

# *Research on the Dilemmas and Promotion Strategies of Smart Campus Construction in Universities from the Perspective of Education Informatization 2.0*

Wu Xuying<sup>1,2</sup>, Ma Xueming<sup>1,3</sup>

<sup>1</sup>De La Salle University, Dasmariñas, City of Dasmariñas, Cavite, 4115, Philippines

<sup>2</sup>Harbin Finance University, Harbin, Heilongjiang, China

<sup>3</sup>Zhengzhou University, Zhengzhou, Henan, China

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**Abstract:** With the deepening of educational informatization, smart campuses have become an important direction for the development of current universities. In this study, the main challenges faced in the current construction of smart campuses were first analyzed. On this basis, strategies for universities to promote smart campuses are proposed, aiming to establish the concept of intelligent teaching and reconstruct the intelligent teaching environment; Adopting a multi-level architecture model to build an intelligent management system based on data centers; Adopting a "people-oriented" service concept to meet the personalized needs of teachers and students. The ultimate goal is to achieve a comprehensive transformation of the construction of smart campuses in universities from traditional informatization to "digital campuses", and to enhance the school's governance capacity and level.

## 1. Introduction

The arrival of the education informatization 2.0 era has brought significant opportunities to China's education industry and also put forward new requirements for universities. With the rapid development of technologies such as cloud computing, big data, and the Internet of Things, based on the practical construction of smart cities and smart campuses, "smart campuses" have become the direction of the new generation of university information construction and have received widespread attention from all sectors of society. At present, domestic and foreign scholars have conducted in-depth discussions on the connotation and construction mode of "smart campus", mainly believing that "smart campus" is a process of campus concept updating, structural adjustment, mode transformation, and system upgrading triggered by the optimization of school management and service models, changes in educational and teaching environments and methods, and changes in learning and life styles in the context of the development of new generation information technology. In order to help universities establish smart campuses, it is necessary to conduct relevant research.

## **2. Dilemmas in the Construction of Smart Campus in Universities from the Perspective of Education Informatization 2.0**

### **2.1. Relatively Traditional Concepts**

At present, most universities' informationization construction is centered on improving the quality of school teaching. However, in specific work, due to the influence of traditional concepts, universities have not deeply realized that the essence of education informationization is to promote the improvement of education and teaching quality. At the same time, due to the short history of the development of educational informatization in China, universities have not formulated relevant strategic plans for educational informatization for a long period of time. Therefore, the direction of university informatization construction is not clear, which is also an important factor restricting the current development of smart campus construction in universities[1].

### **2.2. The smart campus architecture is not open enough**

The construction of a smart campus should be able to achieve deep integration of various application systems, so that all application systems can effectively support business operations and provide convenient services for teaching, scientific research, and management. This is the core issue that needs to be paid attention to and solved in the construction of a smart campus. Therefore, building an open smart campus architecture is an essential part of smart campus construction. However, the current smart campus architecture in some universities is not yet open enough to fully consider various problems that teachers and students may encounter in the actual use process, resulting in poor experience for teachers and students when using smart campus applications[2].

For example, in terms of university management services, the existing construction of smart campuses often focuses more on data sharing and information collaboration between internal systems, while neglecting the issue of system interface standards open to and used by teachers and students.

### **2.3. Insufficient humanization of information services**

The humanization of information services is one of the important goals of smart campus construction. In the era of educational informatization 2.0, the construction of smart campuses should focus on addressing the needs of university teachers and students for intelligent services, integrating service concepts into the construction of smart campuses, promoting the transformation of university education from "teaching oriented" to "learning oriented", and continuously optimizing service experiences[3].

But currently, many universities have some problems in the process of building smart campuses, which affect the user experience of teachers and students. The main manifestations are: firstly, the lack of humanized design in intelligent hardware facilities, and some schools have not yet equipped with intelligent hardware facilities, such as facial recognition access control, facial brushing consumption, etc; Secondly, the functions of the information service system are not perfect enough. In the early stages of the construction of a smart campus, each system and module operated independently without forming a joint force, making it difficult to meet the personalized needs of teachers and students[4].

### **2.4. Insufficient deepening of information application**

From the perspective of educational informatization 2.0, the construction of smart campuses in universities should further strengthen information application and improve the depth of information

application.

Firstly, the information application in the construction of smart campuses in universities involves multiple aspects such as campus management, teaching, scientific research, and services, requiring the joint participation and cooperation of management departments, teaching departments, scientific research departments, and service departments. However, the content of information application in the construction of smart campuses in universities is relatively scattered, and the information systems of various departments operate independently and lack coordination mechanisms. Different systems cannot achieve interconnection and intercommunication, so comprehensive, timely, and accurate services cannot be provided to teachers and students. In addition, due to the lack of a scientific and unified management mechanism for the use of information systems by teachers and students in schools, it is easy to cause information resources to be unable to be shared and shared, affecting the normal use of teachers and students[5-6].

### 3. Strategies for promoting the construction of smart campuses in universities

#### 3.1. Renew the concept and build an ecology of "Internet plus education"

With the arrival of the education informatization 2.0 era, the education ecosystem is facing unprecedented opportunities and challenges. Traditional teaching methods are no longer able to meet the requirements of the new era. Therefore, universities need to change their teaching concepts and traditional teaching models in the process of promoting the construction of smart campuses. First of all, colleges and universities should strengthen the understanding and understanding of "Internet plus education", change the traditional teaching mode and learning methods, and create a more advanced learning environment. The main characteristics of this environment are shown in Table 1.

Table 1: Main Characteristics of Advanced Learning Environment

Serial Number	Characteristic
1	Modernize
2	Intelligent
3	Personalization
4	Open type

Secondly, universities should grasp the development trend and requirements of the education informatization 2.0 era, strengthen the construction of education informatization infrastructure and application service supply, and fully utilize the advantages of information technology to promote education innovation and reform. Once again, universities should establish a learner centered educational philosophy, integrating learning resources, learning processes, learning evaluations, and other elements into the construction of smart campuses. Finally, universities should strengthen the top-level design and overall planning of smart campus construction, and focus on smart campus construction as a long-term and sustainable systematic project. At the same time, universities should accelerate the construction of a learner centered smart campus ecological environment, breaking the limitations of traditional teaching organization methods, learning evaluation methods, and school management systems on the development of students and teachers. By promoting the formation of a learner centered smart campus ecological environment, we aim to improve the level of information technology in higher education[7].

#### 3.2. Overall planning and building an open and integrated smart campus architecture

Firstly, based on the actual situation of our school, clarify the construction goals and positioning. The construction goals of a smart campus mainly include two aspects: firstly, promoting the

transformation of educational and teaching models; The second is to improve the level of information management and service in universities. On this basis, based on the actual educational and management needs of our school, we will refine the functions of the construction of a smart campus, determine the construction content, functional modules, specific processes, etc., and plan and design the campus network infrastructure, data center, system platform, etc. to ensure the achievement of the goals of the construction of a smart campus. Secondly, build an open and integrated smart campus architecture. The construction of smart campuses must take into account the issue of open integration, that is, to carry out overall planning according to the concept of "unified standards, unified platforms, and unified data". This architecture can be divided into two parts: top-level architecture and application architecture, as shown in Table 2.

Table 2: Composition of Smart Campus Architecture

Architecture section	Indirect
High-Level Architecture	The overall construction framework of a smart campus, including data centers, network infrastructure, etc
Application Architecture	Design and development of specific application systems

The positivist research method is a scientific research method based on experience, facts, and scientific experiments to reveal the essential laws of things. In the theoretical research of educational leadership discipline, positivist research methods should be used to reveal the laws of educational leadership practice, based on scientific facts. System theory and critical theory observe and analyze educational leadership practices from different perspectives and perspectives, and draw different conclusions[8].

Of course, positivism and system theory are two important research methods in the discipline of educational leadership theory. However, we should pay more attention to the application of critical theory. Criticism is a reflective cognitive activity. For the discipline of educational leadership, we need to approach various educational leadership phenomena with a critical perspective, analyze the laws contained in various educational leadership phenomena, and use them as an important basis for people to understand, understand, and evaluate educational leadership phenomena, reflect on the problems that arise in educational leadership practice through criticism[9].

### 3.3. Putting People First, Strengthening Management and Services in the Construction of Smart Campus

The construction of a smart campus is a complex system engineering that requires scientific management mechanisms and a reasonable service system as guarantees. As an important battlefield for teaching, managing, and serving, universities are not only the responsible subjects of smart campus construction, but also the service objects of smart campus construction. Therefore, in promoting the construction of smart campuses, it is necessary to adhere to the principle of putting people first, starting from the needs of school teachers and students, continuously optimize and improve the management and service system, and create a good educational environment. Firstly, strengthen the cultivation of information literacy among teachers and students. We should pay attention to the popularization of educational information technology knowledge and strengthen information technology training for teachers and students in various forms, so that they can proficiently master the basic knowledge and skills of information technology and be able to use information equipment proficiently. Secondly, optimize the management mechanism for smart campus construction. We need to establish a sound, scientific, reasonable, and efficient management

system and working mechanism, so that teachers and students can regulate their own behavior and enhance their self-restraint ability through the system. Finally, improve the smart campus service system. We need to strengthen the construction of a smart campus service system, strengthen the application function of information technology, and meet the diverse and personalized needs of teachers and students[10].

### 3.4. Deepen application and promote sustainable development of smart campus construction

The application of information technology is an important link in promoting the construction of smart campuses, but currently most universities only focus on the application of technology when promoting the construction of smart campuses, without delving into the value of information technology in teaching, management, services, and other aspects. Therefore, universities should promote the application of information technology in teaching, management, services, and other aspects based on actual needs.

On the one hand, teachers are encouraged to integrate information technology into daily teaching practices and use information technology to improve the effectiveness of education and teaching. For example, the "5R" teaching practice project launched by the University of Oxford in the UK integrates course resources and student learning process data through information technology, providing personalized teaching guidance for teachers and promoting classroom teaching reform. On the other hand, teachers are encouraged to explore the application of information technology in the fields of management and services. For example, when promoting the construction of a smart campus at the University of Hertfordshire in the UK, it was found that teachers may encounter some difficulties in using information technology for classroom management, student service, and other aspects. Therefore, schools should encourage teachers to explore and practice classroom management, student service, and other aspects through information technology. In addition, universities should establish corresponding incentive mechanisms and evaluation systems to timely track and provide feedback on the use and effectiveness of information technology by teachers and students. Through investigation and analysis of teachers and students, we aim to understand their needs and opinions on the use of information technology, and provide a basis for improving the construction of smart campuses in the future.

## 4. Conclusion

At present, the construction of smart campuses in universities is in its infancy and faces many problems that require high attention and corresponding measures to be taken to solve. Therefore, universities should realize that in the future, with the development and application of technologies such as artificial intelligence and the Internet of Things, the informationization of university education will show a trend of becoming more intelligent, personalized, and open. For universities, only by adhering to a student-centered approach, starting from top-level design, innovating mechanisms and systems, optimizing resource allocation, and upgrading service systems can we achieve the improvement of university governance capabilities and levels.

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