

Differences in Resource Allocation of Compulsory Education Between Urban and Rural Areas: Dynamic Evolution, Institutional Attribution, and Research Prospects

Yilin Zhao

*Elementary Education, Capital Normal University, Beijing, China
1233009043@cnu.edu.cn*

Abstract. Against the backdrop of the vigorous development of rural education in the strategy of rural revitalization, the gap in the allocation of compulsory education resources between urban and rural areas still objectively exists. Although relevant data show that the gap in public funding between urban and rural primary school students is narrowing, and the education level of rural schools has significantly improved, rural areas still lag behind cities in terms of implicit resources such as home school social cooperation and campus culture. This problem of uneven resource allocation urgently needs to be addressed. This article systematically reviews relevant literature and deeply analyzes the dynamic evolution process, specific manifestations, and institutional reasons behind the differences in the allocation of compulsory education resources between urban and rural areas. Research has found that differences in resource allocation are mainly reflected in three aspects: imbalanced funding structure, differences in teacher allocation, and gaps in the application of digital resources. Based on these findings, future research should pay more attention to implicit resource allocation, dynamic impact mechanisms, and collaborative design of cross disciplinary policies, providing more accurate theoretical support and policy references for promoting urban-rural education equity.

Keywords: Urban and rural compulsory education, Differences in resource allocation, dynamic evolution

1. Introduction

Educational equity is the cornerstone of social equity, and the difference in resource allocation between urban and rural compulsory education is a key factor restricting the implementation of educational equity in China. With the rapid development of China's education industry, from the promotion of the "two basics" campaign to the completion of the acceptance of balanced development of compulsory education, the hardware conditions of rural education have greatly improved, and the gap in explicit resources such as per capita public funds between urban and rural students continues to narrow [1]. However, from the actual situation of running schools, rural schools still face prominent problems such as imbalanced teacher structure, low utilization of digital resources, and single funding sources [2]. The difference has gradually shifted from the traditional

total gap to a structural and implicit gap. This not only restricts the realization of educational equity, but also has potential impacts on the educational opportunities and subsequent social mobility of rural individuals. Therefore, it is of great practical significance to comprehensively sort out the dynamic evolution process of this difference and deeply analyze its institutional causes.

This article systematically reviews the relevant literature on the differences in the allocation of such resources across urban and rural regions. Previous studies have mostly focused on static analysis of explicit dimensions such as funding and teaching staff [3]. However, the formation of practical problems such as the systematic decline of rural teaching staff and the high idle rate of digital devices [4] requires objective analysis from the perspectives of the adaptability of resource supply and demand, and the fundamental differences in urban-rural regional development.

Based on the shortcomings of existing research, this article will discuss the specific manifestations, spatiotemporal evolution process, institutional attribution, policy evaluation, and research prospects of the differences in the allocation of such resources. The core observation variables of this issue will be clearly analyzed, with a focus on implicit resource allocation, the actual effects of digital empowerment education, and cross policy coordination mechanisms, in order to provide reference for promoting the high-quality and balanced development of compulsory education in urban and rural areas.

2. The core dimensions and dynamic evolution of resource allocation differences in urban and rural compulsory education

Funding, faculty and digital resources are three core dimensions of urban-rural compulsory education resource allocation disparities, and most existing studies reveal their spatio-temporal manifestations and trends from these perspectives. Based on empirical research and real data, this paper conducts a systematic dynamic analysis of such disparities, explores their formation causes, and identifies driving forces for gap narrowing and constraints on balanced development.

The disparities feature phased evolution: they gradually shift from absolute shortage of hardware resources in the early stage to relative gaps of structural imbalance and insufficient efficiency in the middle and later stages, presenting an overall trend of "general convergence with local differentiation" under policy guidance and economic development. The long-standing urban-rural dual economic structure is the fundamental cause. The significant narrowing of the gap benefits from China's compulsory education balanced development strategy, rural education revitalization policies, enhanced provincial fiscal coordination and social support for rural education. Meanwhile, urbanization has triggered one-way loss of high-quality teachers and students in rural areas, single and insufficient funding sources, inadequate digital resource application support, and uneven regional economic development, further intensifying spatial differentiation.

2.1. Imbalance in funding structure

The funding dimension is measured by per capita public funding and the proportion of social investment. From 2001 to 2023, the urban-rural per capita funding ratio gradually converged from 3.2:1 to 1.1:1, with a remarkable narrowing trend. Spatially, the ratio stands at 1.3:1 in the eastern region and exceeds 1.6:1 in central and western regions, showing significant regional differences. Despite the eased absolute gap, structural imbalance remains prominent: rural education funding relies excessively on fiscal transfer payments, and social participation remains low. Under the provincial coordination framework, the urban-rural funding gap within provinces is still notable, forming a pattern of "overall easing and local solidification" in funding allocation [4].

2.2. Faculty allocation

Faculty disparities are reflected in the proportion of teachers with bachelor's degrees or above and problems in basic education teacher development. From 2015 to 2025, the proportion of highly educated teachers in rural areas increased by 24 percentage points, but the gap with urban areas still reaches 38 percentage points. Spatially, the proportion is 65% in eastern rural areas and less than 50% in western rural areas, with remarkable regional imbalance. Rural faculty problems show phased evolution: the early "staff shortage" has evolved into new challenges, including rigid shortage of full-time teachers in music, sports and fine arts, one-way flow of high-quality teachers to county towns amid urbanization, and difficulty in implementing teacher rotation due to lack of compensation mechanisms, aggravating the fragility of township faculty and the systematic decline of "quality collapse" [5, 6].

2.3. Digital resources

Digital resources are measured by per capita smart devices (hardware) and resource adaptation rate (application), with phased evolution: the gap has shifted from "hardware availability difference" around 2010 to "application efficiency difference" by 2023; spatially, the adaptation rate of suburban rural areas is 25 percentage points higher than that of remote rural areas. The current gap is no longer limited to hardware, but is manifested in disconnection between digital resources and rural teaching needs, and insufficient teachers' information technology capacity, leading to high equipment idle rate and the phenomenon of "hardware idleness" [7]. This not only causes waste of educational funds, but also weakens the compensatory role of digital technology in rural education supply, widening the gap in students' information literacy and delaying rural education digital transformation. Empirical research on Wuhan found that the idle rate of smart devices in rural schools reached 30%, confirming the universality of this phenomenon [3]. County-level research shows that the urban-rural digital divide is a comprehensive gap in resource adaptation, teacher literacy and policy support, which needs to be promoted systematically from the perspective of digital rural construction [8]. Combined with the geographical imbalance of school distribution, this divide amplifies barriers to resource acquisition.

Existing data show that urban-rural resource allocation disparities are multidimensional and dynamically evolving. The current variable system still focuses on hardware and structural indicators, with insufficient coverage of implicit dimensions such as home-school cooperation quality and campus culture. On the whole, however, the system can accurately characterize the core gap and has strong academic and practical rationality.

3. Institutional attribution of differences in resource allocation

The uneven distribution of urban and rural educational resources is shaped by China's specific institutional structure and development stage characteristics, and is affected by the education governance hierarchy and performance evaluation system at the implementation level. Existing literature mainly explores the deep roots from two interrelated dimensions: fiscal system and demographic structure changes, explaining how the fiscal system affects resource supply capacity and allocation efficiency, and how demographic changes drive the scale and spatial layout of resource demand.

3.1. The constraints and games of fiscal decentralization system

The fiscal decentralization framework formed after the tax-sharing reform is the fundamental institutional cause of regional and urban-rural education investment gaps, and also the innate reason for insufficient rural education input. The core problem lies in the mismatch between administrative and financial powers of grassroots governments: as the core body responsible for compulsory education funding, county-level governments have weak financial self-sufficiency and imbalanced income structure, making rural compulsory education funding highly dependent on higher-level fiscal transfer payments.

According to the 2025 Report on the Financial Situation of Provinces, Cities, and Counties by Southwest University of Finance and Economics covering 2774 county-level regions in China, the average financial self-sufficiency rate of counties and cities in 2024 is only about 38% — only 38 yuan of every 100 yuan of county-level fiscal expenditure comes from local general public budget revenue, and the rest relies on central/provincial transfer payments and debts. This figure is far lower than the national average local financial self-sufficiency rate of 49% (Ministry of Finance, 2024), with significant regional differences.

Some county-level finances also suffer from single income structure and unstable revenue. Once resource prices fluctuate or the real estate market adjusts, county-level fiscal revenue will drop sharply, and governments can only rely on higher-level transfer payments to maintain the "three guarantees" expenditures, which inevitably squeezes financial support for rural education. Meanwhile, transfer payments have long disbursement chains: the fund allocation formula fails to accurately reflect local actual education needs and operating costs, and there are potential risks of efficiency loss and fund misappropriation in multi-level fiscal transmission. These issues ultimately weaken the equalization effect of fiscal transfer payments and reduce resources allocated to rural schools [4], reflecting the passive dependence and uncertainty of rural education in resource acquisition.

3.2. The impact of demographic changes and rigid resource allocation

The large-scale cross-regional population flow triggered by rapid urbanization conflicts with the current educational resource layout mechanism. On the one hand, the continuous outflow of school-age population in rural areas leads to shrinking student scales and idle educational resources, with some rural schools even facing enrollment difficulties or closure. On the other hand, urban areas with massive population inflow face severe pressure of insufficient school places, oversized classes and overloaded faculty and facilities.

Huang Huan and Li Xiang's analysis of education policy texts shows that although policymakers have recognized the profound impact of population mobility, the resource planning and adjustment mechanism often cannot keep pace with layout changes in implementation, lacking forward-looking and flexible adjustment based on population forecasts [9]. An Yongjun's case study of Gansu province further confirms that the one-way flow of rural students to cities and the lagging resource layout adjustment jointly intensify the misallocation of urban and rural compulsory education resources, forming the structural contradiction of "idle resources in rural areas and insufficient supply in urban areas" [10]. This non-accidental phenomenon of "population moving while resources remaining static" constantly reproduces and strengthens educational resource misallocation in dynamic development.

4. Evaluation and reflection on the effectiveness of policy intervention

To further alleviate the urban-rural gap in compulsory education resource allocation, China has introduced a series of supporting policies, and evaluating the effectiveness of relevant practices has become a core focus of academic research.

As two typical policy representatives, the Rural Compulsory Education Funding Guarantee Mechanism and the Special Post Teacher Program have effectively consolidated the foundation of rural education development through targeted investment. The funding mechanism has significantly improved the per-student funding guarantee level for rural students, providing stable financial support for the improvement of school conditions.

The Special Post Teacher Program, jointly funded by central and local governments, openly recruits qualified college graduates to serve in rural compulsory education schools for a 3-year term, with guaranteed salary and social security benefits, plus preferential policies such as post conversion and postgraduate entrance examination bonus points after service. It aims to resolve rural teachers' shortages in quantity and quality, optimize rural teacher structure, and supplement full-time teachers for rural schools, especially for remote areas and subjects including music, sports and fine arts.

From 2015 to 2025, the proportion of highly educated teachers in rural areas increased by 24 percentage points. The program has also promoted the renewal of rural teachers' teaching concepts and methods, and eased the one-way flow pressure of high-quality teachers to some extent. However, limitations remain: insufficient long-term improvement of teacher quality, lack of teaching practice among special-post teachers, limited rural training resources, poor teacher stability with some taking the post as a transition, inadequate human capital returns, lack of retention incentives, and uneven regional implementation.

5. Review and prospect of existing research

Existing studies have made remarkable progress in defining core dimensions, analyzing causes and evaluating policies of urban-rural compulsory education resource allocation disparities. Academics have identified funding, faculty and digital resources as three core analytical dimensions, verified proxy variables such as per capita public funding and the proportion of teachers with bachelor's degrees or above, clarified the evolution from total gaps to structural disparities, and revealed underlying causes including fiscal decentralization and population structure changes.

However, deficiencies remain. Most studies focus on hardware evaluation, pay insufficient attention to implicit resources like campus culture and home-school cooperation without a systematic evaluation framework. The mechanism analysis of dynamic evolution is weak, with most research limited to static data comparison. Cross-policy collaboration research is absent, and regional adaptability is inadequate with little attention to the heterogeneity of different regions and rural types.

Targeted future research should be expanded in four directions: building a multidimensional evaluation framework for implicit resources; deepening dynamic evolution mechanism research through panel data and case tracking; strengthening collaborative design of fiscal, faculty and digital policies; and focusing on regional heterogeneity to develop differentiated optimization strategies.

6. Conclusion

The disparity in compulsory education resource allocation between urban and rural areas is a core determinant of educational equity. This paper examines the dynamic evolution, institutional drivers,

and policy optimization pathways of such disparities, employing literature review and data analysis to clarify their formation mechanisms and optimization directions. The findings provide empirical support for advancing high-quality and balanced development of urban-rural compulsory education.

First, urban-rural resource disparities feature multidimensional dynamic evolution: they have shifted from absolute gaps in hardware infrastructure to structural imbalances and efficiency gaps in funding, teaching staff, and digital resources, demonstrating an overall trend of "general convergence with local differentiation". Meanwhile, gaps in implicit resources such as campus culture and home-school cooperation have emerged as new barriers to educational equity.

Second, these disparities stem from multiple intertwined factors—the urban-rural dual economic structure, fiscal decentralization constraints, and demographic shifts amid urbanization—collectively resulting in insufficient rural resource supply and aggravated resource misallocation.

Third, existing balancing policies including the Special Teacher Program and rural compulsory education funding guarantee mechanism have effectively narrowed the urban-rural gap, yet are constrained by inadequate policy coordination and incomplete long-term mechanisms.

Fourth, addressing such disparities requires coordinated allocation of explicit and implicit resources, consideration of regional heterogeneity, and strengthened policy synergy.

Theoretically, this study transcends the static analysis paradigm of existing research, establishes a dynamic analytical framework, deepens research on disparity formation mechanisms, and fills gaps in implicit resource allocation and cross-policy coordination. Practically, it identifies core contradictions and root causes of urban-rural resource allocation, and provides targeted policy references to consolidate educational equity and promote high-quality balanced compulsory education.

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