Research on the Construction Path of Smart Campus Management Platform Under Big Data

Kai Yan[1], Jian Yang[1], Tianyuan Chen[1], Ping Huang[2(✉)], Hua Fu[2], and Man Zhang[2]

[1] State Grid Jiangsu Management Training Centre, Beijing, China
[2] Cross-Strait Tsinghua Research Institute, Beijing, China
`huangping@qzyun.com.cn`

Abstract. This paper analyzes the concepts of big data and smart campus, analyzes the design purpose of smart campus management platform and the problems faced by the construction of traditional smart campus management platform, and explores the constructionapproach of smart campus network platform under the background of big data. The big data method was adopted in the construction of the smart campus of the Jiangsu High-tech Training Center of the State Grid, and the business structure and data flow of the entire system platform were designed, which can effectively improve the operation capability of the platform's data resources.

Keywords: big data · smart campus · management platform · data flow design

1 Introduction

The construction of smart campus management platform is mainly to use cloud computing and cloud storage technology to improve various existing systems on campus, and integrate network access and campus card terminals. With the support of advanced and reliable pattern recognition technology, a comprehensive information intelligence perception of the campus environment will be formed [1]. Through structured processing of big data provided by intelligent perception environment, seamless integration of existing data resources is implemented, and data is integrated vertically and horizontally to provide an intelligent campus analysis application platform, including teaching, scientific research, security, assets, moral education, and school affairs. With the help of artificial intelligence analysis technology, personnel behavior data and environmental change data are monitored, and hidden meanings and relationships are mined, so as to summarize and give early warning at the first time and promote the significant improvement of the management ability of all parties in the university.

2 Big Data and Smart Campus Concept

2.1 Big Data

The application of big data is simply to use massive data to carry out in-depth analysis and accurate push, so as to provide valuable and targeted information to users, help them make final decisions, and enable them to achieve evidence-based behavior decisions

[2]. The value of big data is mostly reflected at the level of massive data, and the efficiency of use and transformation is very high. Relevant data analysis can be used to promote the improvement of their decision-making power. The efficient use of data flow can further clarify the work objectives, build a data-centric work closed-loop in an optimized, measurable and final way, and ultimately ensure the smooth implementation of accurate work, while reducing the work cost, and maximize the work efficiency. In the big data environment, smart campus management is bound to be affected by three aspects: (1) service mode. Influenced by the continuous development of Internet technology, the channels for the construction of smart campus are increasing, the levels are increasingly rich and interactive. The application of Web pages and mobile Internet technology can help to facilitate communication, and the use of big data can also enable smart campus departments to provide users with more active, accurate and targeted services, and finally form a new smart campus big work system. (2) Talent. In the context of the application of smart campus information big data, smart campus enterprises are bound to join the professional team of informatization construction in the key work projects. In the future, the management department of smart campus construction must continue to introduce and cultivate smart campus professionals, especially to actively absorb outstanding talents in IT technology, so as to fully guarantee the efficient work under the big data environment. (3) Service process. In the big data environment, the process for users to accept smart campus management is also different from the past. It has a more simplified and transparent service efficiency and process, and is also accompanied by a more in-depth supervision and management mechanism. For example, after the smart campus application is provided by the user's smart campus network platform, the customer will take the initiative to verify and approve it, and then transfer it directly to the discipline inspection department in the process to complete the relevant work. The construction of smart campus has a clearer and more direct process, which can efficiently complete all work and meet the needs of users.

2.2 Smart Campus

Smart campus is the construction of intelligent campus environment based on the Internet of Things, cloud computing and other technologies. Its concept is to provide personalized services to teachers and students, and the carrier is a variety of application service systems, such as teaching, scientific research, management and campus life, which allow teachers and students to have a more intelligent working, learning and living environment; With the help of advanced information technology means, the intelligent application system will be constructed to facilitate the information acquisition of all teachers and students in the daily life and learning of the whole school. The comprehensive data analysis will be used to support campus management, innovate school management system, and ensure the smooth realization of education informatization, scientific decision-making and standardized management [3].

3   Design Purpose of Smart Campus Management Platform

3.1   Multi-system Integrated Management Optimizes the Data Information Service Experience of Smart Campus Users

Through the establishment of a smart campus management platform, it is possible to integrate and uniformly manage a variety of campus service systems. Both staff and students can operate all functions of the smart campus by downloading only one software to promote the improvement of the user experience of the smart campus, and the integrated management of users can be completed with only one password and account, without matching one account with one software [4]. After the user logs in to his/her account password, the background of the management system will automatically identify the user's identity information and open corresponding permissions according to his/her identity. At this stage, it is mainly divided into two types, namely, school staff and students. Later, it can link the needs of smart campus management and continuously update them.

3.2   Strengthen the Links Between Information

At this stage, there are many kinds of smart campus management systems. When each system is in operation, massive data information will be generated, and this part of data information is stored in its own database. However, information cannot be exchanged between the database and the database, and storage in this way will also waste a lot of construction funds, make many software systems occupied, and increase the cost of smart campus construction. By building a unified management platform, the interaction channel between information can be established. While effectively transforming the data information format, the school does not need to invest more costs in management.

3.3   Realize Intelligent Teaching Mode

The construction of a unified management platform for smart campus can make the teaching mode of colleges and universities more perfect at this stage. There is a close connection between the smart campus platform and the Internet. Using this platform, we can search for teaching resources in the network, and the platform can also use big data to count students' interests, thus making relevant recommendations more targeted [5]. For students, they can play the role of a platform to query empty classrooms and enjoy convenient services in learning; For teachers, they can use this platform to query the research content they need, provide strong resource guarantee for their research and learning, and ultimately cultivate the comprehensive ability of teachers and students.

3.4   Realize Convenient Management of Teaching Resources

In the smart campus management platform, many personnel schemes can be set, including the general administrator, learning resource management planners, teachers and students, and then corresponding permissions can be set according to different personal functions, and the entire smart education resource database can be managed to complete

a series of operations, including uploading, reviewing teaching resources, and setting external links, user permissions, etc. After that, teachers and students can use this part of resources to carry out teaching and learning activities, evaluate the resources after use, and upload the teaching resources that they think are excellent or helpful for students to learn. After obtaining the consent of the learning resource management planner, they can enter the resource pool to achieve the purpose of sharing resources. In the management field of learning resource management planners, there is the setting of "resource management" function. In this interface, management planners can classify learning resources according to different categories, such as subjects, speakers, keywords, etc. This not only provides convenience for managers, but also helps teachers and students to use teaching resources efficiently.

4   Problems in the Construction of Traditional Smart Campus Management Platform

4.1   Technical Problems

Many teaching practices have confirmed that by applying the smart campus management platform to the current school campus education and management work, on the one hand, the school's education and teaching information and resources can become more abundant, on the other hand, it can also provide a good teaching environment and classroom atmosphere for the majority of teachers and students [6]. However, the survey found that the traditional smart campus management platform is due to technical problems in both construction and application. Based on this, the university is required to link the requirements of digital campus construction, adopt modern data information processing methods, and actively introduce relevant technical equipment to effectively promote the smooth construction and operation of the smart campus management platform.

4.2   Problems in the Integration of Technology and Education

At this stage, through the investigation, it is also found that there are still problems in the integration of technology and education in the construction and application of the traditional smart campus management platform. The main reason for such problems is that: ① the traditional smart campus management platform does not fully integrate school education, management information and data collection, nor does it have a high utilization rate. At present, in the construction of digital campus intelligent education and management platform, the use of modern system software and related data integration are highly dependent, and big data is not fully applied to campus education, management information technology and the dispersion of system software application. ② The incomplete integration of big data technology and education management is also one of the reasons for the inadequate construction of smart campus management platform. Specifically, at this stage, the factors that cause problems in the construction of digital campus platform include technical and business process factors, so in order to fundamentally accelerate the construction of smart campus management platform, it is necessary to build a team that has a good grasp of data technology methods and is very familiar with business processes.

4.3 Network Security Issues

In the construction of the traditional smart campus management platform, although the basic construction has been basically completed and the information sharing between technical equipment and data software has been successfully realized, there are also some network information security problems, so there is a certain probability of infecting the campus network virus [7].

5 Ways to Build Smart Campus Network Platform Under the Background of Big Data

5.1 Establishment of Construction Objectives

First, the overall goal is to design a smart teaching service platform that can help customers solve various information content problems in a short time. According to different real identities of users, there are many application functions of the Internet platform. With the help of different applications, customers will enjoy more diversified services. Second, use data analysis to sort out and analyze the resources of each service platform, and provide many reasonable information content to customers. Third, build an efficient application service platform for customers, so that they can communicate with other users in depth in the actual application process, and then make better analysis of the application of relevant data and information, so as to maximize the use value of mobile software itself.

5.2 Determination and Use Object of Construction Function Module

Independent Innovation. The smart education internet platform should be an independent innovation service platform that can reasonably integrate resources [8]. The service platform can provide high-quality service items for ordinary classroom teaching and learning training. In order to give full play to the value of the smart education service platform, it is necessary to carry out certain independent innovation when it is used. Such as application, registration and management of student electronic files; Allocate and live in student dormitory; Statistical analysis and sorting of student scores are included. To sum up, statistical analysis is a prerequisite to ensure the powerful function of the service platform.

Combination. Basic information fusion is one of the basic functions of the service platform to ensure that students can fully grasp the basic dynamics of teaching links through mobile phones or computers. When integrating the service platform, it can effectively avoid the harm to students caused by the separation of system software. For example, after the students watch the video through the computer, the next time they log in with their mobile phone, they will also get the last watch record. Use this method to reasonably record students' daily learning process, reasonably allocate their learning time, and help students apply the smart education service platform more efficiently.

Interaction. The basic interactive function is also indispensable to the smart education service platform. The interactive objects include teachers, students and parents. The

interaction of the three service platforms can open the door and release a lot of exchange and learning information, facilitating the interaction between the three parties around the information content. Exchange and mutual visits can play a positive role in promoting teachers and students to better grasp relevant information.

5.3 Typical Application Cases

We will apply the above ideas and methods to the construction of the intelligent teaching management system of the State Grid Jiangsu Management Training Centre. The system is based on the big data method and adopts the agile development mode. The design and development are parallel, and the overall framework and functional details are communicated and polished layer by layer to ensure that.

the requirements are achieved in place. As shown in Fig. 1, this project has completed the sorting and analysis of various business systems such as original teacher system, original phase I system, guest room system, and Haikang system, and completed the whole process analysis of the center's scheduling design, course design, reception management, student management, course evaluation, budget and final account management. At present, the accumulated warehousing data is as follows, which ensures the basic data and functional integrity of the new system to the maximum extent.

- 1016 instructor data;
- 8 major categories and 41 sub-categories of course data, a total of 1545 items;
- 27027 student database data and 198031 class student association records;
- 1066 class information;
- 1062 tax invoice records;
- 483 traffic expense records.

The resource library has become an important resource of the platform. Take the teacher library and course library as an example, it has more than 1000 lecturers and 1500 course information, which is beginning to take shape and has the conditions for
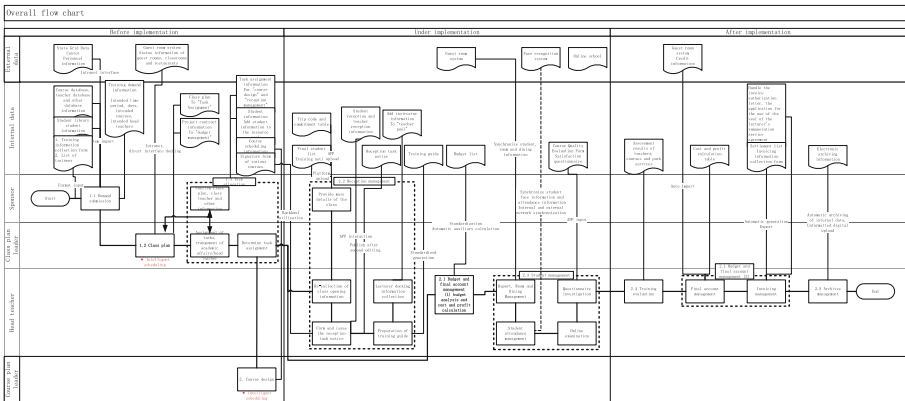
Fig. 1. Smart campus business and data flow diagram of the State Grid Jiangsu High-tech Training Center based on big data

online operation. The next step is to build an operation platform for party building and training resources for the State Grid system. The intranet covers the whole system of the State Grid Corporation, deeply excavates the lecturer's wishes, customer needs and other information, and carries out various online and offline party building training resources and product development and operation.

5.4 Specific Construction

The smart education Internet platform key involves three port numbers, namely teachers, students and managers. The port number of teachers and students can be used for login, application PC and mobile intelligent terminal. After the teachers and students log in, their basic learning activities can be completed. The functions of the teacher's port number mainly focus on the course content work, teaching plan design, record query, student community marketing, etc.; The functions of the student terminal include professional learning, testing, teaching concepts, learning and training communities, etc. In the course management port number, the user management system and management information system are mainly set, and a number of methods and contents are added, such as test paper management method, case management method, teaching courseware management method, etc. In the smart education service platform, the management mechanism is almost an extension based on application points or methods. Based on this, teachers and students can reasonably combine various service information to ensure that students can quickly get services and learn and train various educational resources.

6 Conclusion

The role of big data technology has been fully reflected in all walks of life. Facing this trend, colleges and universities should actively comply with it and complete the collection, processing and use of education and teaching big data with the help of various new technologies. Through the construction of smart campus, universities can manage big data, effectively save time and cost, and promote the improvement of management efficiency. However, at this stage, there are still shortcomings in talent and resource construction of smart campus, which has a certain impact on the construction speed. Therefore, universities are required to strengthen the training of relevant internal talents in the future, establish and improve the relevant management system and management system.

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