

# Research on The Construction of Digital Campus for Vocational Colleges

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**Abstract.** According to the relevant requirements of the Code for Digital Campus of Vocational Colleges of the Ministry of Education, combined with the characteristics of teaching and education of vocational colleges and the needs of information construction, this paper analyzes the new requirements and characteristics of digital campus construction of vocational colleges, and puts forward the connotation and construction principles of digital campus. On this basis, the overall construction framework and construction contents of digital campus of vocational colleges are given. Finally, according to the characteristics of vocational college informatization construction, this paper puts forward some suggestions to promote the implementation of vocational college digital campus construction, which can provide reference for promoting the modernization of vocational education with the help of informatization.

**Keywords:** vocational colleges, digital campus, construction principle, construction framework

## 1 Introduction

China's Education Modernization 2035 puts forward the strategic task of "accelerating educational reform in the information age" [1], aiming at promoting the reform and innovation of educational organizational forms and management modes, and promoting educational modernization with information technology.

Digital campus is a concrete form of educational informatization, which has become the basic conditions for schools to run schools, as well as the necessary environment to support the education and teaching of vocational colleges, communicate school-enterprise cooperation, and promote the development of teachers and students.

In June 2020, the Ministry of Education issued the Code for Digital Campus of Vocational Colleges (hereinafter referred to as the Code) [2], which sets out comprehensive and systematic requirements for the construction and application of digital campus in vocational colleges of all levels and types.

Then in September, the Ministry of Education and nine other departments jointly issued the Action Plan for Improving the quality and Training of Vocational Education (2020-2023), which listed "implementing the Code for Digital Campus of Vocational Schools" and guiding the system of vocational schools to design an overall solution of school informatization" as one of the important tasks for improving the quality and training of vocational education [3].

Therefore, it is of great significance for vocational colleges to promote the modernization of vocational education with the help of information technology to have an in-depth understanding of the connotation and structure of digital campus as well as the general requirements put forward by the "Norms", and on this basis to start the construction of smart campus conditions simultaneously.

## 2 New Requirements and Characteristics for Digital Campus Construction of Vocational Colleges

The survey results of the Report on the Development of Vocational Education Informatization show that by the end of 2018, the construction and development of digital campus information infrastructure and related supporting conditions of vocational colleges were in good shape. More than 50% of vocational colleges had completed the construction of public service systems such as portal websites, data centers and unified identity authentication.

Among the 15 information systems commonly used in vocational colleges, more than 65% of them have established 8 or more information systems, but only 22% of them are well used [4].

It can be seen that the digital campus of vocational colleges generally exists the problem of “emphasis on construction, light on application”.

Based on this, compared with the Code for the Construction of Digital Campus of Vocational Colleges published in 2015, the Code removes the word “construction” from its name, aiming to guide the digital campus of vocational colleges from construction to application [5].

In order to meet the new requirements for the development of vocational education, the Code has expanded its scope of application from secondary vocational schools and higher vocational schools to all types of vocational schools, including primary vocational schools, secondary vocational schools and higher vocational schools, as well as approved undergraduate vocational schools. Or possible future application-oriented undergraduate, graduate level vocational education colleges, etc. In addition, it puts forward new requirements and embodies new characteristics:

(1) Strengthen value orientation and clarify the ultimate goal of digital campus. In the “Code”, it is clearly stated that the work of vocational colleges and universities on digital campuses must uphold the idea of socialism with Chinese characteristics in the new era as the guide and carry out the fundamental task of Establish virtue and cultivate people. The ultimate goal of digital campus is to develop the information technology literacy and professional ability of teachers and students.

(2) Further clarify the internal relationship between digital campus and the modernization of vocational education. The implementation of digital campus should take informatization as the “endogenous variable” of the reform of vocational education system, lead and support the development of vocational education modernization, and promote the renewal of vocational education concept, model reform and system reconstruction. It emphasizes the integrated development of digital campus and school development strategy. The development of digital campus is a process of continuous optimization and improvement. It should be carried out in accordance with the school’s development strategy and career development plan, with the help of digital campus to upgrade informatization into the school’s development strategy, and integrate with other strategies, adhering to the principles and steps of “overall planning, top-level design, security priority, focus on integration, collaborative promotion, application first, focus on experience, operation and maintenance management, and continuous improvement”.

(3) It highlights the supporting role of digital campus for the integration of production and teaching, school-enterprise cooperation, and work-study combination education and teaching in vocational colleges. The “education and teaching” is separated from the “application service” chapter of the original specification, which strengthens the support requirements of digital campus for vocational education, such as industry-teaching integration, school-enterprise cooperation talent training, experimental training and internship, and vocational training.

(4) Pay attention to the enabling role of emerging technologies on digital campus. The Specification describes the enabling role of various emerging information technologies such as big data, artificial intelligence, VR/AR, 5G, blockchain, etc. on the digital campus, and reflects the impact and supporting role on the development of vocational education in corresponding chapters.

(5) The requirements of popularization and application and leading development are fully considered. The name of “digital campus” still used in the Code is to take into account the differences and unbalanced characteristics of the development of vocational colleges at all levels, various types and different regions, and focus on the requirements of popularization and application. The evaluation indicators are also divided into two sets of higher vocational and secondary vocational schools. At the same time, it is clarified that smart campus or smart campus is the advanced form of the development of digital campus, which is the direction of future development, and it is reflected in the content of specific chapters.

(6) Pay attention to docking with relevant specifications. The “teacher and student development” chapter of the Code includes “student development”, which puts forward the requirements for students’ information liter-

acy, which is divided into two parts: general information literacy and professional information literacy. Among them, the general information literacy part is similar to the “Information Literacy Evaluation Index for Primary and Secondary School Students” which is being prepared by the Department of Science and Technology of the Ministry of Education, so the index requirements of “information awareness and attitude, information knowledge and skills, information thinking and behavior, and information social responsibility” are directly quoted, so as to have a unified standard and caliber when evaluating the information literacy of vocational schools, especially secondary vocational school students in the future.

### **3 The Connotation and Construction Principles of Digital Campus**

#### **3.1 The Connotation of Digital Campus**

Digital campus refers to a campus model that changes the way teachers and students [6], staff and campus resources interact in vocational colleges by using new technologies such as cloud computing, virtualization and the Internet of Things, and integrates teaching, scientific research, management and campus resources and application systems to improve the clarity, flexibility and response speed of application interaction, thus realizing intelligent service and management. Digital campus refers to an open education teaching environment and a convenient and comfortable living environment with the concept of personalized service for teachers and students, which can fully perceive the physical environment, identify the individual characteristics and learning situations of learners, provide seamless network communication, and effectively support the analysis, evaluation and intelligent decision-making of teaching process.

#### **3.2 Construction Principles**

##### **(1) Unified planning and phased implementation**

Adhere to the current situation, focus on the future, carry out top-level design, make overall planning for the construction of the basic capacity of the school’s education informatization, base on the current situation of the construction of education informatization, implement it in stages, build it at different levels, and invest in batches, that is, meet the most urgent demands at the current stage, and continue to improve and improve it to avoid repeated investment and blind construction.

##### **(2) Application-driven, integrated innovation**

Comply with the development trend of Internet plus education, give play to the role of information technology in educational reform, focus on the three major directions of digital transformation, intelligent upgrading and integrated innovation, deeply promote the innovative and integrated development of information technology and education and teaching, and strive to support the reform of teaching methods, optimize education governance and innovate education services with common capabilities.

##### **(3) Strengthened standards, safe and controllable**

In the process of digital campus construction, it is necessary to follow the national informatization laws, regulations and standards, strengthen the construction of the standard specification system and information security guarantee system, and closely combine the spirit of relevant documents in the construction, so as to strictly follow the standards, highlight independent security and controllability, independent innovation and key breakthroughs, and ensure the progressiveness of the information system in technology.

### **4 Overall Construction Framework and Content of Digital Campus in Vocational Colleges**

Following the principles of digital campus construction in vocational colleges and combining the teaching methods and personnel training characteristics of vocational colleges, the overall construction framework of digital campus in vocational colleges is proposed as shown in Fig. 1, and the overall construction content is given, which can be used as a reference for vocational colleges to carry out digital campus construction.

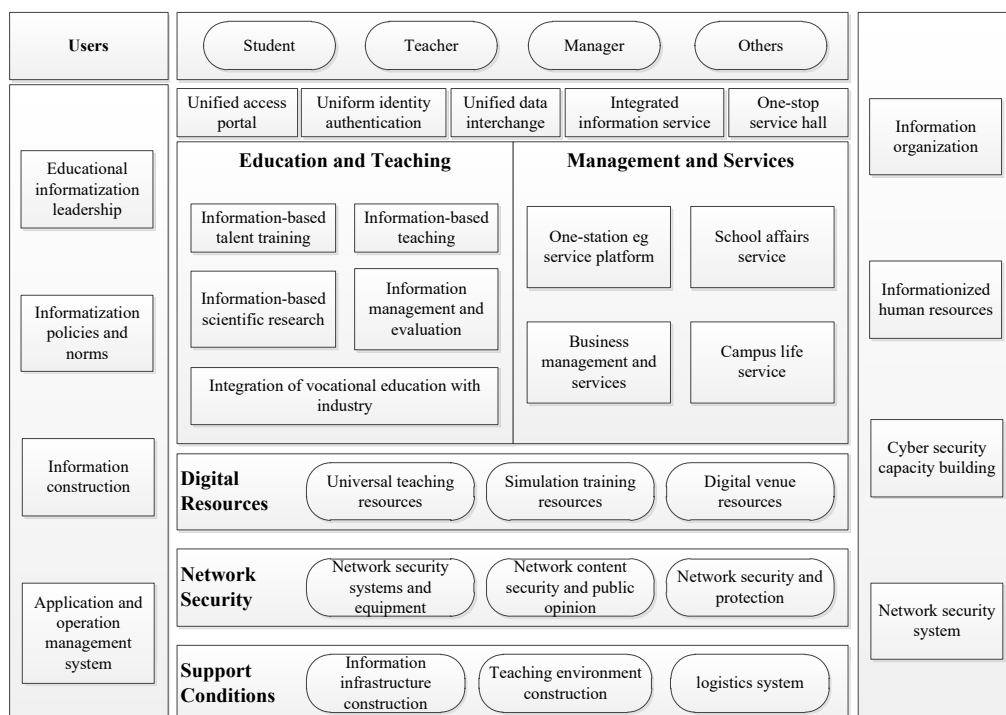


Fig. 1. Overall construction framework of digital campus in vocational colleges

The overall construction content includes digital resources, education and teaching, management services, support conditions and network security.

(1) Digital resources: used by users through the support of application services, including general basic teaching resources, digital simulation training resources, digital venue resources and digital book resources.

(2) Education and teaching: education and teaching include the integration of industry and education, the cultivation of information talents, information teaching and training, information teaching and research, digital resource management and sharing, information teaching management and evaluation, etc.

(3) Management services: including one-stop service platform, school affairs service, business management and service, and campus life service.

(4) Network security: including network security protection and management, network security system and equipment, network content security and public opinion, network security capacity building, etc.

(5) Supporting conditions: including campus network and other information infrastructure, multimedia classroom and intelligent classroom and other teaching environment construction, simulation training system environment, safe campus and logistics services.

## 5 Suggestions on Promoting the Implementation of Digital Campus Construction in Vocational Colleges

In order to promote the smooth implementation of digital campus construction in vocational colleges, this paper puts forward the following suggestions:

First, strengthen overall leadership. On the one hand, the implementation of the construction of smart campus in vocational colleges should be coordinated with the overall planning and promotion of vocational education school setting, teaching staff, teaching materials, safety facilities and other school running standards; On the other hand, the implementation of smart campus construction norms in vocational colleges in the region and the digital campus norms in basic education and higher education will be unified and mutually supported, leading the comprehensive and in-depth development of education informatization.

Second, support demonstration and guidance. In combination with the construction action of “vocational education information benchmarking school” proposed in the Action Plan for Improving the Quality and Excellence

of Vocational Education (2020-2023), promote vocational colleges to actively explore new ideas, new technologies and new models for the development of digital campus under the guidance of the construction of smart campus in vocational colleges, and lead the development of vocational education informatization.

Third, carry out inclusive support. During the “Fourteenth Five-Year Plan” period, in accordance with the basic standards for the construction of smart campus in vocational colleges, the support and cultivation of digital campus was carried out for vocational colleges in remote and poverty-stricken areas, especially secondary vocational schools. Summarize the support work experience, especially with the help of Internet infrastructure and innovative elements, form a sustainable development mechanism of multiple participation in digital campus of vocational colleges, guide the slow development vocational colleges to make up for the shortcomings of informatization, and promote the balanced development of vocational education informatization.

Fourth, strengthen publicity. Governments, societies, research institutions, vocational colleges and enterprises at all levels use newspapers, periodicals, radio and television, network media and other media to publicize, promote the development achievements and typical cases of digital campus in vocational colleges, promote the in-depth application of digital campus as a conscious action of all parties, and form a good ecosystem of smart campus construction.

Fifth, do a good job in research. Continue to carry out relevant research on digital campus and vocational education informatization, and constantly improve the national standard system of vocational education informatization.

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## References

- [1] Y.H. Bai, Research and Implementation of Data Sharing Based on Digital Campus, *Electronic Design Engineering* 29(13)(2021) 129-132.
- [2] Z.X. Yu, Analysis of Digital Campus Construction Based on Big Data, *Electronic Technology* 51(6)(2022) 139-141.
- [3] P. Lv, X.W. Su, X.H. Zhu, Problems and Countermeasures in the Construction of Digital Campus, *Journal of Harbin Vocational & Technical College* (3)(2021) 103-105.
- [4] Z. Deng, K. Badiane, Study on the Status Quo of Smart Campus Construction in Higher Vocational Colleges: The Case of Z School of China’s Guangdong Province, *International Journal of Learning and Development* 11(2)(2021) 94-99.
- [5] G. Xu, M. Li, The Application of Big Data Technology in the Construction of Smart Campus in Vocational Colleges, *Journal of Physics: Conference Series* 1827(1)(2021) 012134.
- [6] Y. C. She, The Significance of Digital Campus Construction in Colleges and Universities, *Management & Technology of SME* (24)(2019) 106-107.