

First-Class Informatization Is an Important Part of First-Class Universities

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Abstract

First-class universities must have first-class management, and first-class management must rely on first-class information technology. This article systematically sorts out the development process of my country's college informatization. On the basis of in-depth analysis of the opportunities and challenges that educational modernization brings to the informatization of colleges and universities, the ideas and measures for the advancement of informatization in colleges and universities in the future are proposed.

Key words: First-class University; modernization of education; smart campus; Information Island

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INTRODUCTION

Information technology is one of the fastest innovations, the widest versatility, and the strongest penetrating power in the world today. As one of the most effective means to improve the quality of education, education informatization has become a strategic choice for more and more countries in the world to improve the education level. The informatization of higher education is an

indispensable and important link in the construction of first-class universities, and it plays an important supporting and leading role in educational reform and development. With the continuous development and application of educational information technology, first-class informatization has become an important part of the construction of first-class universities. Therefore, with the goal of building a smart campus, accelerating the construction of university informatization has become the focus of university research and work. Based on the analysis of the development stage of university informatization and the current opportunities and challenges, this paper proposes ideas and measures to promote the construction of first-class informatization in the future.

1. THE DEVELOPMENT STAGE OF UNIVERSITY INFORMATIZATION

Beginning in the 1990s, colleges and universities have begun to promote informatization construction, which has gone through three stages. It mainly includes the main stage of hardware construction, the main stage of digital campus construction, and the main stage of smart campus construction.

1.1 Main Stage of Hardware Construction

The informatization construction of universities in our country started with the demonstration project of China Education Research Network as early as 1994, and then it has been developed rapidly. Almost all universities have completed the construction of campus networks. The main tasks at this stage include equipment purchase and basic network construction. Among them, the main purpose of equipment purchase is audio-visual teaching and basic computer teaching. Network construction mainly includes campus network planning, construction, management, maintenance, and school Internet access. It should

be said that this stage of construction has laid a solid foundation for the follow-up development of university informatization.

1.2 Main Stage of Digital Campus Construction

Since around 2000, due to the further development and popularization of the Internet and computers, the informatization construction of colleges and universities has entered the stage of digital campus construction. The digital campus stage mainly focuses on the construction of business systems, including the construction of three major application platforms represented by database platforms, identity authentication platforms, and information portal platforms. For example, various universities have successively developed a series of management information systems such as personnel management, financial management, educational administration management, and scientific research management, as well as a digital campus operation management platform featuring identity authentication, data exchange, and integrated portals.

1.3 Main Stage of Smart Campus Construction

Since about 2015, with the application of emerging technologies such as big data, cloud computing, artificial intelligence, and mobile internet to the construction of college informatization, college informatization has entered the stage of smart campus. Jiang Dongxing of Tsinghua University and others believe that: Smart campus is the expansion and upgrade of digital campus, which effectively optimizes the interaction between teachers and students and the school, and establishes an intelligent education, teaching and living environment for teachers and students. The construction of a smart campus provides a brand-new attempt for teachers' teaching and research and student learning, especially provides important support for global large-scale online education.

2. OPPORTUNITIES FACING UNIVERSITY INFORMATIZATION

Through the above analysis, we can clearly see that the informatization of our country's universities has made great progress after more than 30 years of development, providing important support for the development of higher education. Facing the future, we have many opportunities to help further advance the progress of university informatization.

2.1 From the Perspective of Policy Support

In recent years, China has attached great importance to the modernization of education and issued a series of plans and implementation rules. "China Education Modernization 2035" puts forward the requirement of "speeding up educational reform in the information age". The "Education Informatization 2.0 Action Plan" is drawn

up to promote the implementation of three key tasks, one is to build a new model of talent training under the conditions of "Internet +", the other is to develop a new model of Internet-based education service supply, and the third is to explore new models of education governance in the information age. Ultimately, "three transformations" must be realized: one is the transformation from dedicated educational resources to the development, application and service of large educational resources; the second is the transformation from improving the application capability of information technology to the improvement of information literacy of teachers and students; and the third is the transformation of education informatization from integration Application changes to innovative development.

2.2 From the Perspective of Technological Development

At present, the cross integration of information technology, biotechnology, new material technology, etc. is triggering a new round of technological revolution and industrial transformation, which will have a profound impact on economic and social development, especially the reform of higher education. With the popularization of 5G technology in the classroom, more methods and technologies combined with virtual reality can be used in the teaching environment, providing students with a virtual reality interactive learning environment and learning methods, allowing students to be more immersive in their learning Environment and improve the quality of teaching. 5G will run through all aspects of smart campuses such as data perception, network transmission, real-time applications, classroom virtual reality, campus management, etc., and become the engine for the construction of smart campuses. The Internet of Things realizes innovation through more and more network connection technologies and devices, and provides real-time data and valuable insights for students, parents, teachers, and administrative departments. The face recognition application system is connected to the cloud management platform, which can realize functions such as remote supervision, statistical analysis and data display, making campus management more intelligent and safe.

2.3 From a Practical Perspective of Top Universities

According to experience, the reform of information technology will inevitably bring about changes in the teaching mode and governance mode of colleges and universities. The world's top universities are basically making full use of new technologies to promote the development of universities. Australian universities emphasize the use of data science to improve university teaching and promote teaching innovation. Canadian colleges and universities attach great importance to the improvement of the quality of their personnel, through

training to strengthen their understanding of educational technology, and improve the level of decision-making and teaching efficiency. French colleges and universities pay attention to the unification of centralized teaching and individualized learning, and create a flexible and virtual integrated collaborative learning space based on mobile learning. American colleges and universities are focusing more on expanding the scale of online courses and creating a campus culture where both humanities and technical skills are “combined”. Tsinghua University is committed to “things” and vigorously implements the “connection” of wisdom. Peking University has built core capabilities for self-research and established an IT construction model based on unified development. Zhejiang University has made every effort to promote the one-stop operation, and 80% of the service items have been “run once at most”. Fudan University has completed business operations and achieved remarkable results in data mining. Beijing University of Aeronautics and Astronautics pays close attention to the needs, systematically combing the teachers and students most concerned problems, and then innovate the IT governance model.

3. THOUGHTS AND MEASURES FOR THE CONSTRUCTION OF FIRST-CLASS UNIVERSITIES

3.1 Strengthen Infrastructure Construction

Infrastructure is the basic support for the daily operation of university informatization and the basic guarantee for the sustainable development of informatization. After three stages of development of college informatization, the network, computer room and other facilities can meet the basic informatization needs of office, management and teaching. However, under the conditions of normalization of the epidemic, there are still gaps in network bandwidth and value-added services in the face of innovative teaching methods and advancing teaching reforms. Therefore, it is particularly important to further strengthen infrastructure construction. Specifically, it includes the following aspects: First, it is necessary to optimize the overall structure of the campus network, improve basic network performance and international and domestic interconnection capabilities; to expand the core backbone network resources of the campus, and realize the multi-link exchange of cross-campus business. The second is to comprehensively promote the construction of 5G networks, realize the mutual complementation and mutual “integration” of wired, wireless, Internet of Things and 5G networks, and provide integrated services for teachers and students. The third is to build a high-performance operation and maintenance system, improve

the pre-detection and alarm capabilities of network failures, and realize network self-service and smart operation and maintenance. The fourth is to build online smart classrooms that are interconnected among multiple campuses, build an “Internet classroom + new multimedia classroom” pattern, and improve online teaching capabilities and levels.

3.2 Strengthen Data Governance and Security Management

The data generated by the informatization of colleges and universities is a valuable resource for colleges and universities, and it is also a support to promote the innovation of college governance system. Strengthening data governance includes the following aspects: The first is to strengthen the construction of data standards, optimize data management processes, improve data standards, and improve data quality. The second is to establish a full-cycle management mechanism from data collection and storage, analysis and cataloging, and sharing and utilization. The third is driven by application services, strengthen leadership of the construction of the cockpit system, promote data governance, and provide data support for various tasks in universities. The fourth is to improve the data security management system, establish a data security protection system, define data security operation specifications, define data security levels, and determine level security attributes, so that the data use process can be managed and traced. The fifth is to improve cybersecurity situational awareness, establish an autonomous defense and active protection system with multi-agent participation, and build a safe and reliable digital authentication system.

3.3 Strengthen Business Support Services

The purpose of informatization is to better serve the high-quality development of various businesses of colleges and universities. Specifically, it includes the following aspects: The first is to use new technologies to innovate education and teaching models, enhance education governance capabilities, improve teaching processes, innovate evaluation methods, reform education models, enhance the informatization and intelligence of the talent training process, strengthen data analysis and decision support, and effectively improve management efficiency and Teacher-student experience. The second is to build a scientific research management and service informatization system of “service improvement + management optimization + data decision-making” to realize the full-process information management of scientific research projects, funds, platforms, and results. The third is to optimize business management, promote the construction of multi-department collaborative office capabilities, realize business interconnection, and improve the modernization of the university governance system and governance capabilities.

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