

On the Innovation of Teaching Resource Management in Colleges and Universities from the Perspective of “Visualization”

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ABSTRACT. In the future, teaching resource management in colleges and universities will focus on the further integration of cloud computing, artificial intelligence, intelligent science and technology. Based on the basic situation, colleges and universities will effectively build a virtual and visual teaching resource management platform, and actively explore personalized, intelligent and modern management mode. This paper analyzes the current situation of teaching resource management in application-oriented universities from the perspective of “visualization”, puts forward the ideas and mode of management innovation, and explores the innovation direction to promote the future teaching resource management in colleges and universities.

KEYWORDS: Visualization, Information technology, Teaching resource, Innovation

1. Introduction

With the development of information technology, the relevant state departments have repeatedly advocated that colleges and universities should carry out management with the help of information technology, which means a huge transformation of management for colleges and universities. Methods that are not applicable to campus management will face a new “reshuffle” and be cleared out. Many colleges and universities at home and abroad have invested a lot of manpower and resources, and made advantage of the mighty network, they have built virtual and visual teaching resource management platforms and other carriers based on school’s basic situation, therefore, resources can be effectively utilized and the integration and sharing of education and teaching resource can be realized to improve management efficiency and user experience, and help promote the transformation of teaching resource management mode of colleges and universities.

2. Analysis of the Current Situation of Teaching Resource Management in Colleges and Universities from the Perspective of “Visualization”

At present, many domestic colleges and universities have created a number of high-quality virtual teaching resources of different disciplines and fields, including software and hardware, specifically, MOOC platform, remote video education, online courses and virtual campus. The “teaching resources” discussed in this paper are basically hardware facilities or public places.

Nowadays, the information-based teaching reform in colleges and universities are deepening. While the traditional teaching resource management is still conducted by human, which requires a lot of manpower, material resource and time. And the low management efficiency is mainly reflected in the following aspects: first, the insufficient understanding of information management. Second, due to the academic year system, some schools only make plans for teaching and resource management, they don’t really implement the plans. Third, there are differences in management ideas, it is believed that in order to carry out information construction, huge human and financial resource should be invested, which is not proportional to the management efficiency. Forth, Single management platform cannot meet the needs of campus management. For example, the virtual three-dimensional real scene campus developed by a school only has the function of sightseeing or scene appreciating, not very practical. Fifth, there is a lack of professional talents, some schools just set “targets”, in fact, they are not willing to recruit corresponding technical personnel, which lead to the embarrassing situation of no talents, and no substantial progress.

3. Construction of Teaching Resource Management Platform in Colleges and Universities from the Perspective of “Visualization”

3.1 Problems

In South China Institute of Software Engineering of Guangzhou University, the credit system which is featured by course-selecting system is adopted, and an independently developed information management system is applied. There are more than 10,000 students in the school, therefore there will be more than 10,000 different curriculum schedules. Whether the classrooms are available or not depend on different time periods and different locations. With teaching activities going on, some new contradictions have also appeared: First, teachers and students need to apply for various classrooms, applicants must fill in paper forms in the traditional way, and then submit to the teaching resource department for approval. If teachers and students want to hold some activities, they need to apply for on-site inspection of the venue for many times, resulting in low working efficiency. The second is that the classrooms are in different locations on the campus. For newly recruited teachers or newly enrolled students, they know the classroom number from the course schedule, but cannot quickly find the specific location on the campus, and they can only ask for help. The third is that if a teacher wants to make adjustment about the course, after the application for the adjustment is approved by the teaching management department, the course adjustment information is usually posted on the door of the classroom with the most original written form, which causes inefficient management.

3.2 Platform Construction

Currently, countries around the world are applying digital three-dimensional reality in more and more fields, with the help of computer technology, photos taken will be used for stitching, editing and post-synthesis, images can be transformed into a 720-degree three-dimensional virtual and visual scene that can be displayed on the mobile phone or PC, so as to build a practical, easy-handling and virtual platform.

Take South China Institute of Software Engineering of Guangzhou University as an example, A faculty team independently develop a set of visual teaching resource management platform whose “front-end” is based on krpano panoramic virtual visualization, “back-end” is based on PHP technology. And this platform was established according to the predetermined teaching resource objects, data, functions, etc. It has a VR visualized front end, and its back end is connected to the information management system, which makes it autonomic, interactive and scalable.

3.3 Achievements

The first is autonomy. Photos of classrooms, laboratories, activity centers, auditoriums, academic lecture halls, lecture halls, squares and various meeting rooms can be taken, and then this platform can independently splice, edit and integrate real scene photos according to different needs, through krpano panoramic roaming software, virtual and visual real scene images can be displayed on mobile phones and PCs. This platform can make hardware teaching resources become virtual.

The second is interactivity. Apart from visualization, the platform can also provide services like location search, resource application, information retrieval, information release, and notification, etc. Without previous limitations of time and space, managers and people in need can directly and conveniently check the real scene, structure and layout of the targets through the virtual visual space without leaving home. In this way, people in need can make online selection of resources.

Third, scalability. The platform can be customized to add, delete and modify modules, it has functions such as application, auxiliary search, information retrieval, information release, course adjustment, notification, daily management and so on, focuses on management requirements and users’ experience. Especially with the expansion of teaching affairs, the platform can also be combined with different needs for a secondary development to achieve the personalized and autonomous construction of the platform.

4. Innovation and Reflection on the Mode of Teaching Resource Management in Colleges and Universities from the Perspective of “Visualization”

4.1 Promote the Innovation of Management Ideas and Realize the Integration of Top-Level Design and Grassroot Independent Innovation

To explore the management of teaching resource in the context of “visualization”, colleges and universities must

handle the relationship between information technology platforms, management ideas, and technical talents soundly, because “the integration and innovation of information technology and education brings about revolutionary changes in the education system, merely relying on top-level design is not enough, it is necessary to effectively combine top-level design with grassroot innovation to form a top-down and bottom-up communication.[1]”

4.2 With Computer Information Literacy as the Core, Realize the Further Integration of Cloud Computing and Education Management

As the concept of “New engineering” proposed, cutting-edge technologies with cloud computing, artificial intelligence, virtual reality, big data and others at the core are springing up. Many universities in China have taken the initiative to introduce and develop majors about new engineering, to provide intelligence and talents for the future construction of smart campus. “Smart campus is a new form of campus, it is able to realize full environmental awareness, and smooth network connection and ubiquitous learning, it requires holographic three-dimensional big data support, moreover, it can provide intelligent services for teachers and students, and facilitate the overall transformation of campus.[2]”

The majors and disciplines about “new engineering” help promote the development of talent training and lay the foundation for the innovation and integration of information technology and education in colleges and universities. Colleges and universities should strengthen the cultivation of computer information literacy, and teachers and students should take the initiative to gradually infiltrate information thinking and information literacy into education and teaching management activities from the application level, so as to realize the value output of information technology service and management.

4.3 “Tailor Made” Information Management Platform, Promote the Transformation of Information Management Mode

At present, universities and colleges at home and abroad develop various information management platforms, including the multi-combination of cloud platforms, big data, computer technology, imaging technology, photography, keying, animation, H5, VR, AI, krpano technology and PHP technology, they are conducive to “tailor made” the information management platforms and promote the transformation of information management modes.

The future university teaching resource management mode will focus on the application of cloud computing, artificial intelligence, and intelligent science and technology. In order to adapt to the informatization of higher education, colleges and universities should respect the facts and actively develop information management systems or management modes that are suitable for the management of teaching resources, highlight the individualization, intelligence and modernization of management, and provide reference for the future innovation of teaching resource management ideas and practices in colleges and universities.

5. Conclusion

Conducting teaching resource management in colleges and universities from the perspective of “visualization” is imperative. The construction of teaching resource management platform is based on information technology, through the diversified combination of virtual visualized technology, cloud platform, big data, etc., platforms that are suitable for school teaching resource management will be established, which will promote the future innovation of teaching resource management modes in universities and provide intelligent service for teachers and students.

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