

### RETHINKING GLOBAL EDUCATION IN THE ERA OF DIGITAL TRANSFORMATION

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**Abstract.** This study critically examines how global education is being reconceptualized in the era of digital transformation through a Systematic Literature Review (SLR). Education has increasingly been shaped by rapid technological advancements, including artificial intelligence, digital platforms, and data-driven governance, which have significantly influenced educational access, policy, and practice worldwide. While digital transformation is often promoted as a solution to long-standing educational challenges, this study argues that dominant technocentric and instrumental approaches risk narrowing the social and ethical purposes of global education. Using peer-reviewed journal articles indexed in Scopus and Web of Science, the review synthesizes key scholarly debates and identifies major thematic trends in contemporary global education discourse. The findings reveal six dominant themes: technocentric global education, digital divide and inequality, global governance and policy standardization, pedagogical transformation and teacher agency, cultural diversity and epistemic justice, and education as a public good and ethical concern. The analysis demonstrates that digital transformation frequently reproduces existing inequalities between and within countries, particularly between the Global North and Global South, due to unequal access, limited digital literacy, and institutional capacity gaps. Furthermore, global policy frameworks and standardized benchmarks often marginalize local contexts, teacher professionalism, and culturally grounded knowledge systems. This study highlights the need to rethink global education beyond technology-driven paradigms by repositioning it as a social, cultural, and ethical project. Digital transformation should be understood as a means to advance equity, inclusivity, and human development rather than an end in itself. The study contributes to global education scholarship by clarifying dominant discourses, exposing conceptual gaps, and offering a foundation for more human-centered and justice-oriented approaches to digital education.

**Keywords:** Global Education, Digital Transformation; Educational Inequality

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## 1. INTRODUCTION

Education has long been recognized as a fundamental driver of human development, social mobility, and economic growth. In the context of globalization, education systems are no longer confined within national boundaries but are increasingly shaped by transnational flows of knowledge, technology, policy, and cultural values. Global education has emerged as a conceptual and practical framework that seeks to address shared educational challenges while promoting equity, quality, and sustainability across diverse socio-economic and cultural contexts [1]. However, the rapid acceleration of digital transformation has profoundly reshaped the foundations, practices, and purposes of global education, necessitating a critical rethinking of its underlying paradigms.

Digital transformation, characterized by the integration of digital technologies such as artificial intelligence, big data, learning analytics, cloud computing, and online platforms, has redefined how education is delivered, accessed, and evaluated worldwide [2]. Digital technologies have expanded educational opportunities by enabling distance learning, open educational resources, and cross-border collaboration, thereby reducing traditional barriers related to geography and time. Massive Open Online Courses (MOOCs), virtual classrooms, and learning management systems exemplify how digitalization has reshaped teaching and learning processes on a global scale [3]. Yet, while these developments offer unprecedented potential, they also raise critical questions about equity, quality, and the social purpose of education in an increasingly digital world.

One of the most significant global education challenges exacerbated by digital transformation is inequality. Although digital technologies promise democratized access to education, the digital divide remains a persistent and multidimensional problem. Unequal access to reliable internet, digital devices, and technological infrastructure continues to marginalize learners in low-income regions, rural areas, and developing countries. Moreover, digital inequality is not limited to access alone but extends to digital skills, pedagogical capacity, and institutional readiness. As a result, digital transformation risks reinforcing existing global education disparities rather than alleviating them, unless accompanied by inclusive policies and systemic reforms.

International organizations such as UNESCO have repeatedly emphasized that digital transformation must be aligned with the principles of education as a public good and a fundamental human right [4]. In this regard, global education cannot be reduced to technological adoption alone but must be understood as a socio-cultural and ethical endeavor. The increasing reliance on digital platforms raises concerns about data privacy, algorithmic bias, commercialization of education, and the erosion of local knowledge systems. Consequently, rethinking global education requires a critical examination of how digital technologies shape power relations, governance structures, and knowledge production within education systems.

Furthermore, digital transformation has significantly influenced global education policy discourse. International assessments, benchmarking systems, and evidence-based policymaking increasingly rely on digital data and analytics. Organizations such as the OECD have promoted comparative education metrics to evaluate system performance and inform reforms [5]. While such approaches provide valuable insights, they also risk standardizing educational success based on narrow indicators that may overlook contextual diversity, cultural relevance, and non-cognitive learning outcomes. This tension highlights the need to rethink global education beyond efficiency-driven and technocratic models toward more holistic and context-sensitive frameworks.

The COVID-19 pandemic further accelerated digital transformation in education, exposing both the potential and limitations of digital learning at a global scale [6,7]. School closures affected billions of learners worldwide, forcing education systems to adopt emergency remote teaching solutions. While some countries successfully leveraged digital infrastructure to maintain learning continuity, others struggled due to limited resources and preparedness. The pandemic underscored systemic vulnerabilities within global education systems and revealed the unequal capacity of countries to respond to crises through digital means [8]. As education systems transition into a post-pandemic era, there is growing recognition that digital transformation should not merely replicate traditional pedagogies in virtual formats but should fundamentally reimagine learning models, assessment practices, and teacher roles.

Another critical dimension of rethinking global education lies in the changing nature of skills and competencies required in the digital age. The Fourth Industrial Revolution has reshaped labor markets, demanding higher-order skills such as critical thinking, creativity, collaboration, digital literacy, and adaptability [9]. Global education frameworks increasingly emphasize 21st-century skills to prepare learners for uncertain and rapidly evolving futures. However, the integration of these competencies into curricula

remains uneven across countries. In many contexts, education systems continue to prioritize standardized testing and content memorization, which are misaligned with the demands of digital economies and societies. This misalignment raises fundamental questions about the purpose of education and the extent to which global education agendas respond to real societal needs.

Teacher professionalism and capacity building also represent a central challenge in the era of digital transformation [10]. Teachers play a pivotal role in mediating the use of technology for meaningful learning, yet many lack adequate training and support to integrate digital tools pedagogically. Global education initiatives often emphasize technological infrastructure without sufficient attention to teacher agency, pedagogical innovation, and professional development. Rethinking global education thus requires a shift from technology-centered approaches to human-centered digital transformation that empowers educators as designers of learning rather than passive users of digital systems.

In addition, the digital transformation of education has implications for cultural identity and local knowledge. Global digital platforms tend to privilege dominant languages, cultures, and epistemologies, potentially marginalizing indigenous knowledge systems and local educational practices. This phenomenon raises concerns about cultural homogenization and epistemic injustice within global education. A reimagined global education framework must therefore balance global connectivity with respect for cultural diversity, ensuring that digital education supports pluralism rather than uniformity.

Sustainability represents another critical lens through which global education must be reconsidered. Education plays a central role in achieving the Sustainable Development Goals, particularly Goal 4, which aims to ensure inclusive and equitable quality education for all [11,12]. Digital transformation offers tools to support sustainable education systems through scalable learning solutions, data-informed planning, and innovative pedagogies. However, sustainability also requires addressing environmental impacts of digital infrastructure, ethical use of technology, and long-term system resilience. Without a comprehensive and value-driven approach, digital transformation may undermine rather than advance sustainable development objectives. Despite extensive policy discussions and technological investments, there remains a conceptual gap in understanding how global education should be redefined in response to digital transformation. Much of the existing literature focuses on technological innovation or policy implementation in isolation, rather than examining the broader epistemological, social, and ethical implications. There is a growing need for scholarly inquiry that critically interrogates dominant narratives of digitalization and explores alternative visions of global education that prioritize equity, inclusivity, and human development.

Therefore, this study seeks to rethink global education in the era of digital transformation by examining the intersections between technology, policy, equity, and educational purpose. By situating digital transformation within broader global education debates, this research aims to contribute to a more nuanced understanding of how education systems can harness digital innovation while addressing persistent inequalities and safeguarding education's social mission. Such a rethinking is essential not only for policymakers and educators but also for researchers seeking to advance theoretical and empirical scholarship on global education in an increasingly digital world.

## **2. RESEARCH METHODS**

This study employs a Systematic Literature Review (SLR) as the primary research design to critically examine how global education is being reconceptualized in the era of digital transformation [13,14]. The SLR approach was selected because it enables a rigorous, transparent, and replicable synthesis of existing scholarly evidence, which is essential for addressing conceptual, policy-oriented, and theoretical questions in global education research. Given the fragmented and interdisciplinary nature of studies on digital transformation and global education, a systematic review provides a comprehensive framework for identifying dominant discourses, methodological trends, and research gaps. The study follows established SLR guidelines to ensure methodological rigor, including clearly defined research questions, systematic search strategies, explicit inclusion and exclusion criteria, and structured data analysis procedures. The literature search was conducted using internationally recognized academic databases, including Scopus and Web of Science, due to their extensive coverage of high-impact journals in education, social sciences, and technology studies. Additional sources were identified through reference chaining to ensure comprehensive coverage of relevant studies.

The study selection followed a multi-stage screening process. First, titles and abstracts were screened to remove irrelevant or duplicate records. Second, full-text screening was conducted to assess alignment with the research objectives and inclusion criteria. Disagreements during the screening process were resolved through iterative review and consensus-building to ensure objectivity. A flow diagram was used to document the selection process, enhancing transparency and replicability. The synthesis was guided by a critical global

education perspective, integrating policy-oriented and socio-cultural lenses. Particular attention was given to how international agendas promoted by organizations such as UNESCO and OECD influence the framing of digital transformation in education. This approach enabled the study to move beyond descriptive analysis toward critical interpretation and conceptual refinement. By applying a systematic literature review, this study provides a comprehensive and critical synthesis of global education scholarship in the context of digital transformation. The method enables the identification of conceptual gaps and policy tensions that are not readily visible in individual studies, thereby contributing to the advancement of global education theory and informing future empirical and policy-oriented research.

### 3. RESULTS AND DISCUSSION

#### Overview of the Selected Studies

The systematic literature review resulted in a corpus of peer-reviewed journal articles that explicitly address global education within the context of digital transformation. The selected studies span diverse disciplinary backgrounds, including comparative education, educational policy studies, sociology of education, and educational technology. In terms of publication trends, the literature demonstrates a significant increase after 2015, with a sharp rise during and after the COVID-19 pandemic, reflecting heightened scholarly attention to digital education at a global scale. Geographically, the reviewed studies predominantly originate from Europe, North America, and parts of East Asia, while contributions from low- and middle-income countries remain limited. This imbalance indicates that dominant narratives of digital transformation in global education are largely shaped by perspectives from technologically advanced regions. Methodologically, qualitative and conceptual studies dominate the field, followed by policy analyses and mixed-method approaches. Empirical large-scale comparative studies remain relatively scarce, highlighting a gap between policy discourse and grounded empirical evidence.

#### Thematic Synthesis of the SLR Findings

Based on the processes of coding, categorization, and thematic synthesis, the reviewed literature yielded six major themes representing how global education is being reconfigured in the era of digital transformation.

**Table 1. Thematic Synthesis of Global Education Research in the Era of Digital Transformation**

No.	Main Theme	Analytical Focus	Representation in the Literature
1	Technocentric Global Education [15,16]	Digitalization as the modernization of education systems	Efficiency, scalability, artificial intelligence, learning analytics
2	Digital Divide and Inequality [17,18]	Inequalities in access, digital literacy, and institutional capacity	Infrastructure, rural–urban gap, Global North–South divide
3	Global Governance and Policy Standardization [19,20]	Standardization of policies and global assessment mechanisms	Benchmarking, data-driven policy, accountability
4	Pedagogical Transformation and Teacher Agency [21]	Changing roles of teachers and digital pedagogy	Teacher professionalism, instructional design
5	Cultural Diversity and Epistemic Justice [22,23]	Dominance of global epistemologies and cultural homogenization	Local knowledge, language dominance
6	Education as a Public Good and Ethical Concerns [24]	Ethical dimensions, data privacy, and commercialization	Human-centered digital education

This table illustrates that research on global education in the context of digital transformation is not monolithic. Instead, it is characterized by a spectrum of discourses that often reflect ideologically and normatively divergent perspectives on the purposes, processes, and outcomes of digital change in education.

#### Dominant Conceptualizations of Global Education in the Digital Era

The analysis reveals three dominant conceptualizations of global education in the era of digital transformation.

First, global education is framed as a technologically driven modernization process, emphasizing efficiency, scalability, and innovation. Studies within this strand highlight the potential of digital platforms,

artificial intelligence, and data analytics to improve educational delivery and system performance. However, this perspective often adopts a technocentric orientation, positioning technology as the primary driver of educational change while underplaying social and cultural dimensions.

Second, global education is conceptualized as a policy harmonization and standardization project, influenced by international benchmarks, global indicators, and comparative assessments. Scholars note the growing role of transnational policy actors in shaping national education reforms, particularly through digital governance tools. While such frameworks facilitate cross-national comparison and accountability, they also risk narrowing the definition of educational success and marginalizing local priorities.

Third, a critical strand conceptualizes global education as a social and ethical project, emphasizing equity, inclusion, cultural diversity, and education as a public good. This body of literature challenges dominant modernization narratives and calls for a more human-centered and justice-oriented approach to digital transformation. Although less dominant, this perspective provides a crucial counterbalance to technocratic discourses and forms the theoretical foundation for rethinking global education.

### **Digital Transformation and Educational Inequality**

A central theme emerging from the reviewed studies is the paradoxical relationship between digital transformation and educational inequality. While digital technologies are widely promoted as tools for democratizing access to education, the evidence suggests that digitalization often reproduces or even exacerbates existing inequalities. The literature identifies multiple layers of the digital divide, including disparities in infrastructure, access to devices, digital literacy, and institutional capacity. Learners in rural areas, marginalized communities, and developing countries face systemic barriers that limit their ability to benefit from digital education initiatives. Moreover, inequality is not only material but also pedagogical, as many education systems lack the capacity to design inclusive and context-sensitive digital learning environments.

Several studies emphasize that policy responses frequently focus on expanding access to technology without addressing underlying structural inequalities. This finding aligns with concerns raised by UNESCO, which stresses that digital transformation must be guided by equity-oriented principles rather than market-driven logic. The persistence of inequality across contexts underscores the need to rethink global education beyond technological provision toward systemic and social reform.

### **Governance, Policy, and the Role of Global Actors**

The findings highlight the growing influence of global governance mechanisms in shaping digital education agendas. International organizations, regional bodies, and private technology corporations play an increasingly significant role in defining policy priorities, standards, and evaluation frameworks. Studies document how digital tools facilitate new forms of governance, such as data-driven decision-making and real-time monitoring of educational performance. Organizations such as the OECD are frequently cited for their role in promoting evidence-based policy and global benchmarks. While these approaches enhance comparability and policy coordination, they also raise concerns regarding policy convergence and the erosion of national and local autonomy.

Critically, several scholars argue that global digital education policies tend to privilege efficiency and competitiveness over contextual relevance and democratic participation. The increasing involvement of private actors in digital education governance further complicates accountability and raises ethical questions related to data ownership, commercialization, and public interest. These findings suggest that rethinking global education requires a critical examination of power relations and governance structures embedded in digital transformation.

### **Pedagogical Transformation and the Changing Role of Teachers**

Another key finding concerns the impact of digital transformation on pedagogy and teacher professionalism. The literature consistently recognizes teachers as central agents in mediating digital innovation, yet many studies report a mismatch between policy expectations and classroom realities. Digital transformation often emphasizes the adoption of new tools without sufficient investment in pedagogical redesign or teacher capacity building. As a result, technology is frequently used to replicate traditional instructional models rather than to foster transformative learning practices. This pattern reflects a broader systemic issue in global education, where reform initiatives prioritize visible technological change over deeper pedagogical and cultural shifts. Studies that adopt a critical perspective emphasize the need to reposition teachers as designers of learning and co-creators of digital pedagogy. This human-centered approach challenges instrumental views of technology and reinforces the argument that meaningful digital

transformation depends on professional autonomy, reflective practice, and sustained professional development.

### **Cultural Diversity, Knowledge Production, and Epistemic Justice**

The review also reveals significant concerns regarding cultural representation and knowledge production in digital global education. Many digital platforms and educational resources are dominated by content from the Global North, often privileging dominant languages and epistemologies. This imbalance raises the risk of cultural homogenization and epistemic injustice, where local knowledge systems and indigenous perspectives are marginalized. Scholars argue that global education in the digital era must actively support pluralism and cultural diversity rather than promoting uniform models of learning. The findings suggest that rethinking global education involves not only technological and policy reform but also epistemological reflection. Digital transformation should enable dialogue between global and local knowledge systems, fostering culturally responsive and contextually grounded education.

### **Toward a Reimagined Framework of Global Education**

Synthesizing the reviewed literature, this study identifies a critical need to move beyond fragmented and technocentric approaches toward an integrated framework of global education in the digital era. Such a framework should balance innovation with equity, efficiency with ethics, and global connectivity with local relevance. The results indicate that current global education discourse often treats digital transformation as an end in itself rather than as a means to advance broader educational and social goals. Rethinking global education therefore requires a paradigm shift that re-centers education as a public good, emphasizes human development, and addresses structural inequalities.

### **Discussion**

Overall, the findings of this systematic literature review indicate that the core challenge of global education in the era of digital transformation does not lie in the absence of technology, but rather in the conceptual frameworks through which digital change is understood and operationalized. The dominance of technocratic and instrumental paradigms has significantly narrowed the meaning of global education, reducing it to issues of efficiency, competitiveness, scalability, and performance measurement [25]. Within such frameworks, digital transformation is often framed as a technical solution to educational problems, rather than as a complex social process embedded in cultural, political, and ethical contexts.

This technocratic orientation has led to an overemphasis on technological adoption such as platforms, artificial intelligence, and data analytics while underestimating the deeper structural and normative dimensions of education. As revealed by the reviewed literature, digital technologies are frequently treated as neutral tools, detached from questions of power, inequality, and values. Consequently, global education reforms risk prioritizing measurable outputs over meaningful learning, standardization over contextual relevance, and market-oriented efficiency over social justice. This finding resonates with broader critiques in global education scholarship that caution against equating innovation with progress when underlying inequities remain unaddressed.

The discussion therefore underscores the urgency of reframing global education as a social and ethical project, rather than a purely technological or managerial one. Digital transformation must be repositioned within the normative understanding of education as a public good, emphasizing its collective benefits for social cohesion, democratic participation, and human development [26,27]. Such a reframing aligns with international commitments articulated in the Sustainable Development Goals, particularly Goal 4, which calls for inclusive, equitable, and quality education for all. From this perspective, digital innovation should serve as a means to advance educational justice and sustainability, not as an end in itself.

Importantly, the findings suggest that aligning digital transformation with education as a public good requires a deliberate shift away from market-driven and competition-oriented logics. Several studies in the review highlight how global education policies increasingly mirror private-sector values, emphasizing accountability metrics, performance rankings, and return on investment. While such approaches may enhance system efficiency, they often overlook marginalized learners and undervalue non-economic educational outcomes such as critical citizenship, cultural identity, and social responsibility. Rethinking global education thus entails reclaiming its normative foundations and reasserting the role of education in fostering inclusive and pluralistic societies.

From a theoretical standpoint, the discussion reinforces the need for an interdisciplinary approach to global education research [28]. The complexity of digital transformation cannot be adequately captured through single-discipline lenses or technology-centered theories alone. Instead, the synthesis of policy

studies, sociology of education, cultural studies, and ethics of technology is essential to understand how digitalization reshapes educational systems and experiences across diverse contexts. Such an approach enables scholars to interrogate not only how technologies are used, but also whose interests they serve, whose knowledge is privileged, and whose voices are marginalized in global education discourse.

Furthermore, the findings illuminate the importance of contextual sensitivity and epistemic justice in reimagining global education. Digital platforms and global policy frameworks often privilege dominant languages, knowledge systems, and pedagogical models originating from the Global North [29]. Without critical reflection, digital transformation risks reinforcing epistemic hierarchies and cultural homogenization. A rethought global education paradigm must therefore promote epistemic pluralism by recognizing local knowledge, indigenous perspectives, and culturally responsive pedagogies as integral components of global learning ecosystems.

From a policy perspective, the expanded discussion highlights that effective digital education reform requires systemic and participatory approaches. The literature consistently shows that technology-focused reforms fail when they are not accompanied by redistributive policies, institutional capacity building, and inclusive governance structures. Redistributing resources to address infrastructural and digital literacy gaps is essential to prevent the deepening of global and intra-national inequalities. Equally important is the strengthening of teacher capacity, as educators play a critical role in translating digital tools into meaningful pedagogical practices. Policies that position teachers merely as implementers of externally designed technologies undermine their professional agency and limit pedagogical innovation.

In addition, the review emphasizes the need for meaningful participation of local actors including teachers, communities, and learners in the design and implementation of digital education policies. Top-down global reforms, often guided by standardized benchmarks and external expertise, risk disconnecting policy from lived educational realities. Participatory approaches, by contrast, can ensure that digital transformation responds to local needs, values, and aspirations while still engaging with global agendas. Taken together, this discussion suggests that rethinking global education beyond technology requires a paradigm shift from technocratic optimization to human-centered transformation. Digital technologies should be embedded within broader educational visions that prioritize equity, cultural diversity, democratic values, and long-term sustainability [30]. Such a shift challenges policymakers, practitioners, and researchers to move beyond narrow success indicators and to critically reflect on the social purposes of education in an increasingly digital and interconnected world.

In conclusion, the findings of this study reaffirm that the future of global education depends not on how rapidly technologies are adopted, but on how thoughtfully they are integrated into educational systems that are just, inclusive, and responsive to human needs. Rethinking global education in the era of digital transformation is therefore not merely a technical endeavor, but a fundamentally normative and political project that demands sustained critical engagement.

#### **4. CONCLUSIONS**

This systematic literature review provides a comprehensive synthesis of how global education is being rethought in the era of digital transformation. The findings demonstrate that digital transformation has become a dominant narrative in global education discourse; however, its implementation and interpretation are largely shaped by technocratic and instrumental frameworks. Rather than addressing foundational educational challenges, many digital education initiatives prioritize efficiency, scalability, and performance measurement, often at the expense of equity, cultural relevance, and pedagogical depth. The review identifies six major thematic strands: technocentric approaches, digital inequality, global governance and policy standardization, pedagogical transformation and teacher agency, cultural diversity and epistemic justice, and education as a public good. Together, these themes reveal that global education in the digital era is characterized by competing and sometimes conflicting discourses, reflecting divergent ideological and normative assumptions about the purposes of education. This fragmentation indicates that digital transformation alone is insufficient to resolve persistent global education challenges without a broader conceptual and ethical reorientation. Importantly, the findings highlight those digital technologies frequently reproduce existing inequalities, particularly between the Global North and Global South, as well as within national contexts. Unequal access to infrastructure, digital literacy, and institutional capacity continues to limit the transformative potential of digital education. Moreover, global governance mechanisms and standardized policy frameworks, while offering comparability and coordination, risk marginalizing local contexts, teacher agency, and culturally grounded knowledge systems. From a theoretical perspective, this study underscores the necessity of reframing global education beyond technology, positioning it as a social,

cultural, and ethical project. Digital transformation should be embedded within an understanding of education as a public good, aligned with global commitments such as the Sustainable Development Goals, particularly Goal 4 on inclusive and equitable quality education. Such a reframing requires interdisciplinary engagement that integrates policy analysis, sociology of education, cultural studies, and the ethics of technology. From a policy and practice standpoint, the review suggests that meaningful digital education reform must go beyond technological provision. It should include the redistribution of resources, sustained investment in teacher professional development, protection of cultural and epistemic diversity, and the meaningful participation of local stakeholders in decision-making processes. Without these measures, digital transformation risks reinforcing technocratic governance and deepening educational inequalities rather than fostering inclusive and sustainable learning systems. In conclusion, rethinking global education in the era of digital transformation is not merely a technical endeavor but a fundamentally normative and political process. The future of global education depends not on how rapidly technologies are adopted, but on how critically and ethically they are integrated to advance equity, human development, and social justice. This study contributes to global education scholarship by clarifying dominant discourses, exposing conceptual gaps, and offering a foundation for future research and policy that places human values at the center of digital transformation.

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