SCIENTIFIC CULTURE
www.sci-cult.com

SCIENTIFIC CULTURE, Vol. 11, No. 3.2, (2025), pp. 743-756
Open Access. Online & Print

DOI: 10.5281/zenodo.11322554

PARADIGM SHIFT IN NATIONAL EDUCATION POLICY: ADAPTATION TOWARDS AN INCLUSIVE DIGITAL LEARNING SYSTEM

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Received: 27/07/2025
Accepted: 27/08/2025

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ABSTRACT

Digital transformation has significantly reshaped the global and national education landscape, demanding more adaptive and responsive policy frameworks. In Indonesia, these shifts are further challenged by disparities in digital infrastructure and varying levels of readiness among educators and institutions. This study explores how national education policy is evolving in response to digitalization, highlighting both challenges and opportunities. Using a qualitative approach based on secondary data and prior research, the analysis reveals that reforming education governance to align with technological change is crucial for improving quality and equity. Inclusive strategies are essential to address access gaps, while strong leadership and institutional coordination play a pivotal role in ensuring effective and sustainable policy implementation.

KEYWORDS: Paradigm Change, Policy, National Education, Digital Learning, Inclusivity.

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1. INTRODUCTION

The transformation that has occurred in the national education sector in the last few decades has shown the dynamics of policies that continue to move to adapt to social, economic, and technological changes that are taking place globally. This change is not only related to the government's mindset in regulating the education system, but also reflects the urgent need to respond to the development of an increasingly digitalized world (Mhlanga et al., 2022).

Amid the pressures of globalization and technological disruption, the national education system is faced with a major challenge to not only survive but also thrive by adopting new approaches that are more relevant to the needs of the times. The government is required to formulate policies that can bridge the gap between the conventional education system and the demands for flexible, adaptive, and technology-based learning. In this context, a paradigm shift in education policy is inevitable and becomes an important foothold in the process of systemic reform in the education sector (Ul Hassan et al., 2025).

In various regions, gaps in access, quality, and participation in education are still major issues that have not been fully resolved. As the global pandemic accelerates the adoption of digital-based learning, a collective awareness has emerged regarding the importance of infrastructure and policy readiness in supporting this transformation. Limited access to digital devices, internet networks, and the ability of educators to adapt to technology have shown the unequal reality between different social groups and geographical areas (Huda, 2023).

The need to build a learning system that is not only digital but also inclusive becomes increasingly urgent, this requires policy changes that are not patchwork, but rather a profound and sustainable paradigm shift. Education policies that were previously oriented towards mastering material in physical classrooms are now required to change comprehensively to be able to answer the challenges and opportunities offered by the digital ecosystem (Ossiannilsson, 2022).

National education policies in the past were largely based on a centralistic approach that relied on standard curricula and uniform assessment standards without considering the diversity of social, cultural, and geographical contexts. In facing the digital era, flexibility and adaptability are the main keys for the education system to be able to create a dynamic learning environment that is responsive to the needs of students (Oh et al., 2022). A paradigm shift in education policy can no longer be avoided because the demands of the world of work, community expectations, and technological developments have created new conditions that force the government to carry out a strategic reorientation in formulating the direction and substance of education policy. On the one hand, this change creates opportunities to expand the reach of education and improve the quality of learning; on the other hand, there is a major challenge in ensuring that this transformation does not create new, deeper gaps (Anaby et al., 2022).

In the process of adapting to an inclusive digital learning system, various socio-political dynamics also play an important role in determining the direction of policy. Political interests, education bureaucracy, budget constraints, and resistance to change are part of the reality that must be faced in building a more open and participatory system. In addition, the emergence of pressure from civil society, non-governmental organizations, and the private sector has also encouraged the formation of new dialogue spaces in the formulation of more inclusive education policies (Martikalini, 2024). Amidst these pressures, the government is required to be not only reactive, but also proactive in designing policies that are based on a long-term vision and can respond to rapidly changing dynamics. The need to build a truly equitable digital learning system that can reach all levels of society is a complex challenge, and this can only be answered through a paradigm shift that is not only technical, but also structural (Castro & Moreira, 2024).

Policy transformation towards an inclusive digital learning system must also take into account the diversity of social and economic conditions in various regions. The inequality in the distribution of technology and educational resources between cities and villages is still a chronic problem that overshadows efforts to digitize education. While some regions have enjoyed adequate digital facilities, many regions still do not even have the basic infrastructure to support online learning (Matsieli & Mutula, 2024).

In a situation like this, education policy must not only adapt to technological demands but must also be able to respond to the reality of long-standing social inequality. A paradigm shift in policy cannot be merely symbolic or cosmetic; it must touch the root of the problem and present policies that are more inclusive, equitable, and pro-groups that have so far been marginalized in the national education system (Lee & Fanguy, 2022).

The success of adaptation towards an inclusive

digital learning system will depend greatly on political will, institutional capacity, and synergy between various stakeholders. Without a paradigm shift in the perspective and workings of education policy, digitalization will only be a slogan that is far from real implementation. Deep reforms are needed in education governance that allow for the birth of innovative, responsive, and contextual policies.

This process must also be accompanied by the courage to evaluate old policies that are no longer relevant and to open up experimental space for new approaches that are more adaptive to changing times. In this context, the discourse on paradigm shifts in education policy becomes increasingly important to be raised as part of a collective effort to build a national education system that is not only technologically modern, but also socially just and culturally inclusive.

2. LITERATURE REVIEW

2.1. Education Policy

The term policy has its roots in various languages, such as Latin (politeia – governance), Greek (polis – city-state), and Sanskrit (pur – city), all of which convey the idea of governance and societal regulation (Nasiri et al., 2023; Singh & Narayanan, 2023; Suman, 2023). Synthesizing these meanings, policy can be understood as a strategy or framework set by governing bodies to regulate and manage public needs across different regions under their authority (Sulistyaningsih et al., 2021).

According to Maskuri, policy refers to a chosen principle or method used in directing decision-making. Koontz and O'Donnell define policy as a general statement or understanding that guides decision-making within certain boundaries, these perspectives emphasize that policy functions as a guiding principle in the decision-making process (Pokrovskaia et al., 2021).

Further elaboration is provided by Duke and Canady (in Rahardjo), who interpret policy through eight dimensions: as an affirmation of intent, institutional determination, limitation of discretion, problem-solving strategy, legally binding behavior, behavioral norms, output of formulation systems, and influence on target audiences (Thimm-Kaiser et al., 2023). The distinction between policy and wisdom is also noted. While wisdom refers to general binding rules for all, policy may also include specific decisions that deviate from existing rules for justifiable reasons (Malandrino & Sager, 2021), policy serves as a strategic guideline to support goal attainment while accommodating societal needs (Jiang & Raza, 2023).

Education refers to the continuous process of guiding individuals toward maturity by developing their attitudes and behaviors. This lifelong process starts even before birth—through parental self-education—and continues throughout life (Chaturvedi et al., 2021; Dwivedi et al., 2023). In its formal sense, education typically occurs within institutions such as schools (Tohri et al., 2022). Combining these concepts, education policy can be defined as a strategic framework designed to direct and regulate the education system, aiming to achieve educational goals by addressing diverse societal needs through structured, inclusive, and adaptive governance (Beeharry, 2021).

2.2. National Education

Indonesia's national education system is deeply rooted in the values of Pancasila, the 1945 Constitution, and the nation's cultural identity (Zarei & Mohammadi, 2022a). More than just a means of knowledge transfer, it serves as a transformative force to cultivate citizens who are intellectually competent, morally upright, and socially conscious (Andriani et al., 2023; Sugiarto et al., 2025).Built upon noble ideals, national education reflects the collective aspiration to form a just, civilized, and unified society.

It embodies principles that guide the development of individuals who are spiritually grounded, socially empathetic, and environmentally aware (Arifin, 2021; Sukirno et al., 2023), this vision positions education as a central mechanism for shaping national character and promoting shared values.

Legal foundations reinforce this mission. The 1945 Constitution, particularly Article 31 and its Preamble, mandates the right of every citizen to receive education and obliges the state to administer a national system that ensures access and quality for all. Law No. 2 of 1989 further affirms education as a public good and a constitutional responsibility, essential to advancing social equity and national progress (McCandless et al., 2022; Spillane et al., 2022).

Facing globalization and rapid technological shifts, the system is challenged to remain responsive and forward-looking. It must empower learners not only with knowledge and skills, but also with adaptability, innovation, and a firm grounding in local values. Education, therefore, becomes a platform for addressing modern complexities without losing the ethical compass of the nation's heritage (Fahmi et al., 2023; Muhammadievich, 2021).

National education represents an integrated framework for human development merging intellectual growth, character formation, and civic responsibility. It aspires to produce individuals capable of navigating contemporary realities while preserving the moral and cultural foundation of Indonesian society (Rodney, 2020; Zarei & Mohammadi, 2022a; Zhao & Zhong, 2025).

2.3. Digital Learning

Digital learning refers to the use of information and communication technology in education, enabling learning activities through computer networks—whether via internet or intranet. It encompasses not only the digitization of instructional materials, but also the delivery of content, interaction between learners and instructors, assessment mechanisms, and real-time feedback (Egielewa et al., 2022; Haleem et al., 2022).

This learning model transforms conventional education by offering flexible, personalized, and interactive environments. Students can access a wide range of learning resources text, images, audio, videos, animations anytime and anywhere, thereby enhancing accessibility, inclusiveness, and learner autonomy (Bygstad et al., 2022; Farley & Burbules, 2022). The integration of diverse media formats also accommodates different learning styles and improves knowledge retention (El-Sabagh, 2021). The independence digital learning affords means learners are no longer fully reliant on teacher presence. With broad internet access, they can explore topics in greater depth and at their own pace, making education more contextual and self-directed (Alenezi, 2023).

Digital learning serves three core functions in daily life (Pokrovskaia et al., 2021):

a. Communication Tool: It enables fast and borderless communication through platforms such as email, chat applications, and online forums (Maimaiti et al., 2023).
b. Information Access: Learners gain direct access to diverse, real-time information across various domains—science, technology, culture, politics—without the barriers of subscription or location (Allam et al., 2022).
c. Educational Platform: Its global reach and versatility make digital learning an essential tool used by institutions, governments, and educators to expand access to knowledge and modernize teaching strategies (Zarei & Mohammadi, 2022b).

Digital learning is more than a technological tool—it is a paradigm shift in education delivery, offering scalable, inclusive, and future-oriented solutions aligned with the demands of the digital era.

3. METHOD

This study adopts a qualitative meta-analysis approach to examine the paradigm shift in national education policy in response to digital transformation. A qualitative design is deemed appropriate, as it enables an in-depth exploration of complex policy dynamics, particularly those involving socio-cultural, technological, and institutional factors.

Data were collected from a range of secondary sources, including peer-reviewed journal articles, government policy documents, official education reports, and relevant academic literature published between 2015 and 2024. These sources were identified through systematic searches using academic databases such as Scopus, Web of Science, and Google Scholar, with keywords including digital education policy, educational reform, technology integration, and inclusive learning systems.

To improve transparency and research rigor, inclusion criteria required that sources: (1) directly discuss education policy or digital learning at the national or systemic level, (2) provide empirical or conceptual insights relevant to Indonesia or comparable developing contexts, and (3) be published in reputable academic or institutional outlets.

Exclusion criteria eliminated sources that were: (1) outdated (prior to 2015), (2) opinion-based with no analytical framework, or (3) focused solely on technical aspects without policy relevance.

The data were then subjected to thematic analysis, focusing on recurring patterns, frameworks, and narratives concerning digital policy adaptation, access equity, governance models, and institutional readiness. This iterative process allowed for triangulation of findings and identification of key challenges and opportunities in national education policy reform. Through this method, the study seeks to construct a comprehensive synthesis of how policy frameworks are evolving to address technological change, while highlighting the structural and contextual constraints that shape the realization of inclusive digital education.

4. RESULT AND DISCUSSION

4.1. Dynamics of Change in Education Policy in Responding to Digital Transformation

In recent years, the dynamics of national education policy have experienced very significant transformative pressure due to the penetration of digital technology in various aspects of life. The Indonesian government has begun to show a fairly sharp shift in orientation in managing the national education system. The old orientation that emphasized system stability and the implementation of uniform policies has begun to shift towards a more flexible and open approach to change. The need to create an education system that is relevant to the times has encouraged the state to act not only as a regulator but also as a facilitator and policy innovator. In this context, digital transformation is not only seen as an educational tool but as the main catalyst for overhauling the way of working, structure, and strategy in managing education policy as a whole.

Global pressure is the main trigger for the reformulation of education policy, where developing countries, including Indonesia, can no longer ignore the fact that advances in digital technology have become a benchmark for improving the quality of education. The rapid flow of global information and technological developments has forced the government to respond with more progressive strategic steps. In the global competitive atmosphere, education is no longer sufficient if it only relies on conventional standards, but must be framed within a digital transformation framework that places innovation, collaboration, and sustainability as the main pillars. The government is required to create policies that can answer the needs of the digital workforce, anticipate changes in skills needed in the future, and bridge the gap between traditional learning systems and the dynamic and ever-growing digital ecosystem.

Along with this change in orientation, there has also been a paradigm shift from an administrative and hierarchical policy model to an adaptive and participatory policy model. Education policies that were previously formulated in a top-down manner and tended to be closed to input from below are now required to be more open, dialogical, and responsive to various aspirations from all levels of the education community. The government is beginning to realize that in the digital context, policy flexibility is very important because the dynamics of technology that continue to change do not allow for rigid and long-term policies without periodic evaluation. Therefore, policy mechanisms must be built on the principle of involving various actors, from educational institutions, teachers, students, to civil society. This is not only intended to improve the quality of policies, but also to strengthen the sense of ownership of the ongoing change process.

This paradigm shift also has implications for the pattern of relations between the central and regional governments in formulating education policies. If previously the role of the central government was very dominant in determining the direction of policy, now there is a tendency to encourage decentralization of the formulation and implementation of digital education policies. Regional governments are encouraged to be more active in taking a role in designing locally-based solutions, which are following the needs, potential, and challenges in their respective regions. This shift does not always run smoothly because there are still disparities in institutional capacity, human resources, and infrastructure between the center and the regions, this then creates the need for a more solid and effective coordination and collaboration scheme so that digital education policies can be implemented evenly and do not create new gaps in the quality of education services.

Indonesia's education policy has undergone significant adjustments, especially since the issuance of Permendikbud No. 109/2013 on distance learning and further accelerated by the Merdeka Belajar program launched in 2020. These policies marked a shift from centralized, input-based approaches to more outcome-oriented, autonomous, and digital-ready models. For example, the "School Digitization Roadmap" introduced in 2021 outlines policy direction for integrating technology in learning processes, curriculum flexibility, and digital literacy development.

Although the direction of policy change shows significant progress, the challenge of accelerating policy synchronization amidst rapid technological developments remains a major obstacle. On the one hand, technology develops in a very fast cycle and does not wait for the readiness of educational institutions or government bureaucracy. On the other hand, the policy formulation mechanism is often slow, bureaucratic, and not agile enough to keep up with the speed of digital innovation. The mismatch between the speed of technological change and the regulatory ability to respond to it creates inequality in policy implementation. This is reflected in the gap between policies produced at the national level and the reality on the ground, where infrastructure is inadequate, educators are not fully ready, and understanding of digital systems is still very diverse. Therefore, accelerating

policy synchronization requires fundamental reforms in the policy formulation system, including shortening the coordination chain, expanding participation channels, and creating data-based and real-time evaluation mechanisms.

The dynamics of this change show that national education policy can no longer be positioned as a mere bureaucratic instrument, but must be transformed into a strategic means of shaping the future of Indonesia's digital society. The ongoing paradigm shift must be interpreted as an effort to build an education ecosystem that is not only technologically ready, but also institutionally resilient and socially inclusive. Without bold and visionary policies, digital transformation in education will only stop at the discourse level without producing real change, the dynamics of this policy must continue to be monitored, criticized, and refined to be able to answer the challenges of the times while also bringing Indonesian education towards a more transformative and equitable direction.

4.2. Inequality of Access and Infrastructure Readiness in Digital Learning

Inequality in access and readiness of infrastructure for digital learning is a major obstacle in creating a fair and equitable education system in Indonesia. Although digital transformation in the education sector has been encouraged nationally, the reality on the ground shows that not all regions have the same ability to adapt. Differences in geographical conditions, levels of economic development, and distribution of technological resources create a wide gap between urban and rural areas, between central and remote areas. In several areas, especially in island and border areas, access to the internet is still very limited, and electricity is often not even available stably. This causes students and educators in these areas to experience great difficulty in accessing digital learning platforms, so that the potential for digital education that should be inclusive widens the gap.

In addition to physical inequality in terms of facilities and infrastructure, the implementation of technology-based learning policies is also faced with various technical and non-technical obstacles. Technical obstacles such as slow internet connections, inadequate devices, and digital platforms that are not compatible with local conditions often hinder the smooth running of the teaching and learning process. Non-technical barriers arise in the form of low digital literacy among teachers and students, limited training in the use of technology, and resistance to changes in learning methods that have been running conventionally. Cultural factors, local languages, and communication patterns that are still very traditional are also barriers to the acceptance of educational technology. Without comprehensive support in the form of training, guidance, and simplification of technology, digital learning policies will continue to face resistance and implementation gaps.

The imbalance in capacity between education sectors in accessing and utilizing digital platforms further complicates the problem. Educational institutions that are managed by elite private companies or located in large city centers tend to be more prepared in terms of resources, both in terms of teaching staff, equipment, and digital management. In contrast, educational institutions that are managed by poor areas, small state schools, and non-facilitative madrasas often do not have adequate budget and infrastructure support to adopt digital systems. Within one administrative area, there can be drastic differences in readiness between schools, depending on access to funds, attention from local governments, and cooperation networks with external parties. This imbalance not only impacts the quality of learning but also creates a gap in learning outcomes that is increasingly difficult to bridge in the long term.

In this context, the role of local governments is crucial in addressing the gap in digital education resources. Local governments are in a strategic position because they better understand local conditions, including community characteristics, educational needs, and specific obstacles faced by educational institutions in their areas. Not all local governments have the same fiscal, institutional, or vision capacity in driving digital transformation. In many regions, limited regional budgets for the education sector are a major obstacle in procuring digital devices, building internet networks, and training teachers. In fact, without active intervention from local governments that are contextual and targeted, the central government's efforts to expand access to digital learning will encounter serious obstacles. Therefore, strong synergy is needed between the central and regional governments to ensure that each region has a concrete and sustainable digital infrastructure development plan.

Difficulties in integrating technology into the learning environment are also an important issue that cannot be ignored. This integration process not only involves the provision of hardware and internet connections, but also the transformation of

ways of thinking, curriculum systems, and learning cultures at every level of education. In many schools, teachers are still not accustomed to actively using digital devices in the learning process, and students do not always have the experience of learning independently through online platforms. Technology integration is also often hampered by the mismatch between curriculum needs and available digital content, or by the lack of technical support in operating online learning systems. Even at the higher education level, which is considered more adaptive to technology, challenges still arise in terms of managing digital classes, measuring learning outcomes, and protecting students' data. This shows that the success of digital learning depends not only on the provision of facilities, but also on the readiness of the education system to transform as a whole.

A major challenge in digital transformation is unequal access to infrastructure, particularly between urban and rural areas. According to a 2023 report by Badan Pusat Statistik (BPS), only 53% of schools in rural regions have stable internet access, compared to 92% in urban centers. The "Program Digitalisasi Sekolah", initiated in provinces like West Java and East Nusa Tenggara, attempted to address this gap by distributing laptops, establishing Wi-Fi access points, and providing offline digital content. However, gaps in electricity reliability and device maintenance persist, particularly in outer island areas.

Given the complexity of this problem, the inequality of access and infrastructure readiness in digital learning is a reflection that educational transformation cannot run linearly or uniformly throughout Indonesia. Each region has unique challenges that require a flexible, participatory policy approach that is oriented towards fair distribution of resources. In the future, the digital education development strategy must be able to balance between technological development and human empowerment, between system innovation and strengthening local capacity. Without conscious and structured efforts to bridge this gap, digital transformation in education can create new exclusions that weaken the principle of inclusivity that is intended to be built. Thus, equalizing infrastructure, increasing digital capacity, and improving education governance must go hand in hand as a foundation for a truly inclusive and sustainable digital learning system.

4.3. Reorientation of the Role of Educators and Educational Institutions

The changing role of educators and educational institutions is the main focus in the process of transforming the education system towards an inclusive digital direction. In this case, teachers not only function as conveyors of material but must also be able to act as facilitators, mentors, and managers of learning experiences that occur in a complex digital ecosystem. This change in the learning landscape requires educators to master new skills that were previously not a major part of teaching practice, such as the use of digital platforms, the preparation of interactive content, virtual classroom management, and the ability to understand student learning data digitally. This ability cannot be obtained instantly, but requires a deep adaptation process, as well as systematic support from educational institutions and the government. The pressure to immediately transform becomes an additional burden felt by many teachers, especially those who previously had no experience in actively using technology in learning activities.

Changes in perspective on the role of teachers are also a logical consequence of the presence of technology in the learning space. Teachers are now not only the only source of knowledge, but must also adapt to the role as companions who help students navigate information from various available digital sources. On the other hand, the traditional authority attached to the position of teacher is slowly shifting because students also have broad access to independent learning materials. This requires teachers to be not only technically proficient but also able to build emotional connections, create supportive learning environments, and provide ethical guidance in the use of technology. This challenge is not simple because it involves a fairly radical paradigm shift towards the structure and culture of teaching that has been deeply rooted. Teachers who fail to adapt to this new reality risk being left behind and can indirectly hinder the digital transformation process in their institutions.

Teacher readiness remains a pivotal issue. A national survey by Pusdatin Kemendikbud (2022) found that 48% of educators feel unprepared to design and implement digital learning independently. Training programs like Guru Belajar dan Berbagi and SIMPKB have been expanded to improve digital pedagogical skills. In Yogyakarta, a pilot program combining peer-mentoring and blended learning modules successfully increased teacher confidence in integrating technology into daily instruction.

For this reason, the need for ongoing training

that is relevant to the development of educational technology is becoming increasingly urgent. The training provided should not stop at the technical aspects of using tools or applications, but must also touch on the pedagogical and psychological realms of digital learning. Teachers need to receive training that allows them to design learning strategies that are appropriate to the characteristics of digital students, compile data-based evaluations, and manage the emotional and social challenges that arise in online learning. Ongoing training should also provide space for teachers to network, exchange good practices, and receive direct assistance in implementing new methods. Unfortunately, in many places, training is still uniform, formal, and non-contextual, so it does not answer real needs in the field. In fact, without serious investment in developing teacher competencies, digital transformation will only be a technology project without substantial changes in the quality of learning.

Educational institutions, as institutions, must also make deep adaptations to the learning strategies and evaluation systems they implement. It is not only a matter of replacing face-to-face with screen-to-screen, but also redesigning the entire learning experience to remain meaningful in a digital environment. Schools and campuses must rethink learning schedules, learning durations, assessment methods, and social interactions that allow students to feel connected and involved. Educational institutions are required to be flexible, able to balance the use of technology and the needs of students to feel safe and supported. In addition, they must also start building data infrastructure to monitor student learning progress, as well as adapting academic administration systems to increasingly complex digital ecosystems. This adaptation requires progressive leadership that is open to experimentation, as well as the readiness of all elements of the school to get out of the comfort zone of the old system.

However, amid this process of change, tensions between the old education system and the need for innovation in teaching practices continue to occur. Many teachers and educational institutions are still trapped in rigid administrative logic, while technology demands a more dynamic, open, and collaboration-based approach. Curricula that do not fully support flexibility, evaluation rules that are still centered on standardized tests, and high administrative burdens are structural barriers to adopting innovation. On the other hand, young teachers who are accustomed to the digital world often face challenges in communicating new approaches to colleagues or superiors who still think in traditional terms. This tension not only impacts the speed of innovation but also affects the internal cohesion of educational institutions in carrying out a comprehensive transformation. If not managed wisely, these differences in approach will create fragmentation within educational institutions, which will ultimately hinder the reorientation process that is needed.

Thus, the reorientation of the role of educators and educational institutions is a very complex aspect in the framework of the national digital transformation of education. This is not just a matter of technology or skills, but a process of changing culture, mindset, and working methods that touches all levels of the education system. It takes long-term commitment, investment in human resources, and policies that support experimentation and innovation for teachers and educational institutions to truly be able to respond to the challenges of the times. Without this fundamental shift in roles and strategies, digital learning will lose its meaning and fail to deliver the transformational impact it envisions.

4.4. Social Inclusivity in Digital Policy Formulation and Implementation

Social inclusivity in the design and implementation of digital policies is a key issue in the process of transforming national education towards a more just and equal system. During efforts to accelerate digitalization, there is a risk that the resulting policies will further alienate vulnerable and marginalized groups from access to quality education. These groups, such as children from low-income families, indigenous peoples, people with disabilities, and those living in remote areas, are often marginalized due to limited infrastructure, technological capabilities, or even because they are not involved in the policy decision-making process. Digital policies that are formulated in a top-down manner and do not touch on social realities on the ground have the potential to create a new, wider gap in inequality, which will not only impact access to education but also social participation in the digital ecosystem as a whole.

This is where the importance of active community involvement in the process of formulating technology-based policies lies. The community is not just a recipient of policy, but also the owner of needs that must be the main reference in designing digital interventions. The process of public consultation, dialogue between stakeholders,

and feedback mechanisms from users of digital education services must be strengthened so that the policies that are created are truly responsive to the diversity of social and cultural conditions in society. Unfortunately, such participatory processes have not yet become a habit in the governance of education policy in Indonesia, especially in matters related to digital transformation. Many policies are still formulated technocratically, without understanding the structural and psychosocial barriers faced by vulnerable groups in accessing and using technology optimally.

Digital education must also address social equity, especially for marginalized groups. The Program Indonesia Pintar (PIP) has evolved to include support for online learning needs, such as data packages and mobile devices for low-income students. A notable case is in Jakarta, where the local government collaborated with private sectors to provide free learning tablets to students in 267 public schools. Moreover, inclusive content development such as digital materials in local languages or accessible formats remains limited and requires further policy attention. The involvement of families and local communities is key to ensuring that digital learning is not interrupted by structural barriers experienced by learners. In many contexts, especially in rural areas or areas with low economic conditions, family support is the only resource that allows students to continue learning amidst limited access to technology. Not all families have the same capacity to accompany their children in the digital learning process. The digital literacy gap at the household level also exacerbates this situation, thus requiring a structured community-based mentoring strategy. The role of local figures, community institutions, and digital volunteers can be important elements in creating an ecosystem that supports inclusive learning. Without the active involvement of students' closest environment, digital transformation in education will continue to be elitist and difficult to reach the levels of society that need it most. The risk of exclusion in digital education is not only caused by geographical or economic factors, but also by the diversity of social and cultural conditions that are not properly accommodated in policy design. The lack of sensitivity to local languages, cultural values, and the special needs of learners is a significant obstacle to creating a truly inclusive digital education system. When digital platforms are designed in a uniform and inflexible manner, learners with different social backgrounds or learning needs will feel alienated and marginalized. This not only impacts their participation in the learning process but also reinforces the stigma and inequality that have existed in the conventional education system. Therefore, inclusivity in digital transformation is not an optional extra, but an absolute necessity to ensure that no group is left behind in this process of change. In responding to these challenges, policy strategies must be directed at ensuring the fair distribution of digital education services as a whole. This means that it is not enough to just build physical infrastructure such as internet networks and hardware, but also to create a support ecosystem that allows marginalized groups to participate actively and meaningfully. Affirmative policies that prioritize schools in disadvantaged areas, special training programs for teachers in vulnerable communities, incentives for local initiatives that support inclusive education, and the preparation of contextual and multilingual learning content are some of the concrete steps that can be taken. In addition, there needs to be a policy evaluation system that is sensitive to inclusivity issues, so that the digital transformation process is not only measured by the speed of technology adoption, but also by the extent to which the technology can be utilized by all levels of society without exception. Thus, social inclusivity is not only a complement to the digital transformation agenda but also the main foundation that determines the long-term success of a just digital learning system. When digital policies can prioritize the needs of vulnerable groups, digital education will not only become a tool for modernization but also an instrument for comprehensive social change. For this reason, the state and all education stakeholders must formulate strategic steps that are not only oriented towards technological efficiency, but also towards strengthening the dimensions of humanity and social justice in every policy taken.

4.5. The Urgency of Reformulating Educational Governance in the Digital Ecosystem

The need to reformulate education governance in the context of the digital ecosystem is increasingly urgent as the complexity of the national education system increases, which can no longer be addressed with traditional institutional approaches. Digital transformation in education requires institutional restructuring to be more flexible, adaptive, and able to keep up with the rapid dynamics of change. The institutional structure that was previously hierarchical and bureaucratic is now an obstacle to accelerating the integration of technology into the education system. Many institutions are still

trapped in the old work model that emphasizes administrative procedures rather than substantive innovation. As a result, the decision-making process is slow, digitalization programs are not well coordinated, and various initiatives are interrupted due to the lack of synergy between units within the education system itself. In this context, strengthening inter-institutional coordination is necessary, especially in the stages of formulating and implementing digital policies. The Ministry of Education, information technology institutions, local governments, and private institutions need to build effective communication and cooperation channels so that there is no overlap of policies and programs. The lack of coordination so far has caused many digitalization programs to be unsustainable, because each institution runs its own with different priorities. An integrated approach is essential so that every policy launched has continuity and can be implemented efficiently. Collaborative strategies involving all parties, including the private sector and civil society, will also strengthen the legitimacy of policies and increase their reach across all levels of society. The digital transition has encouraged institutional realignment within the Ministry of Education, including the establishment of Balai Teknologi Informasi dan Komunikasi Pendidikan (BTIKP) at the provincial level to support localized policy implementation. Inter-sectoral coordination, however, remains fragmented. For instance, while Kominfo provides infrastructure, and Kemendikbud develops content, integration across ministries is often delayed due to overlapping mandates and budget silos. Pilot reforms in Central Java, where local education offices partnered directly with tech startups for content co-development, present promising models for future governance innovation. Governance reformulation will not succeed without a comprehensive digital data-based monitoring and evaluation system. The use of technology should enable the government and other stakeholders to access real-time data on policy implementation, educational institution performance, and challenges that arise in various regions. Unfortunately, the current monitoring system is still not optimally integrated, so that decision-making is often based on inaccurate or outdated data. Governance reform must place data as the main foundation in the evaluation process and the formulation of new policies. With a strong and open database, policies can be adjusted more precisely and adaptively to needs in the field.

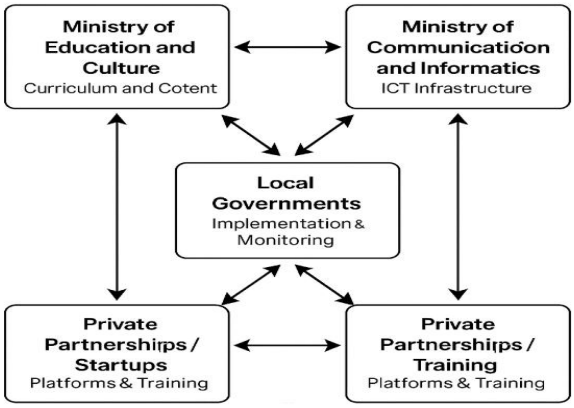

Figure 1: Multi-Stakeholder Governance Model in Indonesia's Digital Education Reform.

This flowchart illustrates the interconnected roles of four key stakeholders involved in Indonesia's digital education reform. The Ministry of Education and Culture is responsible for curriculum development and content guidelines, while the Ministry of Communication and Informatics manages the provision of ICT infrastructure. Local governments play a central role in implementing and monitoring programs on the ground, adapting policies to regional contexts. Meanwhile, private partners and startups contribute through the development of digital platforms and capacity-building for educators.

The bidirectional arrows indicate reciprocal coordination, emphasizing that each actor both influences and depends on the others. For example, the Ministry of Education relies on Kominfo for infrastructure deployment to support digital curriculum delivery, while Kominfo needs educational direction to ensure technology is pedagogically aligned. Local governments depend on national ministries for guidelines and infrastructure, yet provide crucial feedback and data for policy refinement. Private actors work closely with all levels to design usable solutions, adapting to both policy frameworks and on-the-ground realities.

The role of educational leaders in driving governance transformation is also very crucial. Amid the transition to a digital system, visionary, inclusive leadership is needed that can bridge the various interests that exist. Educational leaders at various levels must have a strong understanding of the urgency of change and be able to move the institutions they lead to transform systematically. Leadership that is only oriented towards preserving the status quo will hinder the pace of change. Therefore, leadership capacity building must be an

integral part of the governance reform strategy. In addition, educational leaders must also encourage an organizational culture that is open to innovation, self-evaluation, and continuous learning so that the entire educational ecosystem can develop dynamically.

The reformulation of education governance is also not free from serious challenges in the form of potential conflicts of interest and resistance to change, especially within the education bureaucracy itself. Many actors in the education system feel comfortable with the old governance because it is well-established in the existing power structure. When a new system is introduced, including the use of digital technology to tighten accountability and efficiency, resistance can emerge in various forms, from delays in implementation, budget cuts, to open rejection of new policies. Conflicts of interest also occur when governance reform touches on sensitive aspects such as resource redistribution, changes in organizational structure, or the elimination of institutions that are considered irrelevant. Therefore, reform strategies must be carefully formulated, taking into account power dynamics and building strong alliances between reform actors to ensure that change is not just a slogan but can be implemented in a real and sustainable manner.

Table 1: Summary of Key Themes and Policy Examples in Digital Education Reform.

Policy Transformation	Curriculum flexibility	*Merdeka Belajar*	Kemendikbud, 2021
Infrastructure	Uneven connectivity	NTT digitalization pilot	BPS, 2023
Educator Readiness	Low digital teaching capacity	*Guru Berbagi* platform	Pusdatin, 2022
Inclusivity	Device and data access for the poor	Tablet distribution in DKI	Pemprov DKI, 2022
Governance	Fragmented inter-agency roles	Startup partnership in Jateng	Local Edu Office

Source: Compiled from Kemendikbud (2021), BPS (2023), Pusdatin (2022), Pemprov DKI (2022), Local Edu Office.

The analysis of policy documents and field-based initiatives reveals five major themes shaping the landscape of digital education reform in Indonesia. Each theme is associated with a distinct set of issues and is illustrated by specific policy actions implemented at various levels. The first theme, policy transformation, centers on the need for curriculum flexibility to accommodate local learning needs and rapidly changing competencies. The Merdeka Belajar policy, introduced by the Ministry of Education and Culture in 2021, exemplifies this transformation by granting schools greater autonomy to design and implement contextually relevant learning content. The second theme, infrastructure, highlights persistent disparities in digital connectivity, particularly in underdeveloped and remote regions. The digitalization pilot project in East Nusa Tenggara (NTT), as reported by BPS (2023), illustrates initial government efforts to expand digital infrastructure in these areas. However, the coverage and impact of such programs remain limited and exploratory. The third theme relates to educator readiness, with digital teaching competence identified as a major challenge. The Ministry's Guru Berbagi platform launched by the Center for Data and Technology (Pusdatin) in 2022—offers teachers access to teaching resources, online training, and collaborative tools. While promising, the adoption and effective utilization of this platform vary significantly across regions. The fourth theme concerns inclusivity, particularly in ensuring device and internet access for students from low-income families. An illustrative case is the tablet distribution initiative by the Jakarta Provincial Government in 2022, aimed at mitigating learning loss among disadvantaged students during and after the pandemic. The theme of governance addresses the fragmented roles and coordination among education-related agencies. A noteworthy example is the local government's partnership with education startups in Central Java, which represents a collaborative governance model seeking to integrate public and private digital learning resources. Such initiatives remain uneven across districts and dependent on local institutional capacity, these themes reflect both the progress and the challenges inherent in Indonesia's efforts to reform digital education, while national policies have laid important groundwork, effective implementation depends heavily on regional disparities in resources, administrative capacity, and stakeholder engagement. All of these dynamics show that the reformation of education governance in the digital era is not just a technical administrative agenda, but a strategic agenda that concerns the sustainability of the national education system as a whole. If not carried out seriously and comprehensively, digital transformation will only be short-term projects that fail to change the fundamental structure of the existing education system. Reformulation must move from upstream to downstream: starting from institutional reconstruction, continuing with strengthening cross-

sector coordination, developing a sophisticated monitoring system, involving transformative leadership, and handling conflicts of interest wisely, only with a systemic approach like this can Indonesia build responsive, inclusive, and sustainable digital education governance amidst the challenges of the 21st century.

5. CONCLUSION

The reformulation of education governance within the digital ecosystem is a critical and unavoidable step to ensure the sustainability and relevance of Indonesia's national education system, this transformation includes restructuring institutional frameworks to be more adaptive, strengthening inter-agency coordination, and implementing transparent, data-driven policies. As the pace of technological change accelerates, education policies must be inclusive, forward-looking, and aligned with the evolving demands of the digital age. Education leaders play a vital role in cultivating a culture of innovation and promoting continuous professional development for educators. This process faces persistent challenges such as infrastructure disparities, bureaucratic resistance, and the risk of deepening educational inequities. Local governments, in particular, are central in addressing access gaps and ensuring that digital learning reaches vulnerable and marginalized communities. To move forward, a coherent policy framework is needed one that emphasizes equity, sustainability, and collaborative governance. Key policy recommendations include: establishing permanent inter-ministerial coordination mechanisms for digital education; prioritizing infrastructure development in underserved regions; mandating national digital literacy standards for educators; and encouraging innovation through regulated public-private partnerships. A responsive, technology-driven education governance model can unlock new opportunities for improving the quality and inclusivity of national education, provided it is implemented systematically, with coordination across stakeholders and meaningful participation from all sectors of society.

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