Study on Resource Construction and Management of Multimedia Network Teaching

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Abstract. The rapid development of computer technology, internet technology and multimedia technology has an increasingly profound impact on education. The importance of multimedia network teaching has been fully affirmed, and the quality of network teaching resources is the core, which is directly related to the effectiveness of teaching. Some practicable methods on resource construction and management of multimedia network teaching are proposed in this paper, to standardize teaching resources, realize resource sharing, improve teaching quality and management effectiveness and at the same time meet the needs of digital learning.

Introduction

Multimedia has the format of graphics, text, sound and activity image, which are valuable features and functions for the teaching process. In recent years, the importance of multimedia teaching is fully recognized in colleges and universities, and multimedia technology is applied by college teachers to carry out teaching activities, which lay the foundation for education reform and teaching quality improvement. However, due to the problems in development and management, the quality of educational resources as well as resource sharing cannot meet the personalized learning needs of students. Construction and management of resources do not happen overnight, instead, it is a continuous and circulating systems engineering of development, research and application.

Classification of Multimedia Network Teaching Resources

Multimedia teaching is to reasonably design and use modern teaching media in the teaching process by combining traditional teaching methods organically according to the characteristics of teaching objectives and objects, in order to form a rational structure of teaching process and achieve optimal teaching effect. Multimedia network teaching resources refer to the teaching materials that can run on a computer and network and at the same time can show the contents of related knowledge after digital procession or fabrication and reprocessing.

Courseware Class Resource

Courseware class resource mainly refers to CAI courseware , a computer software designed for teaching, and it is applied to carry out relatively complete teaching on one or several knowledge points. Small courseware and multimedia courseware are usually distinguished according to the amount of their contents.

1) Small courseware is the multimedia teaching resource manufactured by multimedia tools such as Lectora, etc., it aims at a certain aspect or certain knowledge point of teaching and can explain and guide learning for students.

2) Multimedia courseware is applied to vividly explain the key points and puzzles in textbooks and conduct simulation interpretation on abstract concepts, which is an auxiliary teaching software that can systematically detect students' learning effect. And it is usually applied in the independent learning of students and the multimedia teaching of teachers.

Video and Audio Teaching Resource

The main video and audio teaching resources applied in teaching are streaming media courseware and class video.

Streaming media courseware is a network courseware that combines audio, video and speech together at web for simultaneous transmission by using streaming media technology. The advantage of streaming media technology lies in that information can be continuously transmitted and played at any time, which allows learners to watch the learning content while transmission.

Class video is constructed to provide targeted, vivid, and various learning resources for students, in order to meet the needs of teaching and students' learning. Its basis is teaching program, main line is text materials, content is key teaching knowledge, especially key points, and it is manufactured in the mode of video.

Network Course

Network course is the sum of the teaching content and the implementation of teaching activities of a subject that is performed through network. It includes two components: the teaching content organized according to a certain teaching objective and teaching strategy and the network-based learning supported environment. Network course can provide the conditions that can support students' online independent learning and can organize collaborative learning activities, and also provide a wide range of learning support services for students. At the same time, it is able to record the students' learning process, and record, detect and assess their learning behavior and learning effect.

Build High-quality Digital Resources and Serve For the Teaching

A good multimedia data technology can achieve the control of digital program, which enables the leaders or teachers to have an informal discussion with students through summarizing operation process system, so as to understand the mentality of students. Teachers can also respectively select simulation CNC operating system to guide students to learn and practice by virtue of the analog system as well as the actual operation. Original teaching practice can be broken, unified textbook is used as a reference book for students, the students can constantly question and study deeper under the guidance of data designed by teachers.

The construction of digital resources is a very arduous systems engineering, which requires continuous accumulation and exploration.

3.1 Prior to the construction of a digital resource library of teaching, teaching needs should be carefully analyzed first, including the needs of resource type, the needs of media presentation way, the needs of different knowledge levels of students and so on. After different needs are identified, leaders and teachers are required to participate in the design of resources and practical teaching scenarios according to corresponding media material.

3.2 Working together, the active participation of teachers and students should be brought into play. As teachers clearly know what courseware, lesson plan or multimedia material is the most valuable. Therefore, the construction of multimedia resources should bring together the courseware, lesson plan, multimedia material and some other resources of frontline teachers, and at the same time they should participate in the design of digital resources, so that technical staff can manufactured uniformly and these excellent teaching resources can be paid to upload for sharing.

At the same time, students can be encouraged to participate in resource development, to enable students to consolidate the learned knowledge in the design process, and also to improve students' ability of applying information technology.

3.3 Parallel of construction, development and application. With the development of society, construction of multimedia teaching resources cannot be achieved overnight, but rather teaching application and innovation should be carried out while the construction. Combining with school's digital library whose digital resources are rich, teaching digital resources can be timely updated, corrected and effectively maintained.

3.4 Increasing efforts in the construction of video resources. Scientific research shows that visual and auditory senses play an important role in human memory and perceptual knowledge process, so

the teaching resource that combines video and audio is the best instructional media. As video resource has graphics, audio, video and image, it is figurative and intuitive, which can easily stimulate learners' interest in learning. Therefore, the construction of video resource is indispensable, which can be conducted through self-manufacture, purchase, co-production as well as the secondary development of school's original teaching video resource.

With the deepening of education reform and the constant updating of teaching resources, students can actively apply teaching resources to meet their own demands and firmly grasp knowledge under the guidance of multimedia teaching.

Focusing on the Construction and Management of Network Platform

Network platform is the basis for integrating various types of teaching resources, with the in-depth application of multimedia courseware in teaching, enrichment and improvement of teaching resources are required. Based on this demand, it is urgent to strengthen internal construction and management. Among management system based on network platform, course management system should be firstly constructed, because it provides excellent functional performance in course construction and management, it not only meets the demand of actual teaching, but also provides many materials that worth learning for course design.Moodle software can be installed in the teaching network platform if school allows, that is, creating Moodle database in the built LAMP server, uploading the directory of this program to the root directory of Apache server, and then operating install.php installer. Some detailed settings in the creation of Moodle system can be done, such as courses setting, publicity of achievements and activities, resource module and so on. This system can provide students and teachers with a variety of course reservation formats, such as week format (clear start time and end time), topic format, community format (mainly community forum).

Teaching resource management is a tedious and subtle work, for the stability and security of system, the network operating system should be the multiple hardware platforms of international standard, and current alternative management operating systems include Unix,NetWare,WindowsNT,SunSolaris and so on. If the using standard of high capacity, high stability and high speed of network hardware platform can be maintained, it is able to adapt to the communication requirements of multimedia teaching resources.

Therefore, a more powerful system is required for management and display, a real free Xoops management system with purely open source content, can be applied. Xoops system is similar with Moodle, and it has both a complete document and many functional modules. It has following three main features: interface design is templated, structure design is reasonable, functions are complete, which are conducive to secondary development, and its use management is concise; safety factor is high, security vulnerabilities are few, and it has been widely used in personal website, community exchange and all kinds of large portal system; the release of information applies GPL agreement, which is free to use and modify, and it can be freely redistributed as long as relevant provisions of GPL are followed.

In addition, for the standardization of management, the professional teachers' application ability of multimedia should be strengthened. School is a teaching-based institution, the teaching method applied by teachers is related to talent training . As teachers are those who apply multimedia teaching resources mostly, it is necessary to carry out training of modern educational technology for teachers. Teachers would master the development and production technology of multimedia network courseware beside their own expertise, so as to continuously improve their teaching ability and teaching quality and realize resource sharing, which also indirectly contributes to teaching construction and scientific utilization.

Strengthening the Construction of Campus Network

Campus network is an important part of university infrastructure and the basic environment for the achievement of multimedia teaching resources sharing. Therefore, we must spare no effort to

strengthen the construction of campus network. Campus network generally belongs to small and medium-sized systems, campus LAN is the main form, and a basic campus network has the following application characteristics.

Covering a wide range

The core of campus network a network that faces to teachers and students in the campus, it is connected to numerous regions like teaching area, office, dormitories and so on, it involves interconnect technology of LAN, and connection technology is applied in the interconnection between campus network and external public network or professional network.

High data transmission rate and large storage capacity

Multimedia teaching resources can realize sharing only through campus network, so the information in transmission must contain large-capacity multimedia information like video, audio and so on. Therefore, high-capacity storage and high-speed transmission are the basic requirements of campus network.

Diversity of data type

Campus network is the supporting environment of education informatization and management informatization, and it has to meet the requirements of the teachers and students in teaching, research, work, logistics management and some other aspects simultaneously. Therefore, the data transmitting on campus network have various types, such as text, image, animation, video, audio and so on.

The construction of campus network is a complex systems engineering, demand analysis must be conducted before the construction, the construction should be done from the actual situation and based on current demand, and a forward-looking consideration on the development of technology and education should be conducted at the same time. For the realization of the rational planning of campus network, the standardization of network should be achieved and the progressiveness and openness of network should be taken into account; high reliability and high efficiency of network should be achieved and also the economic practicality of network should be taken into account.

Conclusion

Many factors need to be considered in the construction and management of multimedia teaching resources, which not only involve a lot of technical problems, but also include construction of network facilities, information resources, personnel quality and many other teaching links. Currently, multimedia educational technology is developing rapidly, teachers should focus on the study of multimedia technology beside the concern on educational theory study, so as to give full play to the advantages of multimedia teaching and improve teaching quality and effect.

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