this paper, the conceptual framework was developed through the synthesis of four key theoretical perspectives: hierarchical governance models (Weber, 1947; Tyack & Cuban, 1995), network governance and co-creation theories (Ostrom, 1990; Bovaird, 2007; Kickert et al., 1997), game theory as applied to stakeholder dynamics (Axelrod, 1984; Nash, 1950), and trust-building mechanisms within digital platforms (Fung et al., 2007; Zucker, 1986). These theories were integrated to construct a multi-dimensional framework that explains the conditions under which digital platforms like Belajar.id can promote sustainable educational transformation in Indonesia. The integration process followed Jaakkola's (2020) conceptual development strategy, which emphasizes selecting and combining theoretically robust perspectives to address a complex practical issue—in this case, the transition from centralized control to co-creation in education.

While each theoretical perspective is well-established independently, the contribution of this study lies in reconfiguring these theories into a unified model, contextualized within Indonesia's socio-cultural landscape and policy environment. This approach aligns with previous applications of conceptual analysis in governance and digitalization studies (Rothstein, 2011; Bannister & Connolly, 2020). The resulting framework does not seek to generate new empirical findings but rather provides a structured analytical lens that can guide future research or policy applications, especially in relation to Sustainable Development Goals (SDGs) 4 (Quality Education) and 10 (Reduced Inequalities).

Additionally, the conceptual framework is illustrated through a 2x2 payoff matrix, which draws on game-theoretical constructs to map the strategic interactions between administrative policies and

teacher behaviors. This diagram is not derived from mathematical modeling but rather serves as a heuristic device for visualizing the possible outcomes of different governance and engagement strategies. No empirical data were collected or analyzed in this study. As such, there are no datasets to report for this manuscript.

## 4. Results

### 4.1. *The Role of Belajar.id as a Conceptual Illustration*

The national platform Belajar.id occupies a central position in Indonesia's Merdeka Belajar movement, aspiring to reshape educational governance by embedding digital tools into the core fabric of teaching, learning, and administration. As Fullan (2013) suggests, effective educational transformation hinges on deploying technology in a way that catalyzes value co-creation rather than merely transposing bureaucratic structures into online settings. Belajar.id exemplifies an attempt to move beyond hierarchical dictates toward a collaborative ecosystem where teachers, students, administrators, and parents can co-design lessons, share resources, and engage in continuous improvement (Hunaepi & Suharta, 2024). Yet, the extent to which the platform truly disrupts deeply entrenched government-imposed systems depends on factors such as infrastructure availability, teacher training, and policy coherence. At its core, Belajar.id aims to drive value co-creation by enabling stakeholders at every level to take part in constructing educational experiences. Drawing on concepts from Ostrom (1990) and Bovaird (2007), the platform is designed to replace one-directional policy dissemination with multi-directional exchange. Teachers can upload, modify, and share lesson plans and educational materials, while students access curated content tailored to their interests and learning levels. Integrated messaging and feedback systems foster collaborative problem-solving, while real-time analytics equip administrators with insights into student progress and resource utilization, aligning with Fullan's (2013) call for data-driven reform. These features illustrate how Belajar.id embodies participatory governance by encouraging grassroots engagement rather than reinforcing top-down control.

A standout strength of Belajar.id lies in its potential to streamline bureaucratic tasks, consequently freeing teachers to invest more time in innovative instructional methods. By automating documentation and performance tracking, the platform can minimize the compliance burden typically demanded by hierarchical oversight—a phenomenon Hargreaves (2020) identifies as stifling classroom-level creativity. Additionally, making student performance data readily accessible enhances transparency across schools and districts, promoting early detection of learning gaps and more context-responsive strategies. However, these strengths do not diminish the challenges facing Belajar.id. Uneven adoption remains a major concern, as Warschauer (2004) highlights how inequitable infrastructure can reinforce existing disparities in regions lacking stable internet or updated hardware, Belajar.id risks becoming an emblem of the digital divide rather than a solution. So far, conditions in the field still show that there are students and parents who do not have access to technological devices and stable internet and this is certainly a very complex challenge. Technical training gaps also persist; successful platform utilization hinges on digital literacy and ongoing professional development. As Darling-Hammond (2010) notes, professional support is paramount if educators are to embrace transformative change instead of merely reproducing top-down practices through digital means. Furthermore, while data analytics can identify learning deficits, they often fail to capture the socio-cultural nuances that inform student performance. Freire (1970) argues that a purely data-centric lens may overlook critical dimensions of local context and learner agency, potentially undermining the deeper goals of Merdeka Belajar to engender holistic engagement. It is important to remember that the goal of Merdeka Belajar is to improve the quality of education, create a more enjoyable and relevant learning atmosphere, and prepare Indonesia's young generation to face future challenges.

Beyond technological reliability—such as server capacity and ongoing system maintenance—the scalability of Belajar.id hinges on whether stakeholder participation can be expanded and sustained nationwide. Large, decentralized systems require robust incentive structures, consistent policy reinforcement, and professional development pathways to ensure that teachers, students, and administrators maintain active engagement. In particular, culturally responsive strategies—where local values, languages, and traditions are woven into the digital ecosystem—can bolster the trust needed for long-term adoption, echoing Ostrom’s (1990) tenet that communal resources thrive under shared norms and mutually understood rules. Similar inclusivity challenges arise for communities at the margins of Indonesia’s development map. Although Belajar.id aspires to democratize access to quality education, users in underserved regions may lack foundational digital infrastructure or the specialized training to navigate new platforms effectively. These conditions risk reproducing, rather than mitigating, historically entrenched inequalities—contradicting Merdeka Belajar’s ethos of universal competencies and broad-based educational opportunity. A multi-tiered policy approach—investing in connectivity, device distribution, and localized content—could address such disparities, ensuring that the platform’s potential transcends mere rhetoric.

In sum, Belajar.id exemplifies how digital platforms can spur a shift toward co-creation and networked collaboration in educational governance. Yet, harnessing its transformative capacity requires deliberate planning, professional support, and equitable resource allocation aimed at lifting all segments of the population. By acknowledging the realities of infrastructure imbalances, teacher training needs, and cultural sensitivities, policymakers can design targeted interventions that enable Belajar.id to live up to its promise of system-wide reform—a reform that, if fully realized, may reshape Indonesia’s educational landscape and offer generalizable insights for other national contexts grappling with similar hierarchical legacies in the digital age. In order to realize the quality of education in Indonesia that is increasingly better based on digitalization, it is necessary to continue to pay attention to equality of access for all stakeholders and related communities. Therefore, holistic thinking is needed for decision makers in the field of education that reflects Indonesian characteristics in a more complex way, both in the planning, implementation, and evaluation processes of the program.

#### ***4.2. Rethinking the Key Tensions in Digital Educational Reform***

One of the central dilemmas in Indonesia’s evolving education landscape revolves around whether digital platforms like Belajar.id truly redefine long-established governance models or merely retrofit them with technological veneers. Scholars such as Fullan (2013) and Hargreaves (2020) suggest that any serious transformation must interrogate the distribution of authority, the mechanisms of decision-making, and whether learning is framed as a collaborative or hierarchical process. In this sense, technology holds the potential to catalyze more participatory forms of education—but only if deployed in ways that shift pedagogical authority away from centralized actors and toward those most immediately engaged in the learning process. Paulo Freire’s (1970) emphasis on empowering learners as agents of their education underscores this principle, challenging the passive consumption of standardized content.

However, digital transformation does not unfold in a vacuum; it emerges from a web of strategic interactions among stakeholders—administrators, policymakers, teachers, and learners—each navigating their own objectives and perceptions of others’ behavior. Game theory offers a useful conceptual framework to understand these dynamics. Rather than a purely technical solution, Belajar.id can be seen as a repeated stage for interaction where patterns of cooperation, resistance, and free-riding unfold. Importantly, the use of game theory in this article is not intended to involve deep mathematical modeling or precise equilibrium calculations, but to conceptually illustrate stakeholder strategy, much like the approach used by Homann and Suchanek (2005) in ethical economics or Axelrod’s (1984) study on cooperation in repeated games.

The strategic calculus of teachers, for instance, is shaped by their expectations of administrative behavior. If they suspect that data submitted through the platform will be used punitively, participation may diminish. Conversely, clear policies and supportive engagement from leadership can foster a sense of shared purpose. Nash's equilibrium theory posits that stable cooperation emerges when each actor's strategy becomes optimal given the strategies of others. In this light, platform design and policy signals become critical levers in shaping systemic engagement. Axelrod's (1984) research further highlights how repeated interactions, such as co-developing lesson plans or exchanging feedback, build trust over time—yet such trust can be quickly eroded by perceived exploitation or mismanagement.

Parallel to this dynamic is the persistent tension between collective and individual incentives, typified by the free-rider problem. Elinor Ostrom's (1990) work on common-pool resources illustrates how communal efforts can falter when some participants reap benefits without reciprocal contribution. This tension is highly relevant to Belajar.id: if only a small subset of teachers actively shares high-quality resources while others remain passive consumers, the co-creative ethos may be undermined. The unpreparedness and lack of sufficient literacy for some teachers in utilizing this platform are unavoidable conditions. Without mechanisms to recognize and reward active engagement—whether through digital badges, public acknowledgment, or career incentives—motivation to contribute may wane, weakening the platform's collaborative architecture.

Equity also remains a pressing concern. While platforms like Belajar.id aim to democratize access to learning resources, digitalization may inadvertently reproduce entrenched inequalities. Scholars like Warschauer (2004), Gorski (2017), and Banks (2009) caution that infrastructure and technical access, while necessary, are insufficient for equitable educational transformation. Students and teachers in under-resourced communities may lack the cultural capital or support structures necessary to benefit from digital tools. These disparities can be exacerbated when centralized reforms fail to accommodate localized needs or provide differentiated support. In such contexts, trust in the platform is eroded—not just at an interpersonal level but institutionally—further disincentivizing participation.

Teacher empowerment remains a final cornerstone of this discussion. Giroux (1988) and Darling-Hammond (2010) both argue that educational reform succeeds only when teachers are positioned as agents of change. Digital platforms, ideally, should expand their autonomy, enabling creative experimentation, localized innovation, and peer collaboration. Yet in practice, many educators view such platforms as instruments of surveillance or additional bureaucratic burden. This perception can inhibit experimentation, particularly if platform engagement is tightly monitored or linked to punitive evaluation systems. Trust, once again, emerges as a linchpin: teachers are more likely to innovate if they believe their contributions are valued, protected, and contextually supported (Laufer et al., 2025).

In sum, understanding Belajar.id through the lens of game theory and trust-building illuminates how strategic decision-making shapes the success—or failure—of digital reform. Participation hinges not only on technical features or mandates but on whether users perceive mutual benefit, autonomy, and institutional respect. The success of such reforms depends on cultivating conditions in which cooperation is seen as rational, safe, and valuable. Digital platforms do not inherently democratize education; they become democratizing only when embedded in structures that reward participation, reduce inequity, and promote sustained trust among all actors in the system.

## 5. Discussion

Designing a comprehensive conceptual framework that encapsulates the complexities of Belajar.id within Indonesia's educational transformation requires integrating multiple theoretical lenses—traditional and networked governance, game theory, and the strategic role of trust-building

in digital environments. This framework provides a layered understanding of how digital platforms may either disrupt or reinforce prevailing hierarchies, offering both opportunities and constraints for systemic reform. One foundational tension is between hierarchical and networked models of governance. In hierarchical systems, as articulated by Weber (1947), authority resides centrally, enforcing uniformity and top-down accountability that can help standardize policies but often stifle local innovation. By contrast, networked governance, as proposed by Kickert et al. (1997) and Bovaird (2007), redistributes authority among multiple actors—including teachers, parents, and local communities—thereby enabling more agile, participatory, and context-sensitive decision-making. In theory, Belajar.id could serve as a digital hub within such a networked system, fostering co-creation through horizontal linkages, real-time feedback, and stakeholder collaboration. But this potential is contingent on cultivating trust among users and overcoming the inertia embedded in hierarchical structures. The central finding emerging from this conceptual model is that digital platforms do not inherently shift governance dynamics; their transformative potential depends entirely on trust-based engagement mechanisms and collaborative incentives.

Game theory offers additional insights into the strategic interactions underpinning digital reform. Originally formulated by von Neumann and Morgenstern (1944), game theory conceptualizes stakeholders as rational actors navigating incentives and expectations. In the context of Belajar.id, actors such as teachers, administrators, and policymakers pursue different payoffs: from professional development and institutional efficiency to student achievement. According to Nash (1950), equilibrium occurs when each actor adopts a strategy that aligns with their expectations of others' behavior. A teacher might engage meaningfully with Belajar.id only if they believe administrators will use the data supportively rather than punitively. Axelrod (1984) highlights the power of repeated games—interactions over time that either strengthen or erode trust. If early exchanges are collaborative and beneficial, a cycle of mutual engagement can emerge. But a single breach—such as the misuse of uploaded data—can spiral into distrust and strategic withdrawal. Figure 2 illustrates these dynamics, emphasizing the delicate balance between administrative behavior and teacher engagement and highlighting the distinct outcomes of these interactions.

|                               | <i>Teacher Actively Contributes</i>                                                                                                               | <i>Teacher Withholds Effort</i>                                                                                                        |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <i>Admin is Collaborative</i> | <b>Mutual Gain:</b><br>Teachers feel supported; co-creation thrives. High payoffs for student outcomes, teacher growth, and admin trust-building. | <b>Missed Potential:</b><br>Admin remains supportive, but teacher non-participation limits the system's impact and discourages others. |
| <i>Admin is Punitive</i>      | <b>Fear-Driven Compliance:</b><br>Teacher participation arises out of obligation, but trust erodes, undermining long-term cooperation.            | <b>System Breakdown:</b><br>Both admin and teacher disengage; punitive oversight fosters resistance and system-wide stagnation.        |

**Figure 3.** Strategic Dynamics in Belajar.id Adoption  
(Source: author's own)

The figure underscores the fragile equilibrium needed for Belajar.id to function as a truly co-creative space. When administrators adopt a collaborative stance and teachers actively contribute, a

virtuous cycle of mutual gain can occur. However, this cooperation is easily destabilized. If administrators default to punitive oversight or teachers disengage, the system risks breakdown or regression into fear-driven compliance. Trust becomes the linchpin of this dynamic. Digital platforms can foster institutional and interpersonal trust if they are transparent, culturally sensitive, and supported by consistent policies. Institutional trust refers to confidence in the platform's technical integrity—secure data storage, clear data use protocols, and user protection mechanisms (Zucker, 1986). Interpersonal trust emerges through everyday interactions—such as constructive feedback, fair evaluations, and collegial collaboration—that reinforce shared norms of respect and reciprocity (Abrams et al., 2003; Nelson et al., 2019). These findings resonate broader digital transformation literature across contexts, including research from Canada and Finland, where trust was also identified as a prerequisite for effective platform uptake in public education (Selwyn et al., 2020; Kaarakainen et al., 2021).

Crucially, these trust dynamics carry direct practical implications. Practitioners designing or implementing educational digital platforms should focus on ensuring consistent capacity-building support, establishing safe channels for teacher experimentation, and incentivizing meaningful engagement. Without these supports, free-riding behavior—where only a subset of teachers consistently contribute resources while others passively consume them—threatens the sustainability of co-creation. Hardin's (1968) concept of the "tragedy of the commons" warns that when contributors feel exploited, participation erodes. Moreover, if the platform is perceived as too complex or redundant, it may be seen as administrative overhead rather than pedagogical support. This is particularly acute in Indonesia's remote regions, where limited internet access, underfunded schools, and insufficient technical support amplify existing inequities. Scholars like Banks (2009) and Darling-Hammond (2010) caution that ignoring local contexts in the rollout of digital tools may inadvertently reinforce stratification. Therefore, policymakers and school leaders must translate these theoretical insights into clear, actionable strategies: invest in rural digital infrastructure, embed professional development programs tailored to local needs, and co-design incentive mechanisms that recognize and reward active participation. This alignment between trust, incentive design, and decentralized participation is also reflected in studies on India's DIKSHA platform, which emphasize its role in promoting inclusive education and strengthening teacher engagement through accessible digital infrastructure and capacity-building efforts (Mandala & Pradhan, 2024; Sharma, 2018). Comparable dynamics have been observed in other national contexts as well, where trust-building and participatory mechanisms have proven essential to the success of digital education reforms.

From an international perspective, the Indonesian case offers valuable comparative lessons. Many countries, especially in the Global South, are grappling with similar challenges: reconciling top-down educational mandates with the promise of bottom-up digital innovation. For example, India's DIKSHA platform and Brazil's education digitalization efforts reflect parallel tensions between hierarchical oversight and co-creative aspirations. Even high-income nations such as Australia and Canada face challenges in ensuring that digital reforms translate into meaningful teacher autonomy and student-centered learning (Williamson & Hogan, 2020). By drawing these connections, the Indonesian experience contributes to a global conversation about how digital educational transformation must be carefully designed to account for cultural, infrastructural, and governance contexts. Policymakers and researchers alike can benefit from understanding that platforms like Belajar.id are not universal solutions but context-sensitive tools whose success hinges on aligning technology, governance, and trust-building across diverse environments.

Cultural context adds another layer of complexity. Indonesia's sociopolitical fabric is deeply shaped by values like respect for hierarchy and the spirit of *gotong royong* (mutual cooperation). These norms can both hinder and enable digital reform. High power-distance cultures may discourage teachers from embracing autonomy or questioning centralized directives, but strong

communal values may also promote collective ownership when co-creation is framed as a shared moral obligation. Policymakers must tread carefully, ensuring that digital reforms do not impose foreign governance models but rather align with culturally resonant values (Herden et al., 2021). The Merdeka Belajar reforms aim to reset the “rules of the game” in education, but mixed policy signals—such as simultaneous pushes for innovation and rigid assessments—can create ambiguity. Teachers need clear incentives and safe environments to experiment; otherwise, the rhetoric of co-creation may feel disingenuous (Adityas, 2022).

In sum, real reform emerges when technological tools, institutional trust, cultural sensitivity, and strategic incentives are holistically aligned. Digital platforms must be situated within comprehensive governance strategies that account for the incentives, perceptions, and capabilities of each stakeholder group (Al Naim, 2023; Chen et al., 2022). Game theory reminds us that cooperation is rarely spontaneous; it must be nurtured through predictable interactions, fair rules, and repeated positive reinforcement. The payoff is not merely technological modernization but a new mode of relational governance that values inclusivity, mutual accountability, and shared agency. Additionally, the analysis reinforces the idea that the governance structure behind digital education—not the technology itself—is the most critical determinant of reform outcomes.

While this study offers a conceptual framework grounded in well-established theories and supported by relevant cases, it remains inherently limited by its non-empirical nature. Without primary data collection or field validation, the proposed model’s applicability may vary across institutional contexts. Additionally, while Belajar.id is used as a focal case, the analysis may not fully capture the heterogeneity of user experiences across Indonesia’s diverse educational landscape. Future studies should consider complementing conceptual analysis with empirical methods such as teacher interviews, platform usage analytics, or comparative case studies to further test the model’s assumptions and broaden its applicability.

These lessons extend beyond Indonesia and speak to the broader global challenge of educational digital transformation. Countries seeking to modernize their education systems should heed the warning that technology alone cannot drive systemic change without the scaffolding of inclusive governance, adequate infrastructure, localized adaptation, and sustained investment in teacher capacity. Platforms like Belajar.id will only yield transformative impact when their design and implementation are intentionally attuned to these cross-cutting factors. As the international education community continues to grapple with digital innovation’s promises and pitfalls, the Indonesian case serves both as a valuable model and as a cautionary reminder that meaningful, sustainable reform demands more than digital tools—it requires building trust, aligning incentives, and respecting the cultural and institutional contexts that shape educational practice worldwide.

In alignment with the study’s findings, policymakers are encouraged to: (1) design trust-centered governance protocols for digital platforms, ensuring transparent and ethical data use; (2) invest in localized infrastructure and professional development programs tailored to marginalized regions; and (3) embed incentive structures that reward co-creation and knowledge-sharing among educators. These actions correspond directly to the trust, incentive, and cooperation dynamics identified in the strategic framework and are essential for transforming digital platforms like Belajar.id into sustainable, inclusive governance tools.

## 6. Conclusion

Indonesia’s Merdeka Belajar reform, anchored by the national digital platform Belajar.id, offers a timely and instructive case for understanding the evolving relationship between governance, technology, and educational change. As this paper has argued, integrating digital platforms into traditional educational systems cannot be viewed merely as a technical upgrade; rather, it demands a comprehensive reconfiguration of authority, trust, stakeholder incentives, and cultural adaptation.

Framed through the theoretical lens of game theory, the analysis emphasizes that sustained cooperation in digital educational reform depends not only on technological access but also on strategic alignment, institutional trust, and context-sensitive governance (Hora et al., 2017). While hierarchical systems provide stability, they frequently inhibit innovation by constraining stakeholder agency and suppressing bottom-up creativity (Bennett & McWhorter, 2019). By contrast, co-creative governance frameworks grounded in repeated positive interactions, transparent data use, and fair incentive structures create the conditions under which teachers, administrators, and students can collaborate meaningfully. Trust—both institutional and interpersonal—emerges as the linchpin for reform, determining whether platforms like Belajar.id become enablers of genuine co-creation or merely digital replicas of bureaucratic control. Importantly, the Indonesian context offers comparative lessons with global relevance. Many countries—including India, Brazil, Australia, and Canada—are grappling with similar tensions between top-down educational mandates and the promises of bottom-up digital innovation (Williamson & Hogan, 2020). By situating Belajar.id within this broader international conversation, the findings of this study underscore that successful digital transformation is never a plug-and-play solution: it must be carefully adapted to local governance dynamics, infrastructural capacities, and cultural norms.

## 7. Suggestion

To translate these insights into practice, successful implementation must be supported by a multi-dimensional strategy. First, capacity-building efforts should be continuous, locally tailored, and responsive to the specific pedagogical and technological needs of teachers, especially those working in under-resourced regions. Infrastructure investments should be equitably distributed, not only providing access but also ensuring usability and sustainability. Policymakers should develop transparent feedback systems and incentive mechanisms that actively reward teacher engagement, recognize contributions, and reduce the risk of free-riding, while ensuring that platform policies are grounded in local cultural values. International readers can draw both cautionary and inspiring lessons from Indonesia's experience, recognizing shared challenges such as bridging the digital divide, building trust among educational stakeholders, and designing culturally resonant co-creation frameworks. In addition, the conceptual foundation developed here opens important avenues for future empirical research. Longitudinal case studies examining how stakeholder behaviors and trust dynamics evolve over time could reveal whether the game-theoretical equilibria envisioned in this framework materialize in real-world educational settings. Comparative research, especially cross-country analyses, could clarify which contextual factors—such as policy coherence, cultural adaptation, or incentive alignment—are most influential in determining the success or failure of digital reforms. Additionally, experimental and mixed-methods studies may offer granular insights into which specific platform features and incentive systems most effectively promote sustained engagement and learning. Finally, further attention must be paid to the ethical and technical dimensions of platform use, particularly concerning surveillance, data privacy, and user agency, as these factors profoundly influence the long-term sustainability and legitimacy of digital education reforms. These recommendations offer concrete pathways for policymakers, educators, and researchers to operationalize theoretical insights and guide the development of more just, dynamic, and collaborative educational futures worldwide.

## Declarations

**Author Contributions.** Conceptualization, Narong Kiettikunwong and Lena Citra Manggalasari; methodology, Narong Kiettikunwong; formal analysis, Narong Kiettikunwong and Weni Rosdiana; investigation, Lena Citra Manggalasari, Weni Rosdiana, and Yuni Lestari; writing—original draft preparation, Lena Citra Manggalasari and Narong Kiettikunwong; writing—review and editing, Pennee Narot and Narong Kiettikunwong; visualization, Narong Kiettikunwong; supervision, Narong

Kiettikunwong and Pennee Narot; project administration, Lena Citra Manggalasari. All authors have read and agreed to the published version of the manuscript.

**Conflicts of Interest.** The authors declare no conflicts of interest.

**Funding.** This research received no external funding.

**Ethical Approval.** Not applicable.

**Data Availability Statement.** No new data were created or analyzed in this study. Data sharing is not applicable to this article.

**Acknowledgements.** The authors gratefully acknowledge the administrative and technical support provided by the Faculty of Vocational Studies at the State University of Surabaya and the College of Local Administration at Khon Kaen University. During the preparation of this manuscript, the authors used OpenAI's ChatGPT (version GPT-4.0) for the purposes of proofreading. The authors have thoroughly reviewed and edited all outputs to ensure scholarly rigor and take full responsibility for the content.

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