

# Research on the Development and Application of MOOC in the Background of Smart Campus

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**Keywords:** smart campus, MOOC, informationization, teaching reform

**Abstract:** Under the promotion of the "Internet plus" concept, MOOC and smart campus have become new hotspots in the construction of information technology and teaching reform in colleges and universities. This paper focuses on the construction and implementation of MOOCs in the context of a smart campus by following the principles of updating teaching concepts, integrating information and services and reforming the organizational form of teaching. It also proposes a four-point implementation strategy as enhancing top-level design and forming interdisciplinary teams, also constructing social networks, as well as improving evaluation mechanisms.

## 1. Basic concept

### 1.1 Smart Campus

The smart campus is a new concept that has been born in recent years with the continuous advancement of social and education informationization. It refers to the intelligent campus work, learning and living integration environment based on the Internet. This integrated environment is fully integrated with teaching, research, management and campus life with various application service systems as carriers. Its main core is to provide a comprehensive intelligent sensing environment and comprehensive information service platform for teachers and students. Through the intelligent sensing environment and comprehensive information service platform, the school and the external world provide a mutual communication and mutual perception interface. In short, the smart campus is "to be a safe, stable, environmentally friendly and energy-saving campus". Smart campus should have the characteristics of perceptual high-speed internet, real-time monitoring and data collection of campus status, business integration and intelligent processing supported by big data, as well as personalized application of campus services.

### 1.2 MOOC

MOOC is short for Massive Open Online Course. It is a form of curriculum that integrates high-quality teaching resources and distributes them to a wide range of unspecified learners through the Internet. MOOCs has the characteristics of large scale (up to millions of students), openness (facing the world), low threshold (free or low cost), networking (full online learning), autonomy (free control of learning progress) and so on. It already have a certain scale in China, but at the same time there are problems such as high development costs and low academic success rate. Future educators' research on MOOC will focus on meeting individual learning needs, providing services for lifelong learning, self-renewal of form and content, integration and development with other teaching forms, deepening business applications, and promoting school-enterprise cooperation.

In the context of the in-depth development of information technology in colleges and universities and the construction of smart campuses, we must consider how to make better use of the resources and environment provided by the smart campus, also carry out the teaching of MOOCs, and promote the reform of teaching in colleges and universities.

## **2. The principle of building and implementing the MOOC in the context of a smart campus**

### **2.1 Learning and teaching concept innovation**

After entering the information age, around more and more information technology and tools, educators began to explore more detailed application concepts to guide teachers to better integrate technology into the classroom.

#### **1) Supporting a self-directed learning process**

The MOOC is highly autonomous and can be used as a course resource for independent study or as a regular course. Therefore, colleges and universities using MOOCs for teaching, whether as an independent course or a mix with traditional classroom teaching, teachers must fully consider the autonomy of students in the teaching process, and use the resource integration and information service functions of the smart campus to support self-oriented learning.

#### **2) Expanding new classroom teaching mode**

One of the important features of the MOOC that unliked traditional courses is networking. All learning processes are conducted online, but this model is obviously not directly applicable to traditional classrooms. In order to carry out the teaching of MOOCs in colleges and universities, it is necessary to reform the existing classroom teaching forms according to the characteristics of the MOOCs and establish a mode of online and offline mixed learning. This kind of mixing is not simply to divide the classroom teaching process into two, but to combine the advantages of both, complementing and integrating each other. For example, the current practice of using the flip classroom mode for blended teaching is widely practiced, providing students with fragmented learning anytime, anywhere, and providing them with the information they need in real time, also providing efficient and convenient channels for teachers and students.

### **2.2 Information Fusion and Service Integration**

In the digital campus era, the focus is on the digitalization of campus business and teaching resources, the establishment of a digital platform for management, and the daily management business to run conveniently through the network. However, the various departments of the digital campus are still in a decentralized state. The business is not open, the data is not shared, and the services are not integrated. Under the influence of the "Internet +" concept, the smart campus integrates the whole school information system and data, and uniformly processes, analyzes and mines; from the perspective of user needs, it integrates campus services, provides a smart and open service environment, and uses data. Mining and artificial intelligence technologies provide users with personalized services such as decision support, intelligent screening, and information aggregation.

### **2.3 Building a new type of teaching organization**

In traditional colleges and universities, the teaching organization is mainly based on the campus. Students participate in fixed courses at fixed time and fixed locations. The communication between teachers and students is mainly carried out in class, and the teaching is quite closed. The emergence of MOOC and the campus of wisdom has created conditions for reforming the organizational form of colleges and universities, breaking through the boundaries of the campus, and building a ubiquitous teaching environment. On one hand, the MOOC is highly open to the learners, as long as they have the corresponding language foundation and the basic qualities required by the course, they can participate in the study of the class. At the same time, with the help of smart mobile terminals such as mobile phones, students can learn as long as they can connect to the network. On the other hand, the construction of a smart campus not only uses its own hardware (network) advantage to build a ubiquitous learning environment for teachers and students, but also integrates the motto into the cloud platform, so that campus learning resources continue to expand, iterate, as well as ensures the timeliness and quality of resources.

However, the full play of the advantages of the MOOC and the smart campus must rely on the

reform of the organizational form of colleges and universities. Therefore, colleges and universities should strive to optimize teaching organizations, also break the boundaries of traditional campuses, then be brave in practicing open curriculum operation mechanisms, as well as encourage the development of thematic and project-based teaching, together with support teachers and students to absorb quality teaching resources from a wider platform. And the teachers should apply it to both inside and outside the classroom to achieve ubiquitous learning in the true sense.

### **3. The strategies of carrying out MOOC teaching in a smart campus environment**

Building a smart campus and carrying out MOOC teaching in a smart campus environment must follow comprehensive and reasonable strategies to better utilize the advantages of both to improve college teaching.

#### **3.1 Improving construction planning and strengthening top design**

Whether it is the construction and application of the smart campus, or the introduction, construction and implementation of the MOOC, it is an important issue concerning the direction and development level of the schools' informatization construction. It is also a project involving a wide range of work and huge workload. This requires universities to pay full attention to all aspects of informatization construction and to construct a development policy. First of all, we need to adhere to unified planning, unified leadership, unified management, and clarify the organizational structure, as well as do a good job of inter-departmental coordination, also stimulate cohesion. Secondly, we must do a good job of institutional guarantee, also provide technical support, and develop standardized system application manuals together with curriculum implementation guidelines, unified data standards, also reduce the technical difficulties of high-quality teaching resources co-construction and sharing, then improve the number of students. Thirdly, we need to improve the evaluation incentive mechanism, also formulate incentive policies and standards to improve the enthusiasm of teachers, then encourage teachers to participate in the development and use of curriculum, as well as encourage the innovation of teaching methods.

#### **3.2 Establishing an interdisciplinary teaching team**

The MOOC course is an online course implemented under the condition of modern information technology. Its subjects are not specific, and the level of learner's basic level is more serious. Therefore, students' knowledge of different levels must be taken into account in curriculum design and content arrangement. In the implementation process of the MOOC, it is also necessary to organize communication, Q&A, discussion, or organize various activities in each teaching unit to test the student's learning situation. All the above difficulties indicate that MOOC is a highly scientific and systematic form of curriculum. Therefore, the development and implementation of MOOCs requires the establishment of a specialized teaching team with clear division of labor and strengths.

#### **3.3 Building a social network**

The school is a small society. The construction of a smart campus not only needs to pay attention to infrastructure construction, content construction, but also attach importance to cultural construction and social construction. It is necessary to establish a social network between school members through the seamless connection of the network to form a culture of equality and mutual assistance. Therefore, the MOOC needs to build social networks at different levels such as classes, disciplines, campuses, and societies, so that students can be promoted in the process of China Unicom. On this basis, it is necessary to explore the connection and communication with other institutions, and to enhance the level of intercommunication and sharing of resources through the MOOC course, so that high-quality teaching resources can gain fresh vitality in the process of flow, and further in communication. Improvement and improvement.

#### **3.4 Improving the teaching evaluation mechanism**

At the beginning of its birth, MOOC was accompanied by the characteristics of network and intelligence. It has a high degree of automation. It can conveniently record students' learning behaviors, analyze student input, test learning effects, and automatically generate learning reports. The data analysis function of the smart campus can be used to integrate the learning report generated by the MOOC platform into the student evaluation system, also establish a comprehensive learning evaluation system, and conduct systematic evaluation from multiple dimensions.

#### **4. Conclusion**

The construction of smart campus will continue to move to a wider and deeper level with the support of technologies such as network integration and artificial intelligence, and new forms of courses such as MOOC will be further tested and optimized. The transformation and development of higher education is bound to face the challenges of new technologies, new ideas and new methods. Efforts to adapt to the changes brought about by technology, actively change their own ideas then adjust their working methods, and conscientiously studying the practical application of technology is important means for higher education professionals to adapt to the trend of the times and maintain their vitality. The purpose of this paper is to appeal to the construction of information technology in colleges and universities to fully consider the needs of users, to plan for the overall development of software and hardware from the perspective of the application of science and research, and to lay the foundation for the follow-up research.

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