Application of Computer Information Technology in Modern Distance Education System

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Abstract: The key to the application of computer information technology in distance education system is how to effectively apply the advantages of information technology to better achieve the goal of curriculum learning, cultivate students' information literacy, innovative spirit and time ability. Computer information technology does play a huge role in distance education. And good teaching resources have laid a solid foundation for teachers to implement distance education, attaching importance to the construction of teaching resources. This paper introduces the necessity of applying computer information technology in modern distance education system and its application in modern distance education.

1. Introduction
At present, modern information technology, represented by network and multimedia, has gradually penetrated into basic education, higher education and teaching, providing a new teaching environment for students to complete the learning process in their interaction with computers. With the deepening of educational reform and the popularization of computers, good results have been achieved. It has become the consensus of the educational circles to promote the modernization of education and realize the leapfrog development of basic education by means of educational informationization. The construction of high quality and abundant educational resources is the core of software construction in information technology education, which can satisfy the diversification, socialization and subjectivity of teaching and learning process.

P2P and Semantic Web have obvious advantages in the utilization of network resources, eliminating server bottlenecks and understanding the meaning of information. At the same time, it provides a more convenient and effective way for network free interconnection and data transmission, and solves the problems of distance education, such as the relative lack of resources, the difficulty of information exchange, the difficulty of guaranteeing the quality of learning, and the inability to create better interactive space for students.

2. Inevitability of computer information technology applied in modern distance education
Computer information technology has a far-reaching impact on today's social development. It not only greatly improves the development speed of social productivity, but also has a profound impact on social life style and social structure, thus accelerating the pace of human entering the information society.
2.1 Significance of computer information technology application in distance education
Firstly, the knowledge explosion in the information age requires people to master and discover useful knowledge quickly. Computer information technology provides convenience and possibility for storing and retrieving massive knowledge. Secondly, in the information age, the leading economy will be knowledge economy, and the leading industry will be knowledge industry. Knowledge economy objectively requires a large number of high-quality talents. The knowledge structure/ability structure of talents has been steadily rising in the whole society, and the cultural level of the whole society has been raised to a new level. This objectively requires modern education to greatly improve the efficiency of personnel training and meet the demand of knowledge economy for talents.

2.2 Advantages of computer information technology in modern distance education
Computer information technology has posed unprecedented challenges to education, but at the same time it has provided the mode and method to deal with these challenges. The integration of information technology and modern distance education has provided unprecedented possibilities for the reform of education. The advantages of computer information technology in distance education are shown in Figure 1 below.

![Advantages of computer information technology in distance education](image1)

Figure 1. Advantages of computer information technology in distance education

3. Application of computer information technology in modern distance education

3.1 Design of distance education system based on computer information technology
Because of the unsatisfactory network environment and the pressure of centralized access to peer-to-peer networks and servers, distance education units usually set up multiple out-of-school learning centres shunt servers, which adopt B/S network structure in a small area of shunt servers. Considering that in the small area controlled by the off-campus learning centre platform server, the number of students visiting is limited and the network traffic is not large, the centralized B/S access mode needs to be changed, and the P2P and JXTA technologies are not needed. This paper designs a P2P network consisting of the school-based server and the off-campus learning centre server, and uses the P2P technology to transfer these data to solve the problem. Based on the B/S model of distance education system, P2P technology is introduced to expand its functions, which can protect the investment of the original system and seamlessly integrate with the original system. The system is composed of school-based server, off-campus learning centre server and learning institution as shown in Figure 2.
Figure 2. Distance education platform based on semantic P2P network

The server provides customer access to website resources in the form of web pages, generates customer request response and sends it to customers according to their requests. The school-based server also acts as the central server in the P2P network, receiving the tasks of customer registration, customer authentication and "handshake" between nodes. Each off-campus learning centre server should install P2P client software, which can receive local customer registration, customer authentication and resource access services.

Computer-aided instruction can simulate the process, situation and phenomenon that traditional teaching tools cannot achieve. It breaks through the limitation of space and time, makes the process, scene and phenomenon that can only be dictated in traditional teaching vividly and intuitively reflected in front of students, strengthens students' perceptual knowledge and improves teaching efficiency.

3.2 Using computer information technology to construct resource base
By making, collecting and sorting out a large number of resources, teachers gradually establish rich teaching resources in schools, which will greatly increase the amount of teaching information. At present, a large number of computer-aided teaching software in various disciplines, which gathers the experience and wisdom of many educational experts, provides us with rich teaching resources. Teachers can use these resources to organize their own education and teaching activities, which can greatly enrich education, teaching content and increase the amount of information. It not only makes students benefit daily learning, but also broadens their horizons and knowledge. At the same time, the use of powerful computer database system can provide students with multi-level, multi-type exercises, so that the knowledge learned can be consolidated and strengthened, which is conducive to the cultivation of students' learning ability.

3.3 Establishing campus learning resource base of distance education
The educational resources in the school resource base mainly come from the internet, various materials of excellent teachers accumulated by the school, all kinds of educational materials and educational software, etc. As shown in Figure 3.
Figure 3. Main sources of educational resources in school resource base

The inappropriate resources are worthless. The resource base should be fully applied to teaching, and constantly optimize and organize in the teaching process to ensure the applicability of learning resources.

4. Conclusions

Nowadays, with the impact of information technology on all areas of life, more and more attention has been paid to the student-centred teaching mode and learning environment. This change puts forward higher and newer requirements for the education system, especially the skills of using modern technology to promote learning and design learning environment. Through the research of semantic P2P and JXTA, this paper locates the new technology between servers and designs a P2P remote teaching server model based on JXTA platform. Applying computer information technology to modern distance education system is a powerful measure to promote quality education, and is also the direction of future education reform and development.

References

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