



# The Digital Transformation of Local University: Value, Plight and Strategy

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**Abstract.** digital empowerment of higher education is both an effective way of promoting the development of higher education & innovate talent cultivation models in the new era and also an important means of promoting the modernization of education. At present, digitalization of higher education is widely practiced globally, and our country has also carried out the education digital strategic action reform education model and achieved good results. during transition stage from educational informatization to educational digitization has made important progress, but the development level of the digital economy is relatively low, the digitization of the local university is still very slow at the same time the existence of digital education is not fully constructed, the organizational leadership is imperfect, the teacher's digital literacy is not high, the digital teaching model is not innovative enough and Backward technological. The digital transformation of local university must help to promote the digital upgrading of the professional, improve the digital literacy of teachers, promote the transformation of digital teaching mode, build the education digital quality resource platform, and strengthen the digital management and service of education.

**Keywords:** local university; digital transformation; strategy

## 1 Introduction

With the onset of the Fourth Industrial Revolution, digital technologies and transformation have become the driving forces that are reshaping human society. The digitalization of higher education is widely practiced worldwide. The pace of digital transformation of education in China has been accelerating, with Shanghai as a pilot and continuous promotion, and since 2022, the implementation of education digitalization strategic actions has been promoted, and the digital education practices of various regions and universities have been continuously promoted in terms of smart platform construction, teaching model innovation, and organizational governance. At the same time, the practical results of various regions and universities are uneven. Compared with the world's universities and domestic advanced regional universities, due to the shortage of funds, regional digital economy level differences and other reasons, the digital development of local undergraduate colleges is still slow, there are many

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problems, and there are still gaps in education and research. Local undergraduate colleges account for 54% of the country's colleges and universities, and their digital transformation is related to the quality of higher education and the realization of China's education modernization goals. This paper explores the shortcomings of the digital transformation process of local undergraduate colleges through comparison, and puts forward a series of measures to accelerate the pace of education digitalization, which is a meaningful attempt to promote local undergraduate colleges to improve the quality of higher education, innovate talent training models and realize the modernization of higher education governance.

## 2 Preface

Digital transformation is fundamentally a change that involves people, processes, strategy, structure, and competitive landscape.<sup>[1]</sup> China attaches great importance to digital transformation. The Outline of the 14th Five Year Plan proposes: "Accelerating digital development, building a digital China, welcoming the digital era, activating the potential of data elements, promoting the construction of a strong network country, and Accelerating the construction of the digital economy, digital society, and digital government, and drive the overall transformation of production, lifestyle, and governance through digital transformation." The report of the 20th National Congress of the CPC proposes for the first time to "promote the digitization of education" and build a learning society and a learning country for all people lifelong learning. On May 29, 2023, General Secretary Xi Jinping proposes: "Digitalization of education is an important breakthrough for China to open up a new track of educational development and shape new advantages in educational development." On August 4th, One of the "Beijing Initiatives" released by the World University Presidents' Forum held in Beijing proposes: "Accelerating the digital development of higher education. Universities around the world should fully leverage the positive role of new technologies such as big data and artificial intelligence, further bridge the digital divide, strengthen international cooperation in digital education, jointly establish global digital standards and policy support systems for higher education, and work together to create open, green, innovative, and inclusive digital campuses and digital ecosystems." Education digitization, as an important component of educational modernization, is becoming a new engine for building an a Powerful Country of Higher Education, an important strategy for promoting high-quality development of higher education, and a powerful lever for the transformation and development of local undergraduate colleges.

### **3 Digitalization is an important strategy for promoting comprehensive reform of higher education**

#### **3.1 Digitalization is the driving force behind the high-quality development of higher education**

Running a satisfactory education for talents and accelerating the construction of a high-quality education system is a strategic task proposed by the 20th National Congress of the Communist Party of China for education, Improving the quality of education, promoting educational equity, and optimizing educational governance have become the current and future needs of society, countries, and individuals for education. In September 2022, at the United Nations Summit on Educational Change, United Nations Secretary General Antonio Guterres pointed out that the digital revolution can become one of the most powerful tools to ensure quality education for everyone, change teacher teaching, and improve student learning.<sup>[2]</sup> Digital education promotes ubiquitous learning, allowing regions with relatively scarce teaching resources to enjoy high-quality educational resources, optimize resource allocation, narrow gaps, and promote educational equity; The virtual mobility spawned during the pandemic has provided a larger learning space for groups of students whose families are unable to care for or who are unable to study across borders<sup>[3]</sup> Digital education helps collect learning behavior data for Data analysis, conducting smart assessments, and promoting personalized education to implement individualized teaching. The digital platform for digital education development, rich and high-quality teaching resources, and diverse teaching methods broaden the space for cultivating morality, intelligence, physical fitness, art and labor, promote the comprehensive development of students, and provide a source of motivation for universities to implement the fundamental task of cultivating morality and talent.

#### **3.2 Digitalization is an Effective Way to Innovate the Talent Training Model in Higher Education in the New Era**

At present, Governments at all levels vigorously promote the intelligent transformation of the real economy, and strongly call for innovative and versatile talents in areas such as intelligent manufacturing engineering, digitalization of manufacturing, and digital empowerment of small and medium-sized enterprises. According to the <Research and Development Report on Industrial Digital Talents (2023)> released by Renrui Talent, Deloitte China, and Social Science Literature Publishing House in Beijing, The demand for digital and intelligent talents in society will continue to increase, and the overall gap in digital comprehensive talents is currently around 25 to 30 million, which is constantly expanding. Accelerating the supply and cultivation of digital talents is a major mission of higher education. To deepen the reform of digital education, we can accelerate the reform of talent cultivation system and continuously update talent's knowledge, skills, and abilities. Digital education will promote the cultivation of innovative and versatile talents by building intelligent majors, exploring new teaching models, updating teaching content, creating a smart learning environ-

ment, enhancing digital literacy, and ultimately promoting the cultivation of innovative and versatile talents.

### **3.3 Digitalization is an important way to achieve modernization of higher education governance**

April 19, 2022, proposes When General Secretary Xi Jinping chaired the 25th meeting of the Central Committee for Comprehensively Deepening Reform, he emphasized that: We need to widely apply digital technology to government management services, promote the digital and intelligent operation of the government, and provide strong support for promoting the modernization of the national governance system and governance capabilities. The application of digital technology in the field of educational governance can generate new management ideas, means, and methods, transforming institutional advantages into management efficiency. Digital technology will deeply explore, analyze, and aggregate various types of data, making communication smoother and decision-making more scientific. This will promote process optimization, governance mechanism improvement, education subject construction and sharing, and precise governance decision-making, promoting the process of building a modern university system with Chinese characteristics.

## **4 Current Status of Digital Transformation in Higher Education at Home and Abroad**

### **4.1 Countries around the world respond to the challenges of digital education**

On February 13-14, 2023, the World Conference on Digital Education was held in Beijing, showcasing the digital education plans of universities from various countries on a vast scale around the world. Some Asian countries have established the concept of digital education, launched digital strategic actions, and promoted the overall transformation of higher education, such as China, Japan, South Korea, Singapore, India, Malaysia, and so on. African countries have elevated it to a national strategic level. They have issued a series of policy reports and are striving to promote the digitization process of higher education. Many European countries, such as Germany, Russia, the UK, France, Italy, etc., are competing to formulate development strategies and introduce incentive policies to fully integrate digital technology into higher education. The representative countries of North America have reshaped the infrastructure, curriculum, and teaching of education through digitization, deepened core literacy research, and led educational reform to depth, such as the United States and Canada. South American countries are actively promoting digital development strategies, and the degree of digitization is constantly improving. The application of digital technology in various fields is also increasing, such as Brazil. The digital level of education in Oceania is among the top in the world, with high levels of educational information infrastructure and students' digital skills, represented by Australia and New Zealand. <sup>[4]</sup>

#### **4.2 China's Education Digitalization Strategy Action Transforms Education Models**

Since China established its education informatization strategy in 2015, education digitization has penetrated into various fields of the education system. China continues to promote the construction of information infrastructure, "Internet plus education" and intelligent education. In particular, since the COVID-19, China has implemented the largest online teaching, accelerated the deep integration of information technology and education and teaching, explored online and offline mixed teaching models, innovated teaching methods, and improved teaching evaluation; The construction of an online teaching international platform to offer multilingual courses, promote international credit recognition and global integration courses, and provide practical cases and theoretical insights for the digital transformation of education worldwide. At the beginning of 2022, the Ministry of Education of China launched the National Education Digitalization Strategy Action, and the National Education Smart Platform was officially launched and put into use, the digital development of higher education is advancing in depth. Since Shanghai became a pilot project for digital education transformation, various regions and universities in China have deeply promoted the practice of digital education and achieved good results. Overall, provinces and cities such as Shanghai, Beijing, Zhejiang, Guangdong, and Jiangsu not only have a large number of high-quality higher education resources, but also have a good foundation for the development of the digital economy industry. The advantages of digital industry agglomeration are obvious. Although higher education resources in provinces and cities such as Hainan, Tianjin, Fujian, and Chongqing are relatively average, their digital economy has developed relatively well due to the agglomeration of digital technology industries and digital innovation of enterprises in recent years.<sup>[5]</sup> Among colleges and universities, Tsinghua University, Shanghai Jiao Tong University, East China Normal University, Shanghai University, and others have made beneficial attempts, and their development level is relatively high.

### **5 Practice of Digital Transformation of Higher Education in Local universities**

Local universities solidly promotes the strategic action of digitalization of higher education, and form a new mode of education service based on "Internet plus". Local universities carried out pilot construction of digital campuses in universities and the construction of smart education demonstration schools, vigorously established new engineering majors, built undergraduate teaching management platforms, developed the online learning credit platform for college and university students, and actively explored new operating models for cross campus credit courses and inter school credit mutual recognition, all these actions promoted the co construction and sharing of high-quality teaching resources in universities. Some local universities are hosting seminars on digital transformation, showing a thriving trend of development, and

promoting the development of education digitization to a higher level and deeper level.

Compared with global universities and advanced regional universities in China, the digital development of local undergraduate universities is still slow and there are many problems, mainly manifested as:

### **5.1 The digital concept has not yet been fully constructed**

There is a lack of clear understanding of concepts such as educational informatization, smart campus, digitization, and digital transformation, some universities Simply equate digital transformation of education with the use of information technology, so these will affect the grasp of the value, development stages, and measures of digital education.

### **5.2 The organizational leadership mechanism is not perfect**

Most universities mention digital construction in the "14th Five Year Plan", while only a few universities have formulated specialized digital development plans; Some universities have not yet established a digital construction leadership group; There is a problem of insufficient technical support and service capabilities of professional teams.

### **5.3 The digital literacy of teachers is not high**

Most teachers are not familiar with or proficient in the specific operational path of integrating new generation digital technologies such as artificial intelligence, robot learning, and big data with education and teaching. The level of utilizing digital innovative teaching models is limited, and the application level urgently needs to be improved. [6]

### **5.4 Insufficient innovation in digital teaching models**

Some universities simply and mechanically move traditional teaching to digital online platforms, but cannot fully utilize digital technology to design new teaching models for students' active learning, which is not conducive to the cultivation of students' abilities such as problem-solving, exploration, cooperation, and self-directed learning.

### **5.5 The means of digital education are outdated**

Due to funding shortages and other reasons, the construction of digital infrastructure in most local undergraduate universities is still in its infancy, with insufficient emphasis on digital construction and a lack of application of emerging digital technologies. [7] Most universities have not been able to build high-quality educational resource

platforms. There are also some other issues, such as Insufficient information integration, difficult data sharing, and digital silos still exist.

## **6 The Path of Digital Transformation and Development in local universities**

### **6.1 Global planning: Develop a digital development plan for education**

The United Nations Educational, Scientific and Cultural Organization has established a Higher Education Innovation Center at Southern University of Science and Technology. Its strategic plan inspires relevant government departments in developing countries to also attempt to plan from six levels: vision and mission, value creation, stakeholders, specific goals, development themes, and support to promote the digital transformation of higher education. [8] Since the 14th Five Year Plan, the Ministry of Education has issued series of plans such as the <Education Informatization 2.0 Action Plan>, the<Guiding Opinions of Six Departments including the Ministry of Education on Promoting the Construction of New Education Infrastructure and Building a High Quality Education Support System>, and <the Norms for the Construction of Digital Campuses in Higher Education Institutions (Trial)>. Local universities should regard the digital transformation of education as a "top priority project", combine international and domestic requirements for digital education, establish specialized development plans for digital education, so that the entire school can establish the concept of digital transformation from education informatization to education digitization, and form a consensus, Gather the power of all teachers and students and steadily carry out the construction of a digital education system.

### **6.2 Strengthening the Foundation: Promote the digital upgrading and transformation of undergraduate majors**

The report of the 20th National Congress of the Communist Party of China proposes to promote the high-end, intelligent, and green development of the manufacturing industry. Digitalization can accelerate industrial optimization and upgrading, and promote the digitization, networking, and intelligence of the manufacturing industry. According to the 2022 National Statistical Bulletin on the Development of Education, local universities account for 54% of national higher education institutions, which are closely linked to the regional industrial structure. Local universities should grasp the development trend of the digital economy in serving the national and local regional digital economy construction, adjust their professional settings in a timely manner, add new majors in informatization and intelligence, empower the advantages and characteristics of disciplines with digital technology, promote cross disciplinary and professional integration, and jointly build modern industrial colleges, joint laboratories, internship bases, etc. with enterprises and research institutes accelerate the cultivation of innovative talents adapted to future technologies Composite talents provide a continuous stream of digital talent support for the development of related industries such as arti-

ficial intelligence, big data, integrated circuits, robots, rail transit, big health, digital culture, etc.

### **6.3 Focusing on the main body: improving teachers' digital literacy**

In the digital era, teachers' professional digital abilities are becoming increasingly important in classroom teaching, and digital resources and media have become important components of teachers' daily teaching practices.<sup>[9]</sup> At the beginning of 2023, the Ministry of Education released the industry standard <Digital Literacy for Teachers>, which clearly defines the connotation of digital literacy for teachers as: the awareness, ability, and responsibility to appropriately utilize digital technology to acquire, process, use, manage, and evaluate digital information and resources, discover, analyze, and solve educational and teaching problems, optimize, innovate, and transform educational and teaching activities.<sup>[10]</sup> At present, the Ministry of Education has launched pilot actions to promote the construction of teacher teams through artificial intelligence in 57 universities and 35 regions, improving teacher information literacy.<sup>[11]</sup> Local universities should actively design and play the role of teacher development centers, increase multi-level and diverse teacher research and training activities such as digital lectures, seminars, high-quality course displays, and teaching competitions on campus, promote teachers to establish awareness, literacy, and ability of digital teaching, flexibly use information technology to carry out education and teaching, continuously improve digital literacy and skills, and improve and innovate new teaching models and New methods, so that cultivate high-quality and adaptable talents for social development.

### **6.4 Grasp the key: Promote the transformation of digital teaching mode**

Looking forward to the development trend of artificial intelligence, Higher consciousness learning will become a trend in education. In the high dimensions of the world, beauty, bliss and sages are essential characteristics.<sup>[12]</sup> The digitalization of education breaks through the limitations of time and space, promotes the transformation of new teaching and learning models, and promotes this more meaningful learning. Digital ability has become a core goal of curriculum and teaching, with more diverse course content and expanded teaching activities into a space of virtual and real integration. Student evaluation has shifted towards dynamic, diverse, procedural, and big data-based evaluation and feedback.<sup>[13]</sup> Local Universities should accelerate the transformation of teaching models. In terms of innovative educational forms, MOOCs and blended online and offline teaching should become the norm. Modern teaching methods such as micro courses and flipped classrooms need to be widely applied; we will Actively explore immersive teaching models, integrating AI, VR/AR/MR/XR technologies into teaching, create a simulation space, promoting students' understanding and mastery of professional knowledge and skills, and expanding their learning experience. At the same time, teachers should refine teaching design, carefully design discussions and interactions, use big data generated during the course teaching process to carry out learning situation diagnosis and analysis, process evalu-



ation, promote the learning method of "autonomy, cooperation, and exploration", and promote students' autonomous learning and personalized learning.

### **6.5 Building a solid foundation: building a digital high-quality resource platform for education**

The transformation of digital empowering teaching models cannot be separated from the support of various educational digital platforms and tools. However, most ordinary undergraduate institutions have not yet established digital education resource platforms that belong to their own universities. In the future, it is an important task for local undergraduate universities to focus on the construction and utilization of various resource platforms at all levels of digital higher education. Not only should we strengthen the sharing of resources on platforms such as the National Smart Education Platform and China University MOOC (MOOC), but also expand the supply of resources; We also need to upgrade and transform online, offline, mixed online and offline, virtual simulation experimental teaching, social practice and other courses, accelerate the construction of teaching resources, such as digital textbooks, test question banks, case banks, material banks, and then cooperate with high-quality digital enterprises to jointly build a high-quality teaching resource platform with the school's own characteristics.

### **6.6 Amping guarantee: Strengthening the digital management and services of education**

Minister of Education Huai Jinpeng has made "service first" one of the principles in the national education digitization strategy action.<sup>[14]</sup>To promote the digitization of education in local university, the first step is to accelerate the initial development stage, cooperate with banks to increase funding investment, and continue to increase the construction of digital infrastructure, including the Internet of Things, IPv6 applications, cloud computing, big data, and the metaverse; Secondly, we need to build a digital education and teaching environment, accelerate to construct the smart classrooms, the smart classrooms, the virtual experimental training rooms, the smart practice bases, the smart libraries, and the smart life management systems. Thirdly, we need to break away from information silos, then strengthen data governance and data application construction on the three major smart campus platforms, including data asset platforms, campus identity authentication platforms, and application service platforms. We will also build a big data analysis platform for school situations, improve the construction of a unified data platform, effectively and orderly gathering various types of school data, and achieving smarter business decision-making and efficient business collaboration.

## Fund Project

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