

# Game-Theoretic Analysis of the Loss of High-Quality Student Sources in County-Level General High Schools and the Construction of a Return Mechanism

**Jieru Su\***

Tianshui Second high school, Tianshui 741000, Gansu, China

*\*Author to whom correspondence should be addressed.*

**Copyright:** © 2025 Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), permitting distribution and reproduction in any medium, provided the original work is cited.

---

## Abstract

With the rapid development of China's economy and society, county-level general high schools have fallen into a vicious cycle characterized by "student outflow – teacher mobility – reduced investment." The fundamental cause lies in the imbalance between the supply and demand of educational resources. Urban high schools, benefiting from policy preferences and capital advantages, occupy a dominant position, while county-level general high schools struggle to compete due to insufficient resources. Differences among governments, schools, and families further intensify student outflow. This paper proposes reconstructing a balanced educational ecosystem through optimizing resource allocation, innovating distinctive school-running models, strengthening home-school collaboration, and improving policy safeguards. By means of institutional restructuring, this mechanism integrates the efforts of multiple stakeholders, helps county-level high schools regain confidence in talent cultivation, and provides support for educational equity and high-quality regional development.

---

## Keywords

county-level regions; general high schools; loss of high-quality student sources; game-theoretic analysis; return mechanism

---

**Online publication:** October 26, 2025

## 1. Introduction

County-level general high schools undertake the public mission of cultivating local talent, maintaining social stability, and invigorating grassroots vitality. However, with the sustained outflow of high-quality student sources, the educational functions of schools have weakened, local cultural confidence has been undermined, and the balance of educational equity has gradually tilted. The

return mechanism is not a simple measure of retention, but rather an institutional reconstruction that seeks to establish a new equilibrium among schools, students, families, governments, and society. Through quality commitments, schools reduce families' perceptions of risk; through anticipated long-term developmental returns, students enhance their willingness to remain; and through perceptible institutional provision, governments

consolidate the foundation of county-level education. Only in this way can county-level high schools regain confidence in their capacity to retain students, deliver high-quality education, and achieve favorable outcomes, thereby reserving sustainable and reliable human resources for regional development.

## **2. Game-theoretic analysis of the loss of high-quality student sources in county-level general high schools**

### **2.1. Supply–demand imbalance game: resource allocation as the dominant factor**

The core game-theoretic logic underlying the loss of high-quality student sources in county-level general high schools originates from the imbalance in the supply of educational resources, forming a self-reinforcing cycle of “scarcity of high-quality resources – student pursuit of resources – further concentration of resources.” Urban high schools, benefiting from policy preferences and capital advantages, have developed significant competitive strengths in areas such as faculty quality, infrastructure, and pathways to higher education, thereby becoming the preferred choice for outstanding students<sup>[1]</sup>. In contrast, county-level high schools face constraints including insufficient resource investment and the loss of high-quality teachers, making it difficult to meet the demand for high-quality education among certain students and parents, and placing them in a passive position within the competitive game.

As key participants in this game, parents and students make rational choices based on expectations of academic advancement and future development. Urban high schools are regarded as important pathways for educational upgrading, whereas county-level high schools, lacking core competitiveness, struggle to exert strong attraction for high-achieving students. In essence, this supply–demand game reflects a form of market selection behavior driven by unequal distribution of educational resources, further widening the educational gap between county-level and urban high schools and reinforcing the game outcome characterized by the concentration of high-quality student sources and high-quality resources.

### **2.2. Multi-stakeholder interest game: decision-making logic as the driving force**

The loss of high-quality students is essentially the outcome of an interest game among governments, schools, and families. At the governmental level, in pursuit of regional educational branding effects, the allocation of educational resources tends to favor urban areas, while the need for balanced development in county-level education is often neglected. As a result, county-level high schools lack sufficient policy and resource support within this game. At the school level, urban high schools adopt market-oriented enrollment strategies, develop distinctive curricula, and actively compete for high-achieving students, thereby enhancing academic performance and social reputation. In contrast, constrained by enrollment policies and limited resource endowments, county-level high schools find it difficult to engage in effective competition and fall into a vicious cycle characterized by “the outflow of high-quality students, declining educational quality, and diminishing attractiveness.” At the family level, parents tend to view educational investment as a long-term return; in order to provide their children with better developmental opportunities, they are willing to bear high costs to send them to urban schools. The divergence of interests and strategic interactions among these three stakeholders intensify the loss of high-quality student sources in county-level general high schools.

## **3. Retention and application mechanisms for high-quality student sources in county-level general high schools**

### **3.1. Optimizing resource allocation to consolidate the foundation for retention**

To retain high-quality student sources, county-level general high schools must optimize the allocation of educational resources and foster a competitive educational ecosystem. Governments should increase financial investment in county-level high schools, with a focus on improving school infrastructure by constructing standardized laboratories, multimedia classrooms, libraries, and sports facilities, thereby narrowing the gap in hardware conditions between county-level and urban high schools. At the same time, mechanisms for recruiting

and cultivating high-quality teachers in county-level high schools should be established by improving salary and benefit packages, providing professional development platforms, and addressing staffing constraints, so as to attract outstanding university graduates and experienced teachers to teach in county-level schools.

Teacher quality enhancement programs should be implemented through the regular organization of county-level high school teachers' participation in provincial and municipal teaching research activities, inter-school exchanges with prestigious institutions, and educational research projects, in order to improve teaching competence and overall educational standards<sup>[2]</sup>. In addition, educational resources within the county can be integrated by establishing coordinated cultivation mechanisms among county-level high schools and high-quality junior and primary schools. Cooperation can be strengthened in areas such as curriculum development, teaching research, and resource sharing, thereby cultivating high-quality student sources at the grassroots level. This approach enables students to access continuous high-quality educational resources within the county, reduces student outflow caused by resource constraints, and strengthens the foundational capacity of county-level high schools to retain and develop high-quality student sources.

### **3.2. Innovating school-running models to build distinctive educational brands**

To retain high-quality student sources, county-level general high schools must innovate school-running models and develop distinctive educational brands by constructing specialized and characteristic curriculum systems grounded in local industries and regional cultural resources. For example, in agriculturally oriented counties, courses on modern agricultural technology exploration can be introduced; based on local historical and cultural traditions, courses on traditional culture and heritage can be developed; and vocational skill extension courses can be offered in response to local industrial demands. These initiatives can better address students' diverse developmental needs and enable them to gain personalized educational experiences within county-level high schools.

Reforms toward diversified teaching models should

be promoted to overcome the limitations of traditional classroom instruction. By adopting project-based learning, inquiry-based learning, and collaborative learning approaches, schools can stimulate students' interest in learning and enhance their initiative and engagement. A personalized student development guidance system should be established, providing individualized academic guidance and growth plans based on students' interests, learning levels, and developmental trajectories, thereby helping students identify their own development pathways and strengthening their sense of self-identity and belonging.

In addition, efforts should be made to strengthen campus culture development by fostering a cultural atmosphere characterized by aspiration, diligence, and progress. Schools can further enrich students' campus life and enhance their sense of cohesion and belonging through activities such as science and technology festivals, arts festivals, sports events, and student clubs. Through the creation of distinctive school brands, county-level general high schools can become effective platforms for students' self-realization and attractive environments for recruiting and retaining high-quality students.

### **3.3. Strengthening home–school collaboration to build synergistic educational forces**

In county-level general high schools, home–school cooperation serves as a critical safeguard for retaining high-quality student sources and requires the establishment of effective and well-coordinated collaborative mechanisms to form a unified educational force<sup>[3]</sup>. Through multiple channels such as parent meetings, home visits, parent WeChat groups, and online communication conferences, schools can establish a regular and sustained platform for home–school interaction. This platform enables schools to share students' academic performance, ideological development, and school life with parents, while also soliciting parental feedback to better understand their educational needs and concerns.

Parent education programs should be organized on a regular basis, with educational experts and outstanding teachers invited to deliver lectures on topics including parent–child communication skills, adolescent psychological guidance, and academic and

career planning. These initiatives can enhance parents' awareness of family education, guide them toward adopting scientific educational philosophies, and foster a rational understanding of students' growth and development, thereby reducing student outflow caused by blind pursuit of urban educational resources.

Through activities such as parent–child study programs, school open days, and parent volunteer services, parents can be encouraged to participate more deeply in school governance and educational practices, strengthening their trust in and identification with the school. By promoting effective communication and close coordination between schools and families, a positive pattern can be formed in which schools are committed to nurturing students and parents confidently entrust their children to the school, thus providing strong collaborative support for the retention of high-quality student sources.

### **3.4. Improving safeguard mechanisms to optimize the educational environment**

To retain high-quality students, county-level general high schools must establish comprehensive safeguard mechanisms and cultivate a supportive educational environment. Governments should formulate targeted policy support measures, such as establishing incentive and scholarship programs for outstanding students who choose to study in county-level high schools, including tuition reductions, merit-based scholarships, and living allowances. In addition, county-level education evaluation systems should be optimized by shifting away from assessment standards that rely solely on academic performance, and by incorporating indicators such as student retention rates, improvements in students' comprehensive qualities, and the effectiveness of distinctive school characteristics into evaluation frameworks, thereby guiding county-level high schools toward sustainable, quality-oriented development.

Efforts should be strengthened to improve the county-level educational ecosystem by regulating enrollment practices and strictly curbing the selective recruitment of top-performing students by urban high schools, so as to safeguard equal access to education

for county-level students. The educational environment of county-level high schools should also be improved through enhanced environmental governance around school campuses, including the elimination of illegal commercial venues such as internet cafés and gaming centers, in order to create a safe and healthy learning and living environment for students.

At the same time, greater emphasis should be placed on students' physical and mental well-being by establishing a comprehensive mental health education system. This includes employing professional mental health educators, offering mental health courses, and setting up counseling centers to provide students with psychological counseling and support services. Such measures can help students alleviate academic pressure and address developmental challenges. Through the improvement of policy safeguards and the optimization of the educational environment, favorable external conditions can be created for retaining high-quality student sources in county-level general high schools, enabling outstanding students to remain in their local areas and pursue their studies with confidence.

## **4. Conclusion**

In summary, the establishment of a student return mechanism represents not only a profound response to the principle of educational equity, but also a crucial investment in the future competitiveness of county-level regions. It enables schools to regain confidence in talent cultivation and allows students to access high-quality educational resources closer to home, thereby positioning local governments more proactively at the starting point of the talent development chain. Looking ahead, only through continuous and iterative institutional design—ensuring that improvements in educational quality advance in tandem with societal expectations—can short-term policy incentives be transformed into sustainable ecological advantages. In this way, county-level education can truly become a solid pillar supporting rural revitalization and high-quality regional development.

### **Disclosure statement**

The author declares no conflict of interest.

### **References**

- [1] Yang H, 2024, Efficiency or Equity: On the Allocation of Educational Resources in County-Level Regions. *Qiúsuǒ*, (04): 171–180.
- [2] Wei HM, Que YD, Chen L, 2024, Dilemmas and Countermeasures in the Revitalization of County-Level General High Schools. *Jiangsu Education Research*, (02): 24–31.
- [3] Wang TJ, Min WF, Guo CB, 2023, The Impact of County-Level High School Development on Rural Students' Access to High-Quality Universities. *China Basic Education*, (12): 45–49.

### **Publisher's note**

*Whoice Publishing remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.*