The Practical Logic, Value Implications and Governance Implications of Digital Transformation in Education Under the Concept of Chinese-Style Modernization

Yuyan Luo[1,a], Bichun Liu[2,*]

[1]Class 222, Ideological and Political Education, School of Marxism, Guangzhou University, Guangzhou, Guangdong, China
[2]Zhongxin Primary School, Tangxia Town, Dongguan City, Guangdong, China

[a]1098551661@qq.com, *270709593@qq.com

Abstract. The Third Plenary Session of the 20th Central Committee of the Communist Party of China has made systematic arrangements for deepening comprehensive education reform, listing the advancement of education digitalization as one of the important measures for promoting Chinese-style modernization, marking that education digitalization has gone beyond the scope of technological application and has been elevated to a core strategic engine for realizing the blueprint of national modernization. This study systematically analyzes the practical logic of digital education driven by the strong national strategy of "Chinese-style modernization" by constructing a three-tier analytical framework of "national strategy level - education system level - subject interaction level"; The value implications of digital transformation in education under the concept of Chinese-style modernization, as well as the deep-seated governance dilemmas and implications it faces.

Keywords: Digitalization of education; Chinese-style modernization; Governance challenges; Technology empowerment; Teachers' digital literacy

1 Introduction

The integration of digital technology and education is reshaping the global educational landscape, heralding a profound transformation in paradigms. In China, this process is uniquely embedded within the grand narrative of "Chinese-style modernization," a development path that emphasizes the leadership of the Party, people-centered philosophy, and the institutional advantage of "concentrating resources to accomplish major tasks." The elevation of educational digitalization to a national strategic level, as underscored in key documents such as The Outline of the Plan for Building a Strong Education Nation (2024-2035), signifies that it is no longer merely a technical supplement but a core driver for addressing the principal contradiction in Chinese society—the imbalance and inadequacy of development—and for achieving high-quality, equitable education.

A. T. Patanasorn et al. (eds.), *Proceedings of the 3rd International Conference on Educational Development and Social Sciences (EDSS 2026)*, Advances in Social Science, Education and Humanities Research 1010,
https://doi.org/10.2991/978-2-38476-569-0_26

However, the rapid advancement under this strong state-led model presents a complex picture: unprecedented "state speed" in infrastructure deployment coexists with significant challenges in ecological adaptation at the grassroots level. While national platforms promise equity and precision governance, the lived experiences of frontline educators and learners often reveal gaps in digital literacy, systemic disconnections, and emergent forms of inequality. This tension between top-down strategic design and bottom-up practical adoption constitutes the central puzzle of educational digital transformation in contemporary China.

Existing research has extensively discussed the technological applications, policy frameworks, or pedagogical impacts of educational digitalization. Yet, there is a relative lack of systematic analysis that situates these multifaceted phenomena within the specific political logic and value system of "Chinese-style modernization," and that dissects the interactions and frictions across different levels of the governance ecosystem.To bridge this gap, this study proposes a three-tier analytical model ("national strategy - education system - subject interaction") as a heuristic framework. This model aims to unravel: the practical logic of digital transformation as propelled by national strategic will and institutional mobilization; the value implications embedded in and shaped by this process, reflecting the core tenets of Chinese-style modernization; and the governance challenges and implications that arise from the interactions among diverse actors within this transformative ecology.

By employing this framework, this paper seeks to move beyond a simplistic narrative of technological determinism or policy propaganda. It endeavors to provide a critical yet constructive analysis that captures both the monumental achievements and the intricate dilemmas of China's path to educational digitalization, thereby offering a nuanced perspective for understanding one of the world's most ambitious experiments in technology-enabled educational reform.

2 A Three-tier Analytical Model for the Digital Transformation of Education

To clearly understand the complex relationship between national ideas, systemic changes and subject practices, it is necessary to first clarify its theoretical content and analytical boundaries.

"The digitalization of education will bring about changes in many aspects, and the different ways of innovation focusing on the changes and transformation of the education system may lead to systemic changes." [1] This study defines "digital Transformation of education" as a paradigm-level process of "Creative Transformation" that goes beyond "informationization". At its core lies the activation of data elements to drive a systematic reshaping of the educational ecosystem in terms of values, organizational structure, teaching process and governance model.

To systematically integrate the complex elements of educational digital transformation, this paper constructs a three-tier analysis model of "national strategy level - education system level - subject interaction level" (Figure 1). The model aims to reveal

the transmission, interaction and reflection relationships among macro ideas, meso practices and micro actions.

Fig. 1. Three-layer Analysis Model

The first layer, the national strategy layer, is the source of ideas and directions. It embodies the top-level design logic of "Chinese-style modernization", such as the mobilization system of "concentrating resources to accomplish major tasks", the path of gradual reform, and the emphasis on "integration" and "empowerment". In January 2025, the Central Committee of the Communist Party of China and The State Council jointly issued the Outline of the Plan for Building a Strong Education Nation (2024-2035) (hereinafter referred to as the Outline), which, from the strategic height of building a strong education nation, emphasizes the need to "build a learning society and open up new development tracks and shape new development advantages through digitalization of education" [2]. The national strategy provides political momentum and a fundamental guarantee for the process of digital transformation in education.

The second level: the education system level, is the specific practice field for the implementation of the strategy. At this level, the digital transformation of education unfolds a multi-dimensional and materialized process, "specifically including four fundamental components: the teaching dimension, the infrastructure dimension, the management dimension, the research dimension, and the extension dimension" [1].

1Therefore, this level is the core interface for observing how the will of the state is transformed into specific forms of education, from which the value implications of educational digitalization can be seen.

The third layer, the subject interaction layer, is the ultimate destination of policy and technology and the emergent domain of governance dilemmas. The government, schools, teachers, students, businesses, families and other actors come together at this level. They interpret, adopt, adapt, resist or recreate changes at the system level based on their respective roles, goals, resources and perceptions. Analyzing this layer - the digital literacy practices of teachers, the digital learning experiences of students, the collaboration between schools, the technological solutions of enterprises, etc. - reveals the governance challenges and implications of digital education.

This study is rooted in the concrete, multi-dimensional practice of digital transformation in education, and based on the above three-tier analysis model, it penetrates phenomena to trace the two-way interaction among the three layers, revealing the practical logic of China's digital transformation and the governance challenges and implications in the process of practice.

3 From the National Strategic Level, Analyze the Practical Logic of Digital Transformation in Education

The macro practice of China's digitalization of education is a highly efficient and highly mobilized practice logic that clearly reflects the country's outstanding mobilization ability and clear strategic intent in driving large-scale and rapid social engineering.

(1) The “state speed” of infrastructure and the commitment to inclusiveness

The state builds “bottom-line equity” through public investment in infrastructure. The underlying logic of achieving near-full school network access and building a national smart education platform in a very short time goes beyond the popularization of technology. This is a typical “state-led redistribution” model aimed at using administrative and financial power to forcibly bridge the digital access gap caused by geographical and economic disparities and raise the bottom line of educational equity from “having access to school” to “having access to the Internet”. This responds to the fundamental demand for educational equalization in a super-large society. China has achieved near-full coverage of school networks and multimedia classrooms in a very short period of time, and has built a national smart education public service platform that gathers a vast amount of resources, demonstrating the institutional advantage of “concentrating resources to accomplish major tasks”.

(2) Standard-driven, large-scale innovation

Unlike the Western innovation diffusion model that often starts from the bottom up and involves decentralized pilot projects, the Chinese approach is significantly characterized by “top-level design - standards first - large-scale promotion”. The promulgation of the Teacher Digital Literacy standard in 2022 is one example. It provides comprehensive guidance and support for empowering the development of teachers' digital literacy “from the inside out, from the short term to the long term, from theory to practice. [3] “It attempts to systematically enhance teachers' technical integration capabilities

across the country through a unified competency framework. Likewise, models such as the "Three classrooms" and "5G+ Smart education" have also rapidly created demonstration and promotion effects through policy-driven approaches. Standardizing complexity and enabling rapid evolution of hyperscale systems reveals the governance logic that the state is trying to manage complexity and accelerate the diffusion of innovation by establishing a unified framework and demonstration projects.

(3) Digital Governance Vision: Precision Governance Empowered by Technology

Big data and artificial intelligence are highly anticipated in the field of education governance, aiming to transform from "experience-based governance" to "data-driven precision governance". Whether it is regional education quality monitoring, school fine-tuning, or theoretically personalized learning path planning, all demonstrate the ideal of modern governance that relies on technology to achieve scientific management and optimal resource allocation.

4 From the Perspective of the Education System, Analyze the Value Implications of Digital Transformation in Education

(1) Inevitable Responses and Precise Alignment under the transformation of Principal contradictions

The principal contradiction in Chinese society has transformed in the new era, and the digitalization of education directly faces the people's ever-growing needs for a better life "is an important engine for resolving the contradiction between the people's ever-growing needs for a better life and unbalanced and inadequate development, and for promoting the all-round development of people and the all-round progress of society.[4] "Digital means provide people with higher quality, more equitable and more individualized education. Digital technology eliminates the distance of time and space, bringing students from deep mountains to prestigious schools and teachers; Students can arrange their own study time and place and learn at their own pace what they want to learn; Digital technology also greatly enriches the way quality educational resources are provided, increases the flexibility and diversity of access to quality educational resources, and precisely aligns with people's pursuit of "good education".

On the other hand, digitalization of education is an inevitable requirement to address the "imbalance and insufficiency" in educational development. The root cause of the imbalance in education between urban and rural areas, regions and schools lies in the imbalance of resource allocation and development opportunities. Digital platforms have enabled intensive construction and universal access across the country, allowing the best courses, teachers, research and teaching resources across the country to reach the weakest areas at low cost, promoting educational equity. The use of digital means to collect and mine teaching process and management data, and to conduct in-depth analysis and judgment based on this, is conducive to promoting precise improvement, forming a scientific and reasonable decision-making basis, and facilitating high-quality development. As can be seen from the above, digitalization of education is neither a simple way to solve the problems of the current state of education by using

technological means, nor a simple way to drive the transformation of educational paradigms by using new technologies, but an important means to solve the principal contradiction in Chinese society and achieve high-quality development of education in the new era.

(2) The vivid practice and value reshaping of the people-centered position

Education digitalization adheres to the new development concept of "putting people at the center". First of all, it is a concrete manifestation of "development for the people". The digitalization of education is not merely aimed at improving the quality of teaching, but at enhancing people's sense of gain and happiness in education. Whether it is maintaining the bottom line of "no classes, no learning" during the pandemic or providing continuous lifelong learning opportunities for adults and the elderly in normal times, the fundamental purpose remains to serve the right of the general public to education and development. Make education a major concern for people's livelihood and ensure that the digital dividend is not monopolized by capital or geographical entities, so that everyone can enjoy the good benefits brought by digital.

Secondly, the core idea of this path is that "development depends on the people." The creativity of education digitalization comes from the joint construction and sharing of the masses, teachers and students, educators and all sectors of society; It also comes from the vast number of open-source courses, teachers' online community research, and students' generative learning resources. Thus forming "digital learning communities" that are co-bred and shared by all groups [5], 5stimulating the initiative of the people to participate in the process of educational reform and innovation, is an inevitable manifestation of the development logic that the people are the creators of history in the process of contemporary educational reform, and is the best example that the people are the source of power for educational reform and development.

(3) Foundational projects and empowering means in the journey to common prosperity

Common prosperity is an essential requirement of socialism and an important feature of Chinese-style modernization; Education is the foundational and pioneering work for achieving common prosperity, and digital technology has greatly enhanced this foundational and pioneering role.

Digitalization of education is a powerful way to prevent the intergenerational transmission of poverty and ensure that everyone has equal access to quality educational resources to enrich themselves. It can greatly reduce the "starting point inequality" caused by different socioeconomic backgrounds of families and help low-income people and their children obtain higher human capital. This will help low-income people integrate into a modern economy and society and earn higher incomes.

More importantly, digitalization of education serves the logical focus of "promoting common prosperity in high-quality development" [6], which necessarily requires a high-quality workforce and innovation-driven development. 6Digital education can produce more rapidly and efficiently the compound talents, skilled workers and great craftsmen needed in the digital economy era, thus laying a talent foundation for industrial upgrading and the development of an innovative country; In addition, it can cultivate new occupations such as online educators, digital content creators, and learning data analysts, creating new jobs and forming new wealth growth poles. So digitalization of

education can not only promote common prosperity through redistribution, but also tilt towards weak areas and special groups in the distribution process; It can also play a role in improving the quality of production and the quality of the people, thereby expanding the "pie" from the source by increasing income supply and laying a solid material and talent foundation for achieving common prosperity.

5 The Subject Interaction Layer, Analyzing the Universal Challenges of Digital Transformation in Education

The analysis based on the three-tier model shows that the main challenge of China's education digital transformation does not stem from the lack of technology or resources, but from the "ecological adaptation" problem among the technology system, the administrative system, and the educational humanities system. [7]

(1) The predicament of teachers is disconnected from the system

Despite the strong push at the national strategy level and the hardware and standards at the system level, teachers, the core actors at the subject interaction level, are generally confronted with dual challenges of ability and willingness. "The digitalization of education cannot do without the role of people, especially that of teachers. The teacher here is not traditional, but a teacher with digital literacy and the ability to interact and collaborate with humans and machines." However, in terms of ideology, many teachers still view technology as an auxiliary tool rather than an element of ecological reconstruction; In practice, the phenomenon of "technology idling" and "mechanical superposition" is widespread. Standardized training is often disconnected from complex, real teaching scenarios, and the lack of incentive mechanisms weakens the intrinsic motivation of teachers to innovate proactively. This sharply reflects a fundamental contradiction in the process of China's modernization: the rapid leap in modernization of "things" (technology, facilities) and the relatively lagging modernization of "people" (ideas, capabilities, culture) have created a serious speed gap and system disconnection.

(2) The gap between fragmented innovation and holistic governance

The national strategic level emphasizes systematic advancement, but in practice, digitalization of education often falls into the predicament of "fragmentation" [8]. 8There are strict data barriers between departments, creating "data silos"; Platforms and resources are disconnected between regions, schools, and even enterprises; Policies and projects are sometimes poorly connected and even cancel each other out. This reflects the structural tension between the "centralized and unified" top-level design and the "hierarchical contracting" implementation system. When innovation is decentralized in a project-based manner, there is a lack of effective horizontal coordination and vertical integration mechanisms, and the ideal of holistic governance is undermined in the complex interactive layers.

6 The Double-edged Sword of Fairness: From the "Access Gap" to the "Literacy Gap"

Although state power has quickly bridged the "access gap", the problems of the "literacy gap" and the "application gap" remain unresolved [9]. 9Rural schools may have the same bandwidth and platforms, but deep capital, such as teachers' ability to integrate technology, family-supported digital culture, and students' metacognitive skills for autonomous learning, is unevenly distributed. Technology may not be an equalizer here, but rather a new lever that exacerbates endogenous inequality. This reflects the complexity of the issue of equity in the process of modernization: when the gap in basic materials narrows, the deep-seated gap that stems from human capital and social culture emerges, which is far more difficult to address.

7 Conclusions

By dissecting the digital transformation of education under a three-tier model of "national strategy - education system - subject interaction", this paper reveals the complex picture of the advancement of Chinese-style modernization in the field of education: it is a path driven by the strong momentum of the state, rapidly laid out at the system level, but facing challenges of adaptability and cultural adjustment at the subject interaction level. The digitalization of education is not only a strategic tool for China to address its own educational development problems, but also provides a rich comparative perspective for understanding the hopes and limits of technology-enabled educational reform on a global scale, as reflected in the state-led logic, the tension of systemic change, and the multi-subject responses. Ultimately, the success of education digitalization will depend on whether we can pursue efficiency and scale while always adhering to the essence of education, and find the true value coordinates of technology application in the real growth of every classroom, every teacher and every student.

References

1. Zhu Zhiting, Hu Jiao. Analysis of the Essence of Digital Transformation in Education and Research Prospects [J]. China Educational Technology,2022,(04):1-8+25.
2. The Central Committee of the Communist Party of China, The State Council Outline of the Plan for Building a Strong Education Nation (2024-2035) [EB/OL]. (2025-01-19) [2025-02-24]. https://www.gov.cn/zhengce/202501/content_6999913.htm.
3. Zhou Liubo, Zhang Mengyao, Zhang Chenghao. The cultivation of teachers' Digital literacy in the context of Digital Transformation: Era Values, Realistic Dilemmas and Breakthrough paths [J]. Chinese Journal of Educational Technology,2023,(10):98-105.
4. Huo Ruijuan. National Smart Library System: Drawing a New Picture of High-Quality Development of Public Libraries with "AI +" [J/OL]. Library theory and practice of 1-9 [2026-01-09]. https://doi.org/10.14064/j.cnki.issn1005-8214.20251212.004.
5. Li Xiaohong, Wang Huali, Liu Yuxuan. Point to depth teaching of university teachers competency characteristic configuration study [J]. Journal of Shanghai jiaotong university

(philosophy and social sciences edition), 2025 (11) : 107-123. The DOI: 10.13806 / j.carol carroll nki issn1008-7095.2025.11.008.
6. This newspaper editorial office. With new development concept lead high quality development [J]. Contemporary county economy, 2025, (12) : 1. The DOI: 10.16625 / j.carol carroll nki. 51-1752 / f 2025.12.001.
7. Wang Ninghui, Zhao Leilei. Technology phenomenological perspective man-machine coordinated drive [J]. Journal of basic education management research, teaching and management, 2026 (01) : 7-12. DOI: 10.26993 / j.carol carroll nki jxygl. 2026.01.003.
8. Hu Jiao, Peng Hongchao, Zhu Zhiting. The real dilemmas and breakthrough paths of digital transformation in education [J]. Modern Distance Education Research,2022,34(05):72-81.
9. Zhang Runjun, Xiao Chenghu. Research on Digital Technology Empowering the Reconstruction of Higher Education System and the Transformation of Education Paradigm [J/OL]. The academic exploration, 1-8 [2026-01-09]. https://link.cnki.net/urlid/53.1148.C.20251222.0857.004.