Application and Strengthening Strategies of Network Resources in the Construction of Teaching Platform

Hongyan Liu1,*

1Chongqing Vocational Institute of Engineering ,Chongqing, 402260,China

*Corresponding author e-mail:ll20ayan@cqvie.edu.cn

Abstract. Colleges and universities are at the forefront of popularizing and applying information technology, so it is necessary and responsible to create abundant teaching and learning resources, so as to provide a platform for teachers to carry out diversified teaching and students to carry out autonomous learning. In accelerating the process of educational information- zation, we should strengthen the development and application of high-quality educational resources, strengthen the construction of network teaching resources system, establish an open and flexible public service platform for educational resources, and promote the popularization and sharing of high-quality educational resources. In teaching, students should establish information concept, enhance information awareness, integrate, explore and apply computer professional knowledge with other courses, and effectively improve their information technology literacy and operational application ability. When using network resources, teachers need to search and download resources repeatedly with the help of search engines. In order to improve the availability of existing resources and integrate and share the scattered teaching resources, this paper proposes the development of the sharing information platform of network teaching resources in Colleges and universities.

Keywords: Educational Informationization, Educational Resources, Autonomous Learning, Teaching Platform

1. Introduction

The network teaching environment in colleges and universities is the construction of software system based on the operation of network equipment. Therefore, the construction of network teaching resources requires investment in both hardware and software [1]. With the continuous expansion of the scale of higher education and the deepening of teaching reform, higher education has made brilliant achievements. At the same time, we must realize that the improvement of teaching quality depends not
only on the level of teachers, but also on the construction and sharing of excellent teaching resources. Building a platform for sharing network teaching resources is an important way for universities to implement network teaching and share high-quality teaching resources [2]. The rapid development of modern information technology represented by multimedia technology and network technology has given new concepts and connotations to modern education, and brought great vitality and vigor to modern education [3]. In teaching, students should establish information concept, enhance information awareness, integrate, explore and apply computer professional knowledge with other courses, and effectively improve their information technology literacy and operational application ability. At present, various learning modes in the network, especially some teaching resources websites, are not perfect in the aspect of network interaction, and even neglect the platform and function construction in this aspect, which restricts learners' interest and efficiency in online education because they fail to play the role of communication and interaction [4].

At present, the campus network of colleges and universities in China has been basically completed. However, excellent teaching resources have not been fully shared and applied, and they have not played their due role in improving teaching quality and efficiency. The teaching characteristics of online teaching, such as the autonomy of teaching content, the diversification of information forms, the dynamic teaching process, the networking of teaching methods and the individualization of teaching objects, provide the necessary material basis for students to play their creativity, individuality and collaboration [5]. The construction and improvement of the network teaching platform in colleges and universities can effectively meet the needs of colleges and universities to carry out personalized teaching by using the network basic environment, and will also greatly enrich the means for students to build their knowledge and ability. There are many websites of various teaching resources in the network, but there is no "three-dimensional" mode, and insufficient attention is paid to the construction of interactive platform in the network [6]. When teachers use network resources, they need to search and download resources repeatedly with the help of search engines. In order to improve the availability of existing resources and integrate and share scattered teaching resources, this paper proposes to develop a sharing information platform for network teaching resources in colleges and universities. In accelerating the process of educational informationization, we should strengthen the development and application of high-quality educational resources, strengthen the construction of network teaching resources system, establish an open and flexible public service platform for educational resources, and promote the popularization and sharing of high-quality educational resources.

2. Platform requirements analysis

As an auxiliary means for teachers to teach and students to learn independently, the network teaching resource platform in colleges and universities has the advantages that classroom teaching does not have. It breaks the limitations of classroom teaching in time and space, and provides students with the soil for self-improvement and excavation. Generally, demonstration courseware is that teachers use computers to demonstrate some dynamic graphics, microscopic phenomena or abstract contents while giving lectures in class, while system courseware suitable for individual learning is suitable for students to study by themselves or to implement distance education [7]. Teachers should not only let students master information technology knowledge, but also develop and utilize information technology education resources and broaden the learning platform. The network three-dimensional
teaching resources are based on the computer network as the basic teaching, learning and management environment, modern information technology as the means, and digital education and teaching information suitable for remote network transmission as the carrier, serving all the teaching resources in all aspects of the whole teaching process in all societies. The main function of teaching resource database is to provide technical support for teaching work. Therefore, the goal of making teaching resource database is to provide teachers and students with the required multimedia materials scientifically, practically, simply and quickly, and on this basis, design the simplest and most effective maintenance mode, so as to facilitate the continuous updating of the resource database and achieve the purpose of improving the quality of education and teaching.

Curriculum resources are the core of the whole teaching resources. Authorized users can not only download the teaching resources they need from this module, but also upload the excellent or scarce teaching resources they have mastered to the server through the system [8]. So that other users can obtain this part of resources and achieve the purpose of communication and sharing. Courseware also contains materials and strategies, but courseware is the expression of a certain point of view in a fixed way of thinking, and its expression may not be appropriate, and the way of thinking may not be recognized. A survey of students' use of network teaching resources shows that network resources are widely used in teaching. However, not all resources can play a good role in classroom lectures. Table 1 shows the frequency and proportion of teachers using online teaching resources in the classroom.

| Usage ratio       | Frequency | Proportion (%) |
|-------------------|-----------|----------------|
| Hardly used       | 8         | 13.3           |
| Use occasionally  | 12        | 20.0           |
| More than 20%     | 10        | 16.7           |
| More than 50%     | 30        | 50.0           |

Table 1. Proportion of using courseware in class

Network teaching refers to providing educators and learners with a network teaching and learning environment under the guidance of modern educational thoughts and learning theories, giving full play to various teaching functions and rich advantages of network teaching resources. With the development of network technology, it has been able to support synchronous or asynchronous network transmission of multimedia forms such as text, audio, video and images, which provides rich and diverse communication channels for network interaction. Network teaching not only has the advantages of traditional teaching, but also has its incomparable network advantages, which are mainly manifested in the richness of teaching resources, the sharing of time and space, the interactive teaching information transmission, the individualization of instant learning and the contextualization of collaborative learning [9]. The application of knowledge management concept and technology to build a network teaching resource sharing platform aims to upgrade the simple resource database management mode to a new mode which can promote the construction of user knowledge and has the characteristics of individuation, intelligence, co-construction and sharing. Integrating existing teaching resources to meet the sharing of teaching resources and jointly developing teaching resources can make full use of all kinds of talents, effectively make up for the weakness of a unit's lack of
development strength, and realize the sharing of excellent educational resources and human resources. Aiming at the problems existing in the development process of existing resources, this paper puts forward the networking of teaching resource pool.

Interaction between learners and learning resources, between learners and teaching software, and between learners and learning content can promote learners' individual learning and autonomous learning, and lay a good foundation for better interpersonal interaction. The network resource library realizes the access of resources from time to time by using the network technology and combining with the database technology. At the same time, it has the functions of integration of multiple media, expansion of teaching information, diversification of teaching methods and virtualization of teaching scenarios. Its application expands the teaching content and develops the teaching environment. The foundation and core of online teaching is teaching resources, in order to give full play to the advantages of online distance education. The network interaction platform is a management system established to realize the interpersonal interaction of learners in network education, forming a communication platform, which is the network communication environment for learners' learning scenarios, conversations, discussions, collaboration, emotional communication and meaning construction in network learning. It is an inevitable direction of resource construction to divide excellent teaching resources into various materials for systematic and scientific classification, and store them in various data in the form of multimedia electronic information to build a unified teaching resource library.

3. Construction of network teaching resource database system platform

Teaching resource library is a digital resource library transmitted by network, which has the advantages of quick effectiveness and high interactivity. Using this advantage can improve teachers' lesson preparation and teaching efficiency. Due to the characteristics of online education, the environment of guiding teaching activities through the interaction between teachers and students in traditional classroom no longer exists, and instead it is a learning environment created by technology. Therefore, it is very important to design a reasonable and effective network interaction platform. In order to protect these sensitive and important data, the confidentiality, integrity, authenticity and non-repudiation of the information can be guaranteed by information encryption and digital signature, and the authentication and validity of the information can be guaranteed by user login authentication control and key management. The construction goal of network resource database should fully consider the teaching characteristics of courses, give full play to the characteristics of advanced teaching AIDS such as computers and networks on the premise of attaching importance to teaching content and teaching design, and provide teachers with high-quality, high-level, rich and practical teaching basic materials and high-quality teaching demonstration courses. Students can think freely and talk more truly in a free space, which arouses students' enthusiasm and initiative to participate in learning.

Because of the large amount of information contained in the network resource database, in order to facilitate retrieval, it is necessary to refine the course content and carefully design the system structure of the resource database. The system not only includes modules such as resource query, download and upload, but also adds modules such as demonstration courseware, question bank and discussion and exchange according to the integrable ware idea and the characteristics of integrable ware system, which makes the system more humanized. The interactive platform in online education is "dynamic", 4.
which forms a three-dimensional interactive mode, promotes the interactive activities of online education, constructs a network humanistic environment, realizes synchronous or asynchronous communication for online education, and improves the teaching and learning quality and efficiency of online education [10]. The multimedia resource library in the system is provided with modules such as resource query and resource upload, so that users can conveniently find, browse and download the resource materials they need. The management module of the system is mainly for the system administrator, who can maintain and manage information such as system users and system resources.

The network interactive platform breaks the limitation of traditional classroom time. In the process of learning, learners can interact with both teachers and learners in real time and non-real time, which reflects the infinite openness of online learning interaction. For example, Table 2 is a comparison of the basic elements of the teaching process between cloud platform wisdom education and traditional education.

|                        | Traditional education                                                                 | Wisdom Education                                                      |
|------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Teacher                | One course, one teacher                                                                | One lecture teacher and several tutors for a course                   |
| Students               | Most of them are children and teenagers, students with similar age and learning foundation | Most of them are adults, which are very different from each other      |
| Teaching content       | Present teaching content in textbooks                                                  | Presenting teaching content with learning materials                    |
| Teaching environment   | Classroom-based collective teaching environment is the main one                        | Learners give priority to their personal space                        |

In the process of online education, learners take the initiative to participate. The higher the active degree of learners' participation, the better the learning effect and the higher the quality of online teaching. In the practice of knowledge management, through the acquisition, storage, application and sharing of knowledge, a spiral upward trend of knowledge flow and value-added has been formed. Video resources are one of the important components of teaching resources. Because they occupy a large space, higher requirements are put forward for uploading and accessing. Network technology not only shortens the distance between people, but also makes the whole world's learning resources shared. Therefore, online learners can interact with any online learners to maximize the sharing of learning resources. In addition to the above modules, the system should also set up a demonstration courseware module to provide excellent courseware to users, which can not only be used for distance teaching, but also provide a complete system for teachers to learn from and modify. In online education, learners choose their own learning content and determine the learning steps, so as to learn individually. Therefore, learners can set the speed, time and mode of interaction individually according to their actual situation. Knowledge discovery and data mining are usually used

Table 2. Comparison of the basic elements of the teaching process between smart education and traditional education

5
indiscriminately [11]. Knowledge discovery represents the whole process of transforming low-level data into high-level knowledge, and data mining is only one step in the whole process of knowledge discovery. In order to realize the construction of network interactive platform and promote the communication and interaction between teaching and learning activities in network education, various interactive modes are proposed to strengthen the realization of network interactive functions.

4. Conclusion

The concept and technology of knowledge management have been widely used in enterprise management, especially the technologies of knowledge discovery, intelligent search and knowledge push based on data mining have attracted much attention in financial industry, retail industry and e-commerce. The design of the system fully embodies the individualized thought and service thought, and the trend and idea running through the whole educational development should be service thought. The construction of network interactive platform and strengthening the teaching and communication link of network education will certainly promote the development of network education, promote the formation of autonomous learning habits and promote the construction of a learning society. In today's online teaching, what is scarce is not resources, but intelligent and personalized resource sharing services. Modularization is adopted in the construction of resource database platform, which makes the system scalable and portable, and teachers can directly use the multimedia resource database platform to find and download the resources they need. The network teaching resources have been paid more attention by educators, and the network teaching resources are constantly enriched and constructed. However, the construction of network interactive platform is the key and difficult point, which will certainly promote the development of network education.

References

[1] Lin Beiyi, Wu Huiping, Hong Guocai, et al. Teaching design research of network resources and online platforms——Based on the perspective of changes in learning concepts[J]. Open Learning Research, 2017, 106(06): 32-38.

[2] Wang Huiling, Zhou Bin, Liu Hua, et al. Construction of a flipped classroom teaching model based on a digital campus network teaching platform[J]. Light Textile Industry and Technology, 2018, 047(001): 68-69.

[3] Zhao Hongkun, Yang Encui, Li Na, et al. A preliminary study on network informationization of comprehensive chemical experiment teaching resources[J]. Laboratory Science, 2017, 020(003): 94-96.

[4] Qiu Liqiang, Liao Shanggui. Innovative mode of teaching and learning exercise physiology under the network resource platform[J]. Leisure, 2019, 201(09):248-249.

[5] Yang Cuijie. Research on the Development and Application of Network Teaching Resource Platform [J]. Information Recording Materials, 2019, 020(004):185-186.

[6] Wang Cong. Research on the construction of a school-level network teaching resource platform[J]. Computer Knowledge and Technology: Academic Edition, 2018, 14(33):69-71.
[7] Li Lixin, Cao Xiaoming, Chen Hui, et al. Construction and application of systemic anatomy network teaching platform [J]. Anatomy Research, 2016, 038(004):317-319.

[8] Yang He, Liu Bao. Construction of Service Quality Evaluation System of Network Teaching Platform [J]. Journal of Liaoning Teachers College (Natural Science Edition), 2020, 85(01):21-24+91.

[9] Zhu Yinsu, Zhao Yu, Liu Xisheng, et al. Construction and application of medical imaging network teaching and examination platform [J]. Northwest Medical Education, 2015, 23(006): 1047-1049.

[10] Fang Fang, Li Hemin, Li Nianguang, et al. The practice of introducing a comprehensive online teaching platform into the organic chemistry teaching system [J]. Pharmaceutical Education, 2016, 32(02): 54-57.

[11] Zheng Wanting, Hu Zhenhuan, Bai Baogang. Construction of an experimental teaching resource promotion platform based on mobile phone WeChat [J]. Microcomputers and Applications, 2016, 035(008): 82-85.