

Research Article

Research Status and Prospects of Education Modernization in China

Wanying Liang^{1, 2, *} , Changwen Zhou¹ 

¹Department of Education, Liaoning Normal University, Dalian, China

²Institute of Psychology, Chinese Academy of Sciences, Beijing, China

Abstract

Considering the goals of building a strong country with education and human resources, education modernization is a priority development strategy in China. To inform future research on the theoretical and practical issues of education modernization, literature from CSSCI and the Peking University Core Databases on China's education modernization from 2015 to 2025 was reviewed. The developing tendency of the studies was analyzed: perspectives from macro to micro, focuses from theory to practice and from general to special, aims from reflection to foresight, development from slow to rapid, and exploration from preliminary to in-depth, showing Chinese characteristics, local and time characteristics, mainly using speculative methods. Research gaps were found to be: the specific content and practical approaches of the educational strategies remain unclear; policy system at different levels emphasizing cross-sectional and democratic participation is waiting to be established; pathways to primary educational modernization in different regions and integration of industry and vocational education should be explored; and the mechanism of educational modernization in countryside calls for clarification. Future studies should focus on topics such as talent cultivation and multi-agent collaboration, from the prospectives of governance capabilities modernization and technology application; design micro-level research questions based on local education and teaching contexts and explore forward-looking and practical strategies; further conduct empirical research to support the plan and design of education modernization paths; review the application of existing research results in practical work and timely identify new problems while evaluating the external validity of existing studies.

Keywords

Modernization of Education, Evolution Trend, China, Review

1. Introduction

Over the past decade, China has established the world's largest education system, achieving historic leaps in educational accessibility. Future goals were proposed to build a strong- education, technology, talent, culture, and sport nation, and a healthy China. Strategies to strengthen education and modernized human resources and prioritize education

development were put forward [1]. China has always given priority to the development of education. How to promote the modernization of education has always been a hot topic in society [2]. To accurately assess emerging challenges and tasks in educational development, strive to deliver education that meets public expectations, and provide robust support for

*Corresponding author: cloudleung@sina.com (Wanying Liang)

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socialist modernization through educational modernization, it is essential to systematically review and analyze research on educational modernization in China and map the evolutionary trajectory of existing studies to generate insights for future theoretical and practical research on educational modernization, ultimately identifying strategic pathways to advance this transformative process.

2. Data and Method

Literature with the topic of “education modernization” from CSSCI and the Peking University Core Databases from January 1, 2015, to July 16, 2025, was searched. 3135 literature records were found, collected, and scanned, while 44 highly relevant articles were deeply read and analyzed, to describe the research status and explore the development trend of this research field.

3. Result

3.1. Overview

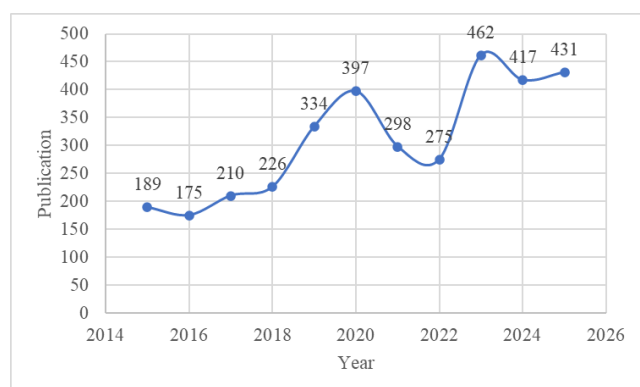


Figure 1. Annual publications from January 1, 2015 to July 16, 2025.

The number of research articles on education modernization in China collected by this study constantly increased. In the past decade, education modernization has become an important part of Chinese-style modernization [3]. Relevant research has been continuously paid attention to by scholars. In order to further explore issues related to education modernization, more and more scholars have carried out research in this field. Thus, the number of publications in this field has also shown an increasing trend year by year. As can be predicted according to Figure 1, the annual publications of research on education modernization in China will still maintain a certain large number.

Vocational education, higher education, and education governance were popular topics, indicating that the research on education modernization in China focused on cultivating

senior professionals and vocational personnel, as well as the collaborative management of public affairs by the government, schools, social organizations and citizens. Meanwhile, educational reform was also a significant hotspot, indicating that related research has placed emphasis on educational reform issues. Governance capacity and artificial intelligence were hot topics particularly since 2020, suggesting that research is intensively focused on these two areas, and the number of publications on these topics is expected to continue growing explosively in the coming years.

Based on the research content and the relationships among the articles, the collected literature could be categorized into 4 groups: educational strategy, governance, stage-specific education, and regional education. The development of these studies has closely followed societal progress, with emerging trends reflecting distinct contemporary characteristics, showing educators' aspirations for educational modernization in China while providing actionable guidance for optimizing future education practices.

3.2. Educational Strategy

This group of articles aligned with the national level of educational strategic thinking and analyzed the concept, direction, policy, path, indicators and other issues of educational modernization, highlighting domestic characteristics.

Initially, the studies explored localized educational issues. The rapidly increasing school enrollment rate raised high attention from researchers and had been seen as an empirical sign of education modernization [4, 5].

After a few years, research has begun to exhibit thematic characteristics, with discussions often focusing on keywords from national-level strategic or policy documents. The research has evolved from preliminary exploration to in-depth analysis, adopting more comprehensive and forward-looking perspectives that increasingly highlight local context and contemporary relevance. For instance, Wu et al. explored the connotation, evolution, and practical approaches of “providing education that satisfies the people.” They emphasized that during the era of educational modernization, it is essential to meet the differentiated demands of the public for basic and quality education. The study proposed fully implementing the Party's educational policies, prioritizing educational development, persisting in educational reform and innovation, adhering to people-oriented principles and educational equity, maintaining strict teaching standards, and strengthening standardized management [6]. Wei, based on the “13th Five-Year Plan for Poverty Alleviation through Education” and the “Guidance on Implementing the Education Poverty Alleviation Project,” as well as the implementation, pointed out that targeting education poverty alleviation served as a pathway to promote educational equity and break the cycle of poverty transmission. However, challenges persisted including reduced policy enforcement effectiveness, disconnection between local culture and educational modernization, conflicts between traditional rural educational values

and contemporary social development, and a single-focused approach in poverty relief. To address these problems, the author proposed strategies such as improving institutional design and guidance to enhance the implementation of targeted education poverty alleviation, building an urban-rural educational informatization community rooted in rural culture, breaking down poverty stereotypes while adapting rural digital networks to new-era social development, leveraging the governments core role, and establishing a long-term mechanism for multi-stakeholder participation [7]. From 2022, citation data revealed that the research by Guan and colleagues at Sichuan Normal University demonstrated significant influence. Grounded in the new historical starting point of high-quality development in physical education at universities, their research identified key challenges, including ambiguous policy frameworks, implementation bottlenecks, systemic coordination gaps, insufficient resource allocation, and inadequate evaluation mechanisms. The study proposed strategies such as refining policy design, establishing feedback mechanisms, enhancing inter-system collaboration, leveraging existing resources to create new opportunities, optimizing evaluation systems, and strengthening regulatory oversight to ensure balanced resource distribution [8]. Likewise, Gao and Xie's study was typically influential, which emphasized that we must adhere to the Communist Party of China's overall leadership and hold the rudder of ideology firmly; adhere to putting people first and provide education that satisfies the people; adhere to nurturing talents, and uphold the fundamental task of the education cause; persist in deepening reform and activate the momentum of development; persist in creating scenarios and build a good social atmosphere respecting teaching and encouraging learning; adhere to facing the world and enhance the international influence, competitiveness and appeal of China's education cause. Their study presented a macro illustration of the Leading Country in Education strategy [9].

According to the strategic recommendations proposed by this group of specialized studies, scholars have reached a consensus on how educational modernization can drive comprehensive societal modernization. Notably, researchers collectively emphasized the importance of educational equity in this developmental process, providing multi-dimensional justifications. However, existing studies predominantly analyzed and discussed strategies through policy-oriented frameworks, lacking systematic exploration of their core conceptual structures. The hierarchical relationships between these strategies remained unclear, often resulting in redundant research when new perspectives emerge. Furthermore, current studies seldom establish concrete methodologies to implement proposed educational strategies, which hinders practical application of research findings in real-world contexts.

3.3. Education Governance

This group of articles focused on the modernization of educational governance. They analyze policy frameworks,

conceptual dimensions, operational capacities, implementation models, and strategic pathways for governance across various levels and domains, including higher education, vocational training, teacher education, ideological-political education, special education, and rural education.

These studies initially explored the modernization of educational governance through decentralized approaches with respect for ethics and morality. At this stage, a unique hotspot emerged centered on a specific discipline - Law. Building upon this foundation, scholars subsequently focused on institutional development for educational governance and explored theoretical frameworks for intelligent governance. For instance, Yin summarized practical experiences in advancing modernization of educational governance through institutional ecosystem construction, emphasizing the humanistic, inheritable, collaborative, educational, subject-oriented, normative, and professional characteristics of such ecosystems [10]. Chen and colleagues have identified issues of intellectual deficiency in smart campuses caused by misinterpretations, intentional actions, or short-sighted pragmatism. They emphasized that the core mission should be fostering innovation, cultivating innovative talents, and providing robust support for such development. To address these challenges, they proposed strategies including institutional innovation, team enhancement, standardized protocols, and evaluation-driven development to build smart campuses [11]. Overall, scholars gradually formed a consensus that the development of education modernization should be dominated by the optimization and transformation through legalization and smart governance.

After five years of development, the research objectives have become more closely aligned with contemporary demands. For instance, multiple scholars have conducted studies on vocational education modernization under themes such as Education Modernization 2035, supply-side structural reform, the National Vocational Education Reform Implementation Plan, the Five Development Concepts, industry-education integration, Education Informatization 2.0, and the Belt and Road Initiative and proposed corresponding strategies [12-18]. Secondly, the research framework and system have been further refined. Taking open education as a crucial component of the lifelong education system in China, Tan et al. analyzed challenges faced by open universities under modernized university governance, including multi-stakeholder governance, insufficient administrative decentralization, limited democratic participation, weak academic and grassroots representation, diverse charter development, and inadequate legal enforcement. The study proposed strategies such as strengthening institutional design, improving democratic governance, operating schools in accordance with laws and regulations, enhancing technological applications, and cultivating leading talents [19]. In response to educational reforms in China advancing toward "governance by law," Li conducted research on school governance in primary and secondary education. The author proposed

strengthening the development and implementation of school charters, including formulating relevant regulations to clarify responsibilities, rights, and benefits among educational stakeholders, revising and improving existing charters, promoting social institutions' participation in establishing a three-tier network, and creating a scientific and comprehensive supervision mechanism [20]. Thirdly, the research content adopted a more micro perspective. As Deng pointed out, most current training bases lacked scientific and systematic configurations in their teaching, production, and service functions. The establishment of such bases lacked effective policy support, with enterprises showing low enthusiasm for participating in their creation. The author suggested establishing a high-level talent cultivation system for training bases that integrated multiple aspects including education, research, production, and services. This required building a multi-tiered policy support and evaluation framework spanning national, local, and industry levels, along with creating incentive mechanisms to motivate both educational institutions and enterprises [21]. Finally, during this period, a wave of multi-stage and multi-tiered discussions emerged regarding governance approaches for smart education. Regarding basic education, Shen and colleagues explored digital campus governance models for primary and secondary schools, proposing strategies including clarifying relationships among government, schools, and families; enhancing principals' digital leadership capabilities; cultivating information literacy among teachers and students; innovating institutional mechanisms; and fostering campus culture [22]. Regarding higher education, Liu and colleagues analyzed the planning of smart campuses under the Double First-Class initiative using Beihang University as a case study. They proposed a "four horizontal and two vertical" framework comprising four layers (infrastructure, public platform, application system, and teacher-student interaction) and two systems (information security framework and operational management system). This framework can serve as a reference for other universities implementing smart campus development [23]. Regarding vocational education, Han et al. interpreted the "Digital Campus Standards for Vocational Colleges" and put forward implementation suggestions such as strengthening overall leadership, supporting demonstration and guidance, carrying out inclusive support, increasing publicity and doing a good job in research [24]. Regarding the technological aspects of smart education, Zhai and colleagues suggested a digital governance framework under the mid-platform strategy. This approach focused on three dimensions: data governance, business application transformation, and organizational optimization. The system architecture integrated logical data warehouses with business modules to establish a dual mid-platform structure of data plus business. Additionally, it developed an information officer organizational system and collaborative work models adopting a strip-and-block management model. These initiatives aimed to fully harness digital potential and enhance operational

efficiency in campus digital governance [25]. In terms of the construction of smart ecology, Liu proposed to use technology to activate the overall education ecology of schools, reconstruct the school ecosystem, and vigorously promote the realization forms of smart education such as smart classroom, smart teacher, smart teaching and research, and smart evaluation [26].

In 2022, Li from Liaoning Education Institute conducted influential research on modernizing higher education governance capabilities through value co-creation. Grounded in the premise that higher education governance directly impacts the realization of national educational modernization, the study identified this process as a collaborative effort involving value co-creation and behavioral coordination among diverse stakeholders. It proposed enhancing governance cognition and practices through three dimensions: structural empowerment via macro-level network environments, technological empowerment through meso-level information systems, and psychological empowerment at the micro-level for governance entities [27]. This study has remained very influential until today. Similarly, Sui and Li's study elucidated the logical nexus between institutions and higher education governance and discussed the modernization actions of higher education governance based on institutional rationality from three perspectives - governance entities in higher education must strengthen rational understanding of the institutional importance in governance; governments must enhance fundamental institutional construction conducive to the modernization of macro-governance; and universities must improve institutional frameworks that return to their essential attributes and core missions, providing enlightenments from a theoretical perspective for policy and mechanism development [28].

The publications in this group consistently emphasized the importance of legal and intelligent governance in advancing educational modernization, offering analytical perspectives and policy recommendations from various angles. However, existing research still lacked sufficient exploration regarding key issues of shared scholarly attention, such as multi-stakeholder governance, democratic participation, and institutional development. Current findings indicated that establishing a multi-tiered institutional framework encompassing macro, meso, and micro levels remained essential for future progress. Nevertheless, the specific content of institutions at each level and their interrelationships required further investigation.

3.4. Stage-specific Education

Studies in this group mainly analyzed the history, theory, tasks, policies, mechanisms, paths, quality evaluation and other issues of education modernization based on the characteristics of different educational stages.

Higher education is regarded as an important source of knowledge innovation, technological innovation, and cultural

innovation, and has the responsibility to support economic and social development [29]. Scholars in this group first focused on higher education and analyzed its developmental context. Subsequently, scholars began to pay attention to the modernization development direction of vocational education and the theoretical issues of preschool education development. For example, Mao pointed out that adhering to the development concepts of effective school-enterprise cooperation, educational informatization and internationalization of running schools, and exploring cross-country, cross-field, and cross-professional development paths were the inevitable choices for the modernization development of higher vocational education [30]. Wang highlighted Chen Heqin's contributions to educational modernization in China through his theories, including advancing empirical research methods in pedagogy, driving the localization of early childhood education reforms, publishing seminal works like *Research on Child Psychology and Family Education*, and establishing the "Living Education" framework. Wang emphasized how these innovations continue to inspire contemporary educational practices across multiple dimensions [31].

After five years, the research scope has expanded to cover all stages from primary education and vocational training to general higher education. Research themes have rapidly diversified and been refined, with studies beginning to incorporate regional realities for analysis, thereby extending to multiple research dimensions. Theoretically, Zhou addressed the fundamental issue of establishing universities rooted in the Chinese context, highlighting that President Xi Jinping's educational philosophy exhibited three characteristics: Chinese logic, a comprehensive educational perspective, and problem-oriented approaches. Its core essence was encapsulated in the "Nine Adherence Principles" [32]. In terms of historical review, Feng et al. pointed out that higher education had undergone a century-long transformation from a field to a discipline, and advocated that we should promote the construction of first-level disciplines, undertake the mission of the new era, and build universities with Chinese characteristics [33]. When it comes to pathways, Guo has proposed strategies to build a high-quality dual-qualified teacher workforce. These included establishing competency frameworks encompassing teaching and educational capabilities, scientific research competencies, social service capacities, cultural heritage preservation and innovation, as well as international exchange and cooperation skills. The initiative aimed to enhance the structural, industry-specific, and societal dimensions of talent development systems. Key measures involved improving teacher training programs, educational reform mechanisms, and research service frameworks. Additionally, it sought to refine performance-based compensation systems, professional title evaluation mechanisms, and incentive technology service programs. Furthermore, strengthening infrastructure, funding allocation, and supervision mechanisms will empower industry-education integration to drive professional growth among educators [34]. Regarding pathways for primary education, recently, Cao from

Guizhou Provincial Academy of Educational Sciences conducted a study on the logic of high-quality development in primary education in Guizhou during the new era, which gained significant influence. This research, based on national policies that provided top-level design and systematic deployment for comprehensively improving primary education quality, analyzed the contemporary logic, theoretical framework, policy rationale, and practical implementation of high-quality educational development in Guizhou. It proposed recognizing the new starting point for basic education advancement in Guizhou, emphasizing theoretical foundations rooted in the five-education integration (moral, intellectual, physical, aesthetic, and labor) of modern education, advancing the construction of a distinctive education powerhouse through educational modernization, and fully implementing the fundamental mission of cultivating virtue and nurturing talent in basic education [35]. Pathway studies on higher education remain developing as well, such as Duan and Qian's discussion about the logical implications of the modernization path of Chinese higher education, which attached great importance to the comprehensive leadership of the Party over higher education work, international experience, legislative support, and funding for higher education, the connotative development of higher education and a high-quality development system for higher education, and the basic direction of modernizing Chinese-style higher education that satisfies Chinese people [36].

Among this group, the research on higher education started earlier. Scholars have basically formed a consensus that cultivating high-level talents is an important support for educational modernization, and have explored implementing ways to strengthen discipline construction, combine local characteristics, and expand the scope of popularization [33, 37-40]. Compared to research in higher education, studies on primary education and vocational education started later. Research on primary education modernization based on regional realities and studies on vocational education modernization through industry-education integration are still in their initial stages, but have already garnered significant academic attention and discussion. Future research should focus more on these topics.

3.5. Regional Education

In this group, researchers mainly explored the historical changes, endogenous development, teacher construction, big data application, management system, poverty alleviation, and revitalization of education modernization in ethnic areas and rural areas.

From the beginning, the research developed slowly, the content was relatively scattered, and the focus was not clear enough. The biggest progress in advancing educational modernization in underdeveloped regions emerged after 2020, with research now more closely aligning with local characteristics and the requirements of modern education. As Liu et al. noted, the modernization of educational governance in ethnic minority areas exhibited developmental features

transitioning from basic guarantees to equitable access, evolving from standardized approaches to diversified models, and shifting from external aid dependency to self-sustaining mechanisms. However, challenges persist including incomplete legal frameworks for ethnic education, insufficient participation from multiple stakeholders, underdeveloped cultural resources for modernization, inadequate educational governance resources, and limited support for local socioeconomic development. As a response, researchers suggested accurately defining the scientific essence of modernizing educational governance in ethnic regions, establishing active participation mechanisms among diverse stakeholders, strengthening institutional safeguards, enhancing the scientific rigor of educational development, and tapping into culturally distinctive ethnic resources [41]. Liu et al.'s study was a significantly typical study that focused on ethnic education modernization and demonstrated strong Chinese characteristics. This kind of studies all took the modernization of ethnic education as a beautiful vision of the comprehensive modernization of education, and put forward a series of realization paths from different perspectives [42-45]. Zhang et al. pointed out that the development vision of rural education revitalization was to use big data as content, tools and support for rural education revitalization, and proposed strategies such as using information 2.0 to achieve big data acquisition, designing revitalization path map based on data, cultivating governance culture and building a guarantee system [46]. In 2022, Ma's research at East China Normal University on the value implications, objectives, and practical approaches of rural education in promoting rural revitalization gained significant influence. By analyzing the value of rural education from the perspective of the Rural Revitalization Strategy, the study emphasized that it should focus on writing Chinese stories of rural education across the countryside, revitalizing rural culture, and leveraging the educational value of local traditions in classrooms. It proposed practical pathways including dual-track advancement of rural education modernization and localization, dual-guidance reflection between the inheritance of local culture and the promotion of traditional ethnic values, as well as dual-pathway progress in rural education innovation and the demonstration of rural educational advantages [47].

The above research indicates that studies on educational modernization in underdeveloped regions such as rural areas have established a preliminary framework encompassing development objectives, philosophies, practical challenges, opportunities, pathways, and implementation strategies. However, as this group of studies has only entered its early years of accelerated development, the current research output remains limited, and the framework requires further refinement. Key areas needing enhancement include: development goals containing poverty alleviation and revitalization initiatives, philosophies integrating rural cultural revitalization, and empirical data-driven analysis of

existing challenges and opportunities. Particularly, the unique developmental mechanisms of education in underdeveloped regions compared to other areas require deeper exploration, and thus, concrete and actionable development pathways and practical strategies should be explored.

4. Conclusion and Implications

4.1. Conclusion

To commence, four major consensuses were formed. In the past decade, educational modernization research has drawn conclusions that can be summarized into four major consensus points. First, education is the cornerstone of a modernized nation, and equity is the cornerstone of educational modernization. Second, the development of educational modernization has established the foundation of legalization and smart transformation. Third, cultivating high-level talents serves as the backbone of educational modernization. Fourth, the modernization of ethnic education represents a distinctive vision for China's comprehensive educational modernization. Overall, the research over the past decade has advanced studies on theoretical frameworks, concepts, historical development, directions, policies, pathways, indicators, and evaluation systems in educational modernization. These achievements provide valuable insights and recommendations for policymakers, school administrators, education experts, teachers, parents, and other stakeholders across various educational stages and types, ranging from general higher education, vocational education, teacher training, secondary education, primary education, and special education to ideological-political education and subject-specific education, to guide their modernization efforts.

Meanwhile, four future directions were inspired. The historical development trends of educational modernization research in China appeared to be from macro to micro perspectives, from theory to practice, from general to specific applications, from reflective analysis to forward-looking perspectives, from gradual evolution to rapid advancement, and from preliminary explorations to in-depth validation. Over the years, research has emphasized serving the modernization of socialism with Chinese characteristics, integrating local conditions, and aligning with contemporary features, particularly highlighting the application of dialectical research methods such as logical analysis. Research areas, including Chinese characteristics, value orientations, governance systems, basic education, rural education, industry-education integration, talent cultivation, and empirical indicators, remain active and have not reached a wide consensus. These can inspire four major prospects for future research. First, the conceptual framework and implementation methods for educational strategies need to be established. Second, institutional networks consisting of multi-stakeholder governance and democratic participation at the micro, meso, and macro levels should be built. Third, con-

crete pathways for advancing primary education modernization and vocational education-industry integration across regions require more exploration. Fourth, the developmental mechanisms of rural education modernization need further validation.

4.2. Implications

Through the review in this study, it is inspired that we must continue to focus on cultivating high-level specialized talents and professionals, as well as collaborative management of educational public affairs by entities including governments, schools, social organizations, and citizens. We should persistently advance research on Chinese-style education modernization reforms by prioritizing the modernization of governance capabilities and innovative applications of technologies like artificial intelligence. Meanwhile, scholars should concentrate on micro-level issues related to designing local educational teaching scenarios. Efforts should be made to explore practical strategies for problem-solving, anticipate potential challenges in the process of educational modernization, and adopt a dual approach of preparation and resolution. Empirical studies should also be conducted to provide empirical support for planning and designing pathways for educational modernization. Moreover, scholars should collect and analyze data on the application of existing research findings in actual work. Extensive action research should be carried out to assess the external validity of existing studies while promptly identifying new issues.

In the journey toward building a modern socialist nation in all respects, advancing educational modernization plays a foundational and strategic role. Building upon existing achievements in educational modernization research, scholars should capitalize on their momentum to design and implement future studies with more forward-looking, localized, contemporary, and practical perspectives. Through research-driven teaching innovation, management enhancement, evaluation improvement, and reform promotion, they should experiment while summarizing experiences, then use newly identified challenges and accumulated insights to guide further exploration. By continuously seeking new approaches and directions for educational modernization, these efforts will contribute to China's high-quality development of Chinese-style modernization in education.

Abbreviations

CSSCI Chinese Social Sciences Citation Index

Author Contributions

Wanying Liang: Conceptualization, formal analysis, methodology, writing - original draft, writing - review & editing.

Changwen Zhou: Writing - review & editing.

Data Availability Statement

The data supporting the outcome of this research work have been reported in this manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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