THE CONSTRUCTION AND TREND OF INTELLIGENT INFORMATION CAMPUS

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Abstract: With the development of information technology and variety of applications in different fields, the construction of campus information has been an important part. Also, in the scientific and standardized management, the integration of these information resources can be used for better services in teaching, researching, management and daily life, as well as smart school buildings. In these cases, much incomprehensible information can be used to form much smarter campus.

1 INTRODUCTION

Web office, which emphasizes the transmission from office automation to information management to go to the paperless office, also focuses on the management of educational resources and the effective utilization of educational information, is so normal to our daily-life. There is no doubt that management can bring benefits, and management of campus computing is to promote the application of computer network technology so as to improve school management level. Computer network technology and unified school management software carry advanced management ideas, management models and management methods, are also the only way to the informationization of campus management.

Information-oriented campus is mainly concluded management information system, office automation system, online learning system, resource management system, knowledge base and information base. In order to apply information technology, network technology and communication technology to teaching, research, management and campus life orderly and effectively, informationization of campus management is

development requirements and prerequisites of campus computing .

2 CAMPUS COMPUTING

2.1 The Concept of Campus Computing

The concept of campus computing was form the project named The Campus Computing Project which was initiated and hosted in 1990 by Kenneth Green, the professor of Claremont University. On January 31, 1998, former U.S vice President AL Gore published a report entitled "The Digital Earth: Understanding our planet in the 21st Century" in California Science Centre, who was the first to propose the concept of "Digital Earth". Generally accept the concept, the whole world put forward "digital city", "digital campus" and so on.

In terms of campus computing, there is no consensus academic representation in China currently. And I choose some concepts to find the sameness and difference. Firstly Professor Shen Peihua in Tsinghua University think that campus computing based on the network, which makes the use of advanced information technology and tools to

digitize infrastructures (including equipment, classrooms, etc.), resources(such as books, handouts, courseware, etc.) and activities(including teaching, learning, management, service, office, etc.), is to build a digital space in order to expand the dimensions of time and space on traditional campus, so that campus computing can enhance the efficiency of the traditional campus, expansion of traditional school function, and ultimately informationization of the overall educational process.

Secondly, Professor Huang Dawu in Peking university considers campus computing, which takes advantage of computer technology, network technology and communication technology to realize the comprehensive digital of information resources related to teaching, research, management and campus life, can be a virtual university beyond time and space with scientific and standardized management to integrate information resources, in order to constitute a unified user management, integrated resource management and unified access control.

From two definitions given above, we can realize that even though the central idea of each expression is the same, there is no uniform expression. Until on the National University Research Information Annual Conference 2003, through the argument and demonstration of experts, "campus computing" was clearly defined. And the definition is that campus computing is to build digital space in order to expand the dimensions of time and space on traditional campus, so that campus computing can enhance the efficiency of the traditional campus, expansion of traditional school function, ultimately informationization of the overall educational process and improvement of teaching, research and management, which makes the use of advanced information technology and tools to digitize infrastructures (including equipment, classrooms, etc.), resources (such as books, handouts, courseware, etc.) and activities(including teaching, learning, management, service, office, etc.).

2.2 The Pattern of Campus Computing

Campus computing is concluded concept layer, information layer, application layer and physical layer defined by conceptual model. Physical layer constitutes basic platform of campus computing, which refers to the network and digital facilities and entities of these facilities. Application layer, which is mainly concluded management information system, office automation system, online learning system, resource management system, knowledge base and information base, is application systems, which regards teaching, management as a core and digital information resources running on the physical layer.

Information layer is including information skills, information consciousness and information learning. Among them, information skills are information acquisition, information retrieval, information representation, information exchange, information processing and so on. Information consciousness means the sensitive extent to information by human beings, which is correct understanding, effective management, and reasonable assessment of the value and utility of information. Information Learning transforms disorderly information to confused knowledge so as to form their own knowledge structure by generalizing and abstracting information and learning by themselves.

Concept layer is reconstruction of educational idea, including educational idea, personnel training, knowledge innovation and production, teaching methods, teaching management, as well as the sum of rules, methods and behaviours. Physical layer is the premise and assurance of campus computing. Application layer is "soft environment "of campus computing. Of course, human beings are the body of campus computing. How to use and manipulate the physical layer and application layer, and how to provide effective networking and information service in learning shouldn't been ignored in building campus computing. Information layer reflects the effect, content, form and operation methods of physical layer and application layer in campus computing, which determines the organization utility of resources and the form of concept layer. Concept layer represents the goal of campus computing, realizes the reconstruction of educational philosophy, and determines the structure and content of each layer.

Spatial pattern reflects the characteristics of "Enhance the digital space"and "virtual education space", including physical space, network space, information space and virtual space. Physical space mainly means the Part of the actual existence of entities, such as people, infrastructure, and application systems and so on. Network space is still limited and visible by interacting and connecting with network. Information space is the digital pattern of information management, communication and storage. It reflects the existed information and resources, also mirrors the intelligent activity of people's treatment, awareness, learning, use of

information. So it is semi-visible, between the virtual and real. Virtual space is an educational space infinite and invisible sublimated from physical space, network space and information space, so it is an absolutely virtual which gives an expression that campus computing has been a positive and huge impact on education, all human beings, even the whole world.

Functional model mainly discusses three function layers, namely network, application and information service, which is macro-model of practice by information technology. Function of network layer is single, which provides the basic network function and service by hardware device and infrastructure, including Network access, e-mail, file transfer, domain name service and so on.

3 THE APPLICATION OF THE DEVELOPMENT OF NETWORK TO CAMPUS COMPUTING

Currently, network technology, computer technology and communication technology has accordingly developed considerable. For example, the use of advanced information technology, such as Triple play, physical networking technology, RFID technology and so on, to build the campus on campus is the development trend of information technology requirements.

3.1 The Application of Triple Play to Campus Network

Triple play means the mutual penetration of telecommunications network, radio network and television network, compatible with each other, and gradually integrated into a unified information and communication networks around the world. The development of triple play will greatly change the existing technology and product's fate.

Triple play putting use to campus network, the transformation program is as follows: Upgrade the existing Closed-circuit television to HFC bilateral network, and connect TV to Set-Top box which are regarded as a network terminal.

Concrete measures: First, put one of campus as a basis of basic network and the exchange platform; secondly, combine telecommunications networks and cable TV supplying each other; lastly, integrate multimedia information retrieval and bi-directional, real-time, interactive campus network.

3.2 Intelligent Campus Computing on the Internet of Things

On the basis of two layers of intelligent campus computing, including application data service layer, network layer and end-user level communication, It can meet the need of intelligent digital automatic identification of both students and teachers, data processing applications and sharing.

Based on unified user identification system and the internet of things, intelligent campus computing consists of user identity management, library management, multimedia classroom and laboratory management, internal consumption management.

（1）User Identity Management

First, teachers and students need to apply for digital campus phone SIM card in their RFID tag in the form to write their own basic personal information in the department of school intelligent campus computing, such as name, gender, identity, position, unit, place of origin, date of birth and so on.

System administrators can log in system in the use of administrator's SIM card, and supervise the basic information of teachers and students using operation of adding, deleting and updating. They can freeze SIM card accounts, so as not to cause loss of personal property of teachers and students.

(2) Multimedia Classroom and Laboratory Management

Teaching in multimedia Classroom has become a common phenomenon in college. With the use of the internet of things, intelligent campus computing install tag identifier on the console in the multimedia classroom to enhance efficiency in the use of multimedia classrooms.

（3）Library Management

When students enter the library on their phones at the tag reader, the library according to the access control module can read RFID tag information through the network to the user management module, for automatic Identity processing. For its legitimate users, library access automatically open, otherwise the user will be unable to enter the library.

（4）Internal Consumption Management

Campus daily consumption is an important part of school life. Based on SIM card, the internal consumption of automatic identification management is a convenient, secure payment to provide quality management services. Teachers and students via mobile phone SIM card in the Auto-ID, the utilities can be used to pay management functions and the family quarters to pay the appropriate tap fees, user fees of public bathrooms,

dormitory water use fees, laundry, electricity, etc. This will greatly reduce the trouble of using cash.

4 THE MEANING OF CAMPUS COMPUTING

Campus computing aims at collecting, processing, integrating, storing, transporting and applying information on teaching, research, management, technical services etc, so that teaching resources can be fully optimized with the use of virtual education environment, there is important practical significance for university.

(1) Effectively regulate the business process in universities, innovative education and work patterns. Construction of university information system can regulate virtually all school business processes, improve efficiency and reduce disadvantage of the huge randomness caused by manual and difficulties in standardization process.

(2) Solve Information Isolated Island of university information system, to enhance the real-time and authority of information. The construction of campus computing make the relative independent grid system to become a conformity, eliminate Information Isolated Island, effectively realize data and resource sharing, eliminating duplication of data management and data sync issues, so that all departments could manage their own information to ensure that the only source where data comes from, and enhance data's real-time information and authority, the full realization of all data and information sharing to facilitate the users to accurately and effectively access the shared data.

(3) Create a virtual university space and cross-boundary management; enhance the manager's mental value. Campus computing implements effective learning, teaching, research and management of digital information to create a living space with the virtual university space and information and modern education, which provide a solid basis protection to cross-regional management of the school, analyze and statistic the data provided by campuses could help optimize the business campus, and also can free managers from the complex, simple repetitive data entry, transmission, management, retrieval, can greatly reduce the work intensity and improve working efficiency, so that the managers' mental value will be enhanced, also did to the work , learning and living environment of staff and students.

5 CONCLUSIONS

At present, Computer technology, network technology and communication technology has been widely used in our daily life. In recent years, some of our policies and regulations have greatly promoted the development of Internet of Things technology, and the application has been successful to some extent. At the same time, we recognize that computer network technology and integrated school management software are the effective carrier of the advanced management ideas, management models and management methods, also are the only way into management information and campus information. In the process of informatization, one the one hand we should try our best to develop systems. On the other hand, we must focus on effectiveness so as to realize the integration of capital flow, information flow and logistic flow gradually.

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