

# Chapter 6

## Smart Education Promotes the Revitalization of Rural Education



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### 6.1 Overview of Education in Liuyang

Liuyang, located in the east of Hunan, has 388 schools at all levels, including 342 rural schools (including 81 village schools and teaching points with less than 100 students). Liuyang's education needs to achieve high-quality and balanced development continuously, and there are the following main obstacles:

**Rural teachers are weak, and it is difficult to complete the curriculum.** On the one hand, Liuyang attracts teachers to teach in rural schools through policy guidance and incentive mechanisms such as increasing the training of public-funded normal students, recruiting teachers at fixed points, subsidies for township work and subsidies for remote mountainous areas; on the other hand, it helps rural small-scale schools to improve the quality of education and teaching by volunteering for teaching and walking in their jurisdictions. However, with the acceleration of urbanization, there are more and more small-scale schools in rural areas, and it is a long-term and persistent demand to improve the teaching quality of small-scale schools in rural areas.

**Rural teachers' professional development is limited and their growth cycle is long.** At present, training is the main way for the professional development of rural teachers. However, teachers' training generally focuses on imparting theoretical knowledge, skills and experience in a unified way, there are few teaching practice activities in which all trainers participate. Moreover, it is easy to ignore the particularity of the geographical area where teachers are located. In addition, teachers in rural schools have a long growth cycle and limited development due to tight staffing,

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heavy teaching tasks, weak school-based research atmosphere and few training and learning opportunities.

**The task of balanced development of urban and rural education is heavy and the pressure is high.** Although the hardware facilities of rural schools have been greatly improved, the traditional education management and governance are difficult, and the balanced development of education between urban and rural areas and between schools is a heavy task and a heavy pressure because the teachers in rural schools are generally weak, the mobility is high, the quality education resources are few, and the school layout is characterized by many points, long lines and wide areas.

## 6.2 The Main Solutions

Liuyang is a “pilot province of education informatization 2.0” established by the Ministry of Education of Hunan, and Changsha is the first batch of “smart education demonstration zones”. Liuyang fully understands the spirit of the relevant documents of national and provincial education informatization and combines the educational reality in the region to deeply explore “Internet + education”, accelerate the circulation of high-quality educational resources, and connect regional, inter-school and urban–rural education with integrated development. It tries its best to promote compulsory education from basic balance to high-quality balance through online collaborative teaching and research in different places.

## 6.3 Work Measures and Promotion Mechanism

Taking Liuyang’s “Three Classrooms” as the starting point, and the network school as the link, the primary and secondary schools in the city form a “network school association” to carry out network teaching, teacher training and inter-school communication, and use big data to implement precise teaching to improve classroom teaching efficiency. The specific measures and promotion mechanisms are as follows.

### 6.3.1 *Create a Strategy-Driven Engine for the Digital Transformation of Education*

**The first is to build consensus on development.** Liuyang Municipal Party Committee and Municipal Government successively issued the *Implementation*

*Opinions on Accelerating the Process of Building a Strong Education City, the Decision on Accelerating the Construction of a Strong Education City to Realize Education Modernization in an All-round Way, the 14th Five-Year Plan for the Development of Education in Liuyang City and the Plan of Action for Smart Education in Liuyang City*, which explicitly took education informatization as the starting point, built a strong education city in an all-round way, ensured priority investment, deployment and implementation, and the whole city worked together to provide organizational guarantee for promoting education equity and rural education revitalization.

**The second is to develop “new infrastructure”.** Liuyang has built an education metropolitan area network with high standards, realizing a 10-megabit backbone, 100-megabit enrollment and 100-megabit arrival, covering all kinds of schools (including teaching points) at all levels in the city. Build a smart education cloud platform that integrates information systems such as teaching resources, interactive teaching, precision teaching, network research, quality monitoring and education management. It coordinates the construction of all kinds of information intelligent terminals, and provides basic guarantee for promoting education equity and rural education revitalization.

**The third is platform integration and interoperability.** According to the needs of work, Liuyang has successively developed various educational management and teaching application systems, and built various educational resources by stages. In order to facilitate teachers and students to use and share all kinds of data, Liuyang has integrated and optimized all platforms, realized single sign-on and unified authentication, and provided technical support for promoting education equity and rural education revitalization.

### **6.3.2 Create a Digital Driven Situation of Rural Information Teaching**

With the acceleration of urbanization, there are some practical problems in rural small-scale schools, such as “lack of teachers, lack of teaching, lack of classes, poor schooling” and poor education quality. Therefore, Liuyang makes full use of information technology to expand the coverage of quality education resources, activate the vitality of rural education and narrow the educational gap between urban and rural areas.

**First, gather high-quality educational resources to promote the revitalization of rural education.** Through extensive publicity and strengthening the appraisal, on the one hand, it is suggested to make good use of national and provincial education public resources, and introduce website resources such as Zhixue.com and Discipline.com. On the other hand, local famous teachers are organized to record high-quality video courses, especially those in primary school music, art and English, and efforts are made to make up for the shortage of professional teachers in rural schools. In order to enhance the attractiveness of after-school services and meet the diverse

needs of students, Liuyang also organized famous backbone teachers to develop characteristic courses and select high-quality teaching resources for rural students to choose to study.

**The second is to implement the network joint school project to promote regional education equity.** It is encouraged to construct the construction and application mode of county-level network joint school with “three-fixed, four-synchronous” network teaching and “three-fixed, three-in-place” network teaching and research. Urban high-quality schools will help rural weak schools to set up a good curriculum, and organize urban and rural teachers to carry out network teaching and research activities, so that rural children can enjoy urban high-quality classrooms at the same time, and rural teachers can conduct teaching and research together with famous teachers at home. Until now, there are 88 lecture classrooms and 187 interactive lecture classrooms in Liuyang, which cover all rural schools in the city with high-quality teaching resources. Through synchronous interactive classrooms, asynchronous on-demand classrooms and famous teachers’ classrooms, teachers in the city are driven to participate in activities such as famous teachers’ guidance, online seminars, resource development and application.

**The third is to carry out accurate teaching of big data and explore a new mode of classroom teaching.** We implement accurate teaching of big data in 69 middle schools in the city, advocate schools to teach students in accordance with their aptitude based on big data, cultivate students’ awareness and habits of autonomous learning, and advocate inquiry learning and heuristic learning. For example, the theme study of “three sections and four rings” in No.2 Middle School, the big data precision teaching in No.4 Middle School, Dayao Middle School and Yanqian Middle School, etc., have achieved obvious educational and teaching effects by identifying the breakthrough point of classroom teaching reform.

### ***6.3.3 Construct a Mechanism-Driven Ecology of Smart Education in Liuyang***

**The first is to build a training mechanism integrating research and training.** Taking Liuyang teachers’ workshops, famous teachers’ studios and smart education lecturers as the starting point, we carried out heterogeneous and interdisciplinary teaching activities in the same class across schools through the platform of “network school association”, organized urban and rural teachers to carry out collective lesson preparation, grinding, research and evaluation activities online and offline, and led subject teachers to conduct network training by famous teachers, which enabled teachers to participate in regional teaching and research activities without leaving home, thus promoting the professional growth of rural teachers.

**The second is to build a reform mechanism of education and teaching.** Liuyang set up the “Smart Education Award” to encourage schools to attach great importance to information-based teaching. We selected 20 primary and secondary schools in

the city as integrated application experimental schools to explore a new learner-centered teaching model. We fully implement big data precision teaching in 69 middle schools in the city, and explore the organic combination of large-scale education and personalized training. We also selected six primary and secondary schools in the city as “smart classroom” pilot schools, focusing on classroom teaching, building new courses, new classrooms and new ecology based on student development, and promoting the integrated development of urban and rural education.

**The third is to build a visual management and governance mechanism.** Assist in supervising and managing campus security through Liuyang Smart Education Cloud Platform Command Center, and find online feedback, timely rectification and visual return visits when problems are found. Through the teaching quality monitoring system, analyze and diagnose the teaching quality of each school, and provide a scientific decision-making basis for school teaching and management; Through the educational equipment management system, the balanced allocation of the application, distribution and management of educational technology equipment in schools can be realized, and the urban and rural areas can play chess together. Through the intelligent teaching and research system, teachers and researchers can be provided with a platform for remote classroom listening and evaluation, and front-line teachers can be provided with teaching analysis reports, which can effectively improve the teaching quality.

## 6.4 Achievements and Experience

By vigorously developing “Internet + education”, Liuyang has been awarded the title of “Hunan Modern Educational Technology Experimental County”, “Hunan Rural Network Joint School Group Construction Experimental County”, “Hunan Education Informatization Integration Application Experimental Zone” and Changsha Smart Education Demonstration Zone. Through smart education, it has achieved the following results.

**First, co-construction and sharing of high-quality resources will promote the improvement of rural education quality.** Through “network joint school”, music, fine arts, English and other courses are offered to small rural schools in a normal way, so as to solve the difficulty of “uneven opening and bad opening” of nationally prescribed courses in rural schools. Through the Liuyang Smart Education Cloud Platform, high-quality teaching resources are co-built and shared, platforms are interconnected, applications are diverse, and management is convenient and convenient, which makes up the shortcomings of poor educational resources in rural schools and beyond the reach of management. By means of information technology, we can continuously expand the coverage of high-quality education resources, optimize education management and governance, and promote the high-quality balance of regional education. In recent years, in Liuyang’s national compulsory education quality monitoring, the subject quality measured has been obviously improved

compared with the past, and the degree of education equalization has been continuously improved, which has alleviated the main contradiction of rural education and improved the people's satisfaction with education.

**The second is to build a “network school association” to promote the professional growth of rural teachers.** Relying on the “network-school association”, a network teaching and research alliance will be set up. Famous teachers will lead urban and rural teachers to conduct network research, and through online and offline teaching seminars and inter-school exchanges and other activities, teachers' smart education concept will be updated, education and teaching methods will be changed and professional growth will be promoted. By comparing the awards of primary and secondary school teachers' personal growth in our city in recent three years, the number and grade of awards have been greatly improved, especially in the online collective lesson preparation contest of teachers' information technology and subject teaching integration and innovative application in Hunan Province. In 2021, the total number of awards increased by 92% compared with 2020, of which rural teachers accounted for 76.3%.

**The third is to implement smart education and comprehensively improve the quality of teachers and students.** By vigorously developing “Internet + education”, implementing smart education and promoting the reform of education and teaching methods, the comprehensive qualities of teachers and students, such as information literacy and digital literacy, have been greatly improved, the educational concept of primary and secondary school teachers has been updated, the educational level and quality have been improved, and the comprehensive strength of education has been continuously enhanced. In the past 3 years, Liuyang Education has won 30 national honors and 52 provincial honors; In various disciplines, 907 people won national awards and 3493 people won provincial awards; In the scientific and technological innovation competition, 96 achievements were awarded at the national level and 107 at the provincial level.

**The fourth is to refine and summarize in time and comprehensively popularize the application results.** After years of exploration and practice, a total of 20 papers related to smart education have been published in national and provincial official journals; Thirty-one cases were selected as outstanding cases of smart education in Hunan Province or Changsha City, and the application case of “Network-School Consortium” smart education platform was selected as the case set of “Typical Applications and Solutions of the First New Smart City in Changsha City”.

Through years of practice in Liuyang, we have summarized the following working experience. To promote regional education quality balance through educational informatization, firstly, we should adhere to the principle of “demand traction, application is king and sustainable development”, and comprehensively use information technology to enlarge advantages and enhance connotation. Second, it is necessary to strengthen environmental construction, such as building software platforms, providing excellent resources, providing information facilities, and providing a single sign-on network teaching environment. Third, improve the working mechanism, and introduce practical incentive measures and evaluation methods. Fourth, pay attention to hierarchical training and constantly improve the information literacy

of management cadres and front-line teachers. Fifth, strengthen coordination, pay attention to the coordination of relevant government departments (such as education, finance, development and reform, industrial information, network information and data resources) and the internal education system (such as basic education, teaching and research, audio-visual education and equipment) to form a joint force.