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# *Focusing on Educational Equity: The Rational Boundaries and Reasonable Approaches of Resource Allocation Bias Towards Key Middle Schools*

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***Abstract.*** In the process of global education modernization, the policy of key middle schools, as a local practice of concentrating resources to build demonstration schools, has played a role in elite training and regional education demonstration, but the problems of urban-rural/inter-school gap and unequal educational opportunities caused by excessive resource tilt have attracted widespread attention. From the perspective of educational equity, this paper systematically analyzes the historical positioning (early elite training, mid-term demonstration radiation, and later reform experiments), positive impact, and fairness challenges brought about by resource tilt (county financial imbalance, hollowing out of rural schools, and structural deprivation of educational opportunities). The study finds that the core contradiction of the key middle school system is that the policy is not dynamically adjusted with the demand for high-quality and balanced education, resulting in a disconnect between resource allocation and the goal of equity. Based on this, this paper proposes an optimization path to build an education equity monitoring and early warning system, design a gradient adjustment mechanism, and cultivate a collaborative development ecology, so as to provide a practical reference for the high-quality and balanced development of education.

***Keywords:*** Key Middle School Policies, Educational Equity, Allocation of Educational Resources, Fairness Challenges, Policy Optimization Path

## 1. Introduction

In the process of global educational modernization, how to rationally allocate high-quality educational resources has always been an important social issue. As society's demand for high-quality education continues to increase, countries around the world generally adopt the approach of concentrating resources to build model schools in order to enhance the overall educational level. The policy of key middle schools in China is a manifestation of such practices in the local context.

However, the rapid economic and social development has brought new challenges to the allocation of educational resources: key middle schools have gathered a large number of high-quality resources to become the core of regional education, while resources between ordinary schools and remote areas are becoming increasingly scarce, and the gap between urban and rural areas and schools continues to widen - this imbalance is not only related to the quality of education

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popularization, but also touches on the core issues of educational equity and regional coordinated development [1]. Studies have pointed out that the uneven allocation of urban and rural education resources can exacerbate social stratification through the chain of "resource siphoning - opportunity deprivation", and the resource fault at the county level is particularly prominent, which further highlights the urgency of exploring the tilted boundary of resources in key secondary schools [2].

The value of this study is reflected in two aspects: theoretically, by revealing the "agglomeration-imbalance" relationship in the resource allocation of key middle schools, combined with the mathematical statistical strategy of evaluating the efficiency of educational resource allocation, it provides a quantitative empirical basis for the study of educational equity; In practice, based on the development differences of different regions and referring to the resource optimization logic from the perspective of economic management, a dual-track support system of "introducing resources" and "cultivating independent ability" is proposed to help the healthy development of regional education.

From the perspective of educational equity, this paper conducts a comprehensive analysis of the "boundary of resource inclination in key middle schools". This paper discusses the problems that may lead to uneven regional development and unequal educational opportunities when the concentration of resources is too high, and clarifies the reasonable scope of resource allocation based on typical cases of basic education resource allocation in underdeveloped areas (such as ethnic minority areas in Guizhou) [3]. On this basis, a multi-measure plan through dynamic monitoring, phased regulation and multi-party cooperation is proposed, aiming to provide new ideas and references for the education management system in the new era.

## 2. The historical positioning and development logic of key middle schools

### 2.1. Policy evolution and functional positioning

The key middle school policy is an important strategy in China's basic education. Through national planning and policy guidance, it identifies some middle schools as key development targets, and concentrates resources such as excellent teachers, funds and facilities. This policy first sprouted in 1953, and gradually formed a more standardized institutional framework in the 1980s, becoming the main way to promote the development of high-quality education in China. This model belongs to the local exploration of "demonstration school construction", and the core idea is to select specific schools for key support and build the core force of regional education [4].

Its purpose is to "improve the quality of education and cultivate elite talents" in the early stage, to strengthen the "regional demonstration" function in the middle stage, to drive ordinary schools with the school-running experience and teaching achievements of key middle schools, and form a "point-to-point" education quality improvement mechanism and the dual goal of "coordinated development of regional education" [3,5].

### 2.2. The positive impact of key secondary schools

#### 2.2.1. Early stage: cultivation of elite talents and assurance of high-quality sources for higher education

In the early stages, key high schools adopted the strategy of 'concentrating resources and precise training' to establish an elite education system of 'selection, training, and delivery,' which provides a fundamental guarantee for the growth of important talents and higher education. The government

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prioritized the investment of quality teachers, advanced equipment, and funding, such as providing senior-title teachers, building standardized laboratories and libraries, and significantly enhancing teaching levels and talent cultivation efficiency. Through the mechanism of 'selection-training-delivery,' representatives are chosen from high-quality student sources, and targeted teaching programs are developed to deliver a large number of students with solid foundations and outstanding abilities to universities. For instance, in the early years of reform and opening, the proportion of key high school students among new university students was relatively high. These students, with their solid foundations, could quickly adapt to the pace of university life and become important reserves for scientific research and academic innovation, thereby indirectly improving the talent level of higher education in China. In the context of limited resources at the time, this method of concentrating efforts on major tasks effectively compensated for the shortage of top talent and promoted the development of talent cultivation and higher education.

### 2.2.2. Mid-term: demonstrative radiation and overall enhancement of regional education quality

In the middle stage of development, key middle schools began to assume the responsibility of "regional education benchmarking". Through experience transfer and model promotion, they have gradually formed a regional education improvement mechanism of "point to area". In terms of curriculum reform, teaching research and management innovation, these schools have become the object of reference for surrounding ordinary schools. For example, in the basic education curriculum reform in the 1980s, key middle schools took the lead in trying "hierarchical teaching" and "project-based learning", and after sorting out feasible plans, they were promoted to county and rural schools through open classes, seminars and training. The high enrollment rate and management experience of these key middle schools have prompted ordinary schools to continuously optimize teaching and teacher training, thereby narrowing the gap between schools in the region to a certain extent. For example, an eastern province has increased the classroom efficiency of ordinary schools in the region by 15% and the student compliance rate by 12% through the "Key School Teaching and Research Alliance", fully demonstrating the role of key middle schools in driving the overall development of regional education [2].

### 2.2.3. Preliminary explorations and practical experience accumulation of educational reform experiments

Key middle schools have made full use of their resources and teacher advantages, and have long been regarded as a "test field" for basic education reform, providing valuable experience for the transformation of national education. Since the 80s of the 20th century, they have become the main pilots for the reform of the new curriculum, quality education and evaluation system. For example, in the promotion of quality education in the 90s, key middle schools took the lead in promoting the integration of "moral, intellectual, physical, aesthetic and labor" and developed courses with local characteristics, effectively breaking through the limitations of exam-oriented education. In recent years, in the implementation of the "double reduction" policy, some key middle schools have also tried "after-school service improvement" and "homework hierarchical design" to form a generalizable plan. These pilot practices have effectively avoided the blindness in reform - after verifying the feasibility of the policy in key middle schools, it has been gradually extended to basic education across the country, reducing the risks and costs of reform, and promoting the transformation of basic education from a single examination to comprehensive development [3].

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## 3. The equity challenges brought by resource imbalance

As the country's education moves towards the stage of high-quality and balanced development, the traditional practice of "concentrating resources to focus on key points" in the past has gradually deviated from the society's expectations of "fairness and inclusiveness" and "coordinated development". In the process of policy implementation, the problems of regional ecological imbalance and unequal opportunities caused by excessive concentration of resources are becoming increasingly obvious. These problems are not deviations of the policy itself, but the result of not adjusting in time with the changes in the stage of educational development, and also reflect the urgency of the key middle school system in adapting to social needs and optimizing the system.

### 3.1. Transmission path of the imbalanced educational ecology in the region

#### 3.1.1. Uneven allocation of fiscal resources in counties

The early fiscal policy of "prioritizing the key points" has gradually evolved into a vicious circle of "siphon one-depletion" of resources at the county level, which it difficult to meet the needs of the current coordinated development of county education. In fact, there is a clear difference in education investment in the country's county-level finances: the coastal areas are fully invested, while the central and northeastern regions are relatively weak [6]. For example, a key school in a provincial capital satellite city attracts 62% of the education funds of surrounding counties and districts every year, resulting in a shortage of funds for other ordinary schools and slow facility renewal [1]. Although the education expenditure of poor counties and ethnic autonomous counties has increased in recent years, it has not improved simultaneously in terms of scale and teacher-student ratio, which shows that the financial allocation of "focusing on key points and neglecting the ordinary" is difficult to meet the needs of the overall regional improvement, and it is urgent to adjust the resource tilt strategy according to the actual situation.

#### 3.1.2. The 'hollowing out' of rural schools and the issue of left-behind children

The bias of key middle schools towards high-quality urban resources does not fully consider the special situation of rural schools, especially among left-behind children, resulting in the intensification of the problem of "hollowing" of rural education and deviating from society's expectations for the balanced development of urban and rural education. Rural areas face resource allocation and geographical constraints: For example, under the mechanism of "county management and school use", the renewal cycle of sports facilities in underdeveloped areas is longer than that in cities, and the proportion of full-time physical education teachers in rural primary schools is less than 30%, and many teachers have multiple responsibilities at the same time [7]. The impact of lack of resources on left-behind children is particularly pronounced: lack of family supervision, limited cognitive and skill development, and a vicious circle of "resource deprivation - hindered development - intergenerational replication". In addition, the rural population continues to flow to cities, and high-quality students and teachers are also concentrated in key urban schools, indicating that if the resource replenishment of rural education continues to be ignored, it is difficult to cope with the changes in urban and rural demographics and the expectation of educational equity. Only by rationally adjusting the allocation of resources can the "self-hematopoiesis" of rural education be truly realized.

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### 3.2. Structured deprivation of educational opportunities

#### 3.2.1. Matthew effect of student source screening

The "cross-district enrollment" policy of key middle schools has not only expanded the enrollment scale and improved educational resources, but also exacerbated the loss of county teachers. For example, rural schools are facing the dilemma of "unable to recruit and retain teachers": according to a survey of 35 counties in 18 provinces, 75% of rural teachers are willing to leave, with an annual turnover rate of 6.01%, which is significantly higher than that of urban schools, while the cross-district enrollment of key middle schools has further broken the balance of teachers: to compete for high-quality students, schools in the county have to poach rural teachers, resulting in a breakdown of the rural teaching team [8]. This phenomenon of "resource concentration and talent flow" has led rural education into a vicious circle of "loss of teachers, decrease in students, and depletion of resources": the departure of teachers leads to a decline in teaching standards, so parents are more inclined to send their children to key schools in urban areas, and the resources of rural schools are further shrinking. This situation shows that simply emphasizing the attraction of high-quality students does not consider the impact on rural teachers, and it is urgent to adjust the enrollment policy and teacher guarantee system in light of the actual situation.

#### 3.2.2. Compensatory compensation for family capital

In the process of implementing the policy and social development of key middle schools, factors such as the allocation of resources in key middle schools and the widening of family economic disparities have also led to families making up for the inequality of educational opportunities through extracurricular training. This shows that policies have not been effective in addressing the "implicit" issue of educational equity. Family conditions affect the possibility of children receiving quality education, and in the case of obvious resource differences, wealthy families often achieve the advantage of "school training" through customized training, while rural families have difficulty obtaining similar opportunities due to economic constraints, and the coverage rate of high-quality training is less than 30% [2,9]. This pattern of "combining resources and family capital" has gradually turned educational opportunities into an "accessory" to the family's economic strength. The core problem is that the original policy focuses more on the school level and is obviously insufficient to deal with the implicit equity gap brought about by family capital. If the relevant mechanisms are not improved promptly, it will be difficult to achieve true "fair opportunities". Therefore, policies should be dynamically adjusted in the future to reduce the impact of family economic differences on educational opportunities.

## 4. Future policy pathways to promote educational equity

As the country's education gradually moves from "scale popularization" to "high-quality balance", future policies need to focus on "dynamically adapting to fair needs". By establishing a governance system integrating supervision, regulation and cooperation, the concept of fairness runs through every link of resource allocation. This is not only an important response to the current policy imbalance in key middle schools, but also an inevitable choice to conform to the overall education development trend.

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### 4.1. Monitoring and early warning of education equity: the basis for precise policy regulation

To ensure educational equity, the government must first establish a set of monitoring mechanisms that are "detectable and well-founded". The role of this mechanism is to accurately identify the existing fairness shortcomings, so as to avoid blind investment of resources and make policy adjustments more targeted. In monitoring, the government should not only stop at simple numerical quantification, but also build an indicator system to make hidden fairness issues intuitive and provide solid data support for policy optimization.

From the perspective of indicator design, the core of measuring the fairness of resource allocation lies in the "principle of differentiation": for example, dynamically adjust the teacher-student ratio according to region, take into account the problems of scattered students in rural schools and heavier teaching tasks, and avoid using unified indicators to cover up actual differences; Add a regional cost coefficient to the per capita expenditure to respond to the reality that "the same funding has different effects in different regions", and emphasize that "substantive fairness is better than formal fairness"; In addition, the utilization rate of digital devices should be included in the early warning system, breaking through the misunderstanding of "focusing on hardware over application", and ensuring that the invested hardware is successfully transformed into practical results of educational equity. This series of indicators echoes each other and is in line with the "output-oriented" fair measurement principle.

On the other hand, with the help of spatial visualization of education equity heat maps, the abundance and scarcity of resources in different regions can be clearly displayed, breaking down information barriers and allowing policymakers to intuitively perceive the problem. As a result, decision-making shifts from empirical to data-driven, providing a scientific basis for accurate allocation of resources. According to it, improve the effectiveness of policies, avoid inefficient investment in the past blind "pepper noodles", and ensure that each adjustment is aimed at specific fair shortcomings.

### 4.2. Gradient adjustment: the core strategy for resource balance

The key to achieving educational equity is to break the habit of resource allocation of "one-way tilt" and achieve orderly resource flow through gradient adjustment. This actually reflects the shift in policy from "efficiency first" to "balancing efficiency and fairness".

The core of the contract mechanism of "key school-ordinary school" pairing assistance lies in "using the rigid constraints of policies to transform the advantages of key schools into fair dividends for the region as a whole". In the past, the demonstration role of key schools mostly stayed in the exchange of experience, while the contractual mechanism strengthened guidance by clarifying responsibilities (such as the dispatch of teachers in key schools and the improvement goals of ordinary schools), and introduced third-party evaluation to avoid the phenomenon of "key schools standing out". Drawing on the experience of "inter-school coordination" in Guizhou's ethnic minority areas, this approach not only consolidates the leading role of key schools, but also ensures that resources are tilted towards weak schools, to achieve "helping the weak and the poor", reflecting the development logic from "priority" to "leading combination" [3].

At the same time, the reverse transfer payment mechanism uses the Gini coefficient to adjust financial allocations through the principle of "fair compensation", aiming to tilt financial resources to weakly developed areas. This mechanism breaks the traditional simple model of "distribution according to scale" and turns to "distribution according to demand" to ensure the rational flow of resources between regions. Strict supervision of special funds is also one of the safeguards to ensure

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that the funds are truly used to improve teachers and infrastructure in weak areas, thereby promoting institutional guarantees of educational equity.

### 4.3. Collaborative development of educational ecology

To create a long-term fair guarantee to achieve comprehensive educational equity, it is necessary to establish an "education ecology without borders and common development". The core of this ecology is to break down the barriers between regions and universities, allowing high-quality resources to flow and be shared freely. This represents the transformation of policies from "local adjustment" to "systematic governance" and is the only way for future development.

For example, the cross-regional virtual teaching and research community goes far beyond the technical level of traditional "transmission courses", and its essence is to promote the inclusiveness of high-quality educational resources. Using 5G technology as a means, the focus is to realize the sharing of high-quality curriculum, teaching concepts and teaching and research support between rural schools and high-quality middle schools, so as to solve the problem of limited coverage and insufficient sustainability of "sending teaching to the countryside". The goal is to make "equity" no longer mean averaging, but to ensure that every child has equal opportunities in education.

In addition, key middle schools provide online lesson preparation and resource sharing every week, which actually turns the "reform results" of urban high-quality education into regional public resources, so that rural teachers can get professional growth without leaving their posts, which is a concrete embodiment of "process fairness". The innovation of the teacher rotation system also lies in breaking the solidification of teachers: in the past, the flow of teachers was mostly one-way flow to high-quality regions, but the new mechanism emphasized the two-way cooperation of "promotion and rotation" and "incentive guarantee", so that teachers from key schools can bring experience in rural schools, and rural teachers can also grow in key schools. For example, 15% of teachers from key schools in an eastern province went to rural areas for job rotation, which effectively alleviated the problem of teacher concentration and promoted the institutional innovation of "fair mobility" [10].

## 5. Conclusion

This study explores the relationship between the reasonable range of resource tilt and educational equity in key middle schools. The results show that the key secondary school policy has played an important role in different stages: in the early stage, elite talents and higher education were supported through "resource concentration and precise training"; in the medium term, demonstration will drive the improvement of the overall education level of the region; In the long term, it has become a pilot for basic education reform and provides experience for transformation. However, with the pursuit of high-quality and balanced development, excessive resource tilt has caused fairness issues, such as the phenomenon of county financial "siphon", the hollowing out of rural schools and unequal opportunities, mainly because policies have failed to adapt to changes in social demand for fairness promptly.

In order to solve these problems, a monitoring and early warning system for educational fairness should be established to accurately identify shortcomings; design a gradient adjustment mechanism to promote resource balance; Establish a coordinated development ecology and break down barriers. In this way, the leading role of key middle schools and the coordinated development of regional equity. This study provides a theoretical and practical basis for improving resource allocation and

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promoting the transformation from "large-scale popularization" to "high-quality and balanced", and also points out the direction for future policy adjustment.

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