



Research on the Application of Network Learning Model Based on CSCW Technology in University Network Teaching

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Abstract. With the rapid development of modern information technology with Internet technology and computer technology as the core, the idea of Internet and electronic information technology has gradually penetrated into the teaching of colleges and universities, and the electronic information in the field of education is moving forward in continuous expansion. Classroom learning in traditional classrooms cannot meet the needs and motivation of learners. With the rapid popularization of online learning, scholars begin to realize the necessity of being able to work together at any time and anywhere. The computer CSCW mobile learning system model arises at the right moment, which improves the simplicity of offline learning and the defects of simple online learning, realizes high-quality resource sharing and efficient learning interaction, and makes the network teaching in colleges and universities fully realize its effectiveness. Through theoretical and application analysis, this paper discusses the application of network learning model based on CSCW technology in network teaching management information flow, designs the network structure of colleges and universities, and puts forward suggestions for the popularization and application of network teaching technology, in order to provide effective help for the innovation of education informatization in China.

Keywords: Network teaching · CSCW technology model · Work collaboratively · Management information Flow

1 Introduction

As science, education, computer science, the Internet learning science and the rapid development of artificial intelligence, digital terminal and the popularity of computer network, broke on the behavioral learning theory model of the traditional teacher-centered learning mode, Internet + education has promoted the innovation of cognitive style learners and educators. Network teaching is to span the distance between teachers and students in space and time, extending the classroom to any field covered by electronic information technology, and conducting interactive learning anytime and anywhere. At

the same time, the application of network technology also provides beneficial help for cooperative learning, inquiry learning and interactive learning.

In recent years, the computer supported collaborative mode (CSCW) has developed rapidly. It uses computer technology and network communication technology to organically combine multiple collaborative members and their interactions in a shared environment. The network gives CSCW two advantages: information acquisition and human-computer interaction. Put the CSCW technology model is applied to network teaching, on the one hand can realize remote interactive lectures and discussion, you can also use the collaborative teaching, teachers and students can be put in the same interaction environment, teaching to make use of the computer system management and control, the visible CSCW technology for network collaborative teaching model provides favorable technical support. The new CSCW personalized network learning model established in the new environment of network teaching brings a new development opportunity and efficient reform for hybrid learning.

2 Network Learning Model Based on CSCW Technology

The diversification of higher education has become a foregone conclusion, from a single structure to a variety of structures. Cultivating compound and innovative talents has become an important training goal of colleges and universities. The development of Internet information technology in the 21st century enables college students to make full use of the Internet, the “second space”, to study independently, enhance the broad perspective of learning, and stimulate the desire for knowledge and exploration of college students. Thus guide students to establish a lifelong learning concept. With the in-depth development of applied information technology and Internet technology, e-learning (Electronic Learning), a new online Learning method emerged at the right moment, changing the relationship between teaching and Learning, forming an effective and feasible teaching method system under the environment of information technology. Enhance the possibility of learning anytime, anywhere and for life.

In the late 1980s, constructivist learning theory began to rise. Constructivist learning theorists believe that learning is to guide students to grow (construct) new experience from the original experience [3]. He is a rational development of cognitivism learning theory and studies the process of learning from a scientific perspective. On the one hand, it highlights the subjective initiative of the learning subject in a certain situation; on the other hand, it emphasizes the leading role of the teacher subject in participating in a suitable way. Therefore, the essence of network learning model is based on constructivism learning theory, strengthening the active construction and interactive cooperation between professor and learning, establishing learning scenarios, promoting the interaction between new learning activities and existing cognitive structures, and realizing learning objectives, which is the core of network learning model design. In today’s Internet environment, the construction of such network learning model is also an inevitable trend.

Computer Supported co-operative Work (CSCW), it is the use of Computer system to support people to Work together, using the interaction of Computer technology, the comprehensive multimedia technology and the distribution of network technology, Support groups of different time and space to perform common tasks on the shared interface

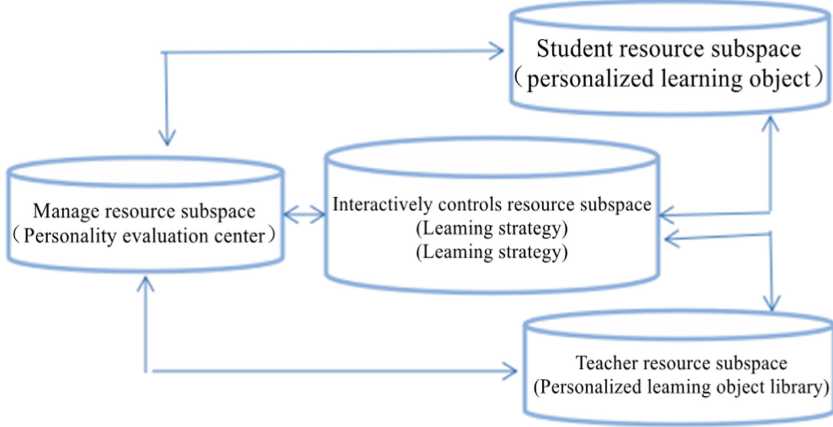


Fig. 1. CSCW Learning model

and complete collaborative tasks together to achieve higher work efficiency. In recent years, the network has brought CSCW two advantages: an information acquisition tool and a human-computer interaction model. In view of this, we put forward a personalized network learning model based on constructivism: CSCW personalized Network learning model, combining with CSCW technology on the basis of integrated network teaching experience, theory and practice. First of all, the concept of resource space can be introduced to describe it, and then the operation between Spaces can be reflected in the interaction between resources. In Fig. 1, the double arrow symbol represents the bidirectional resource acquisition.

The network cooperative teaching model based on CSCW technology enables people to use teaching resources efficiently and safely without the limitation of region and time. Meanwhile, it can meet some specific requirements of learners in the learning process and meet the requirements of network teaching in general. It also conforms to the diversified resources, operability, autonomy of participation and interactive characteristics of open MOOC online learning.

3 Application of CSCW Technology in Network Teaching Management Information Flow

In February 2016, the American New Media Alliance (NMC), known as the weather vane of higher education, launched the latest horizon Report, which pointed out that blended learning mode is a major innovation in the field of education in the information age and has become a way of learning with complete experience. Its platform design and application promotion will become an important direction of global higher education development in the future. According to academic research, the authors confess blended learning is the advantage of traditional learning style and MOOC organic integration as the core of the advantages of network learning, he is teaching methods,

learning environment, teaching equipment, teaching activities, course content and learning resources, learning strategies and learning evaluation mechanism is the process of mutual accommodation, so as to achieve the best teaching efficiency and matching effect.

So far, China's education authorities have not issued specific implementation plans and evaluation criteria for online teaching. On the surface, it is Internet online learning based on MOOC. At a deeper level, the learner-centered education paradigm aims at focusing on students' personalized learning and sense of learning experience, cultivating independent learning ability, finding identity and sense of value in learning, exploring learning and teamwork ability. It is of great significance and value to study the real state and problems of network teaching in college students' actual study and life.

Relevant studies show that 46.4% of college students think that online teaching based on MOOC is not suitable for them, 14.3% think it is not suitable for them, and another 10.0% think it is not suitable for them at all [1]. Some scholars' research indicates that 30% of students think online teaching is inefficient. In view of this, this paper designed the questionnaire and interview of online teaching for college students, taking Nanchang Institute of Technology and Jiangxi Institute of Applied Science and Technology as the survey objects, to understand the degree of students' participation and satisfaction in online learning. It is found that the proportion of general level of online learning is 50.8%, and the proportion of relatively level is nearly 23%, which is quite positive. In addition, 35.25% of the students think it depends on the situation to use this teaching method, nearly half of them think it is helpful or not obvious, but the proportion of not obvious help is still a little more, accounting for 45.9%. As can be seen from the data, students do not deny the help for them, but it has not reached the necessary importance to use it. In the learning process, college students hope that teachers can solve the problems raised in time, participate in discussion and guide thinking, followed by supervision and feedback of homework, indicating that network teaching still emphasizes the role of teachers' assistance.

It can be seen from the research that network teaching must rely on the support of collaborative technology. The management information flow in network teaching is the core of collaboration, which is carried out around the flow of information flow. In this study, CSCW technology is introduced into the network teaching management information flow, so that the information flow can be further transferred in a collaborative way, so that the information flow can work in a collaborative way. Network teaching obtains teaching and learning information through network interaction. Therefore, the establishment of interactive management information environment is the key to support the development of network teaching. Network teaching management structure is a distributed structure, because schools, branches, teaching entities are separated in the site; Students, teachers and teaching administrators have different communication times. You will need to have group work together to support the modernization of technology, CSCW technology, which makes the flow of information better applied to the support and the community work together to, as shown in Fig. 2, is the CSCW technology in network teaching management information flow, the application of can better strengthen the synergy of network teaching and learning, deepen the innovation of the network education.

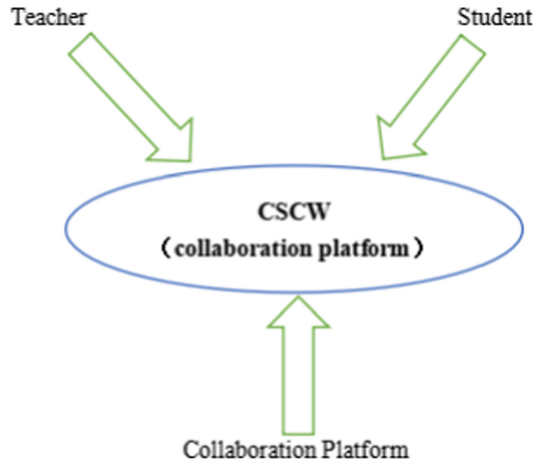


Fig. 2. Cooperative work model

4 Support the Design and Implementation of Network Teaching System

CSCW technology provides an open, integrated and distributed network mobile cooperative working mode, which is not only useful for computer supported cooperative learning (CSCL), but also develops a large space for the application and development of distributed cooperative teaching in network teaching. Network teaching based on learners as the center, the innovation is the key guarantee of Internet technology, traditional online teaching, there are many disadvantages and CSCW online collaborative learning system model can be established through the network collaborative working environment, to form virtual together as a group, make teachers and students, students and students to exchange information and experience sharing, problem discussed in this paper.

Therefore, college students generally concentrate on offline or online teaching on campus, so the network design of colleges and universities is particularly important. The author designs the network structure diagram of colleges and universities (Fig. 3). The network diagram can make full use of the existing campus network resources and establish an interactive management system supporting network teaching for the basic network environment. The system uses CSCW to deal with the various links that affect the efficiency of management, and realizes the cooperative operation among the main bodies of information flow [5].

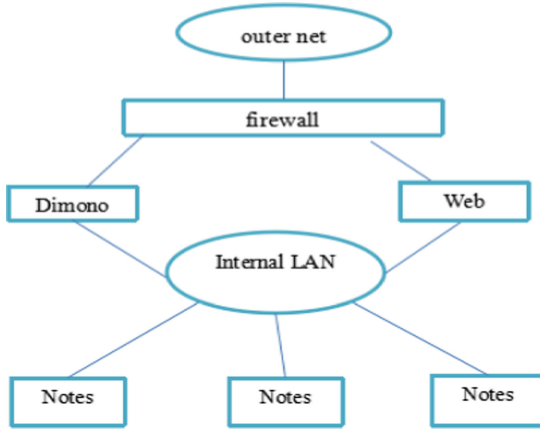


Fig. 3. System network distribution diagram

5 Suggestions on the Popularization and Application of Network Teaching Technology

Through the design and implementation of the network teaching system, the author puts forward some suggestions on the popularization and application of network teaching technology.

(1) Strengthening the application of the model of online collaborative learning system. Different from traditional “indoctrination” learning, network teaching needs more self-learning ability, information technology application ability and self-time management ability. The network cooperative learning model of CSCW combines “system user”, “online classroom”, “operation channel” and “database” so that all users can access the database through the identity authentication center and system functions. The application of this model can reduce the interaction barriers of traditional online teaching, improve the efficiency and effect of online teaching, and enable students to broaden their horizons and master knowledge and skills better through online teaching. Only by serving learners themselves and enhancing learners’ initiative, can the advantages of network learning be better played.

(2) Strengthen the functional design of campus network system.

In the process of network teaching, the task of the teacher becomes the dredging of knowledge and the guidance of students, and the teacher turns “teaching” into “leading” [2]. Teachers can establish reward mechanism and model power in online teaching. The platform and classroom should be organically combined, and the learning platform should also have after-class discussion modules. Such “timely feedback” link is also the most urgent need of students, so that teachers can timely understand students’ grasp of the content and improve learning efficiency. Through the guidance of learners’ management strategies, we hope to optimize learners’ online learning process and improve their online teaching ability. But these all require the support of system functionality, as shown in Fig. 4.

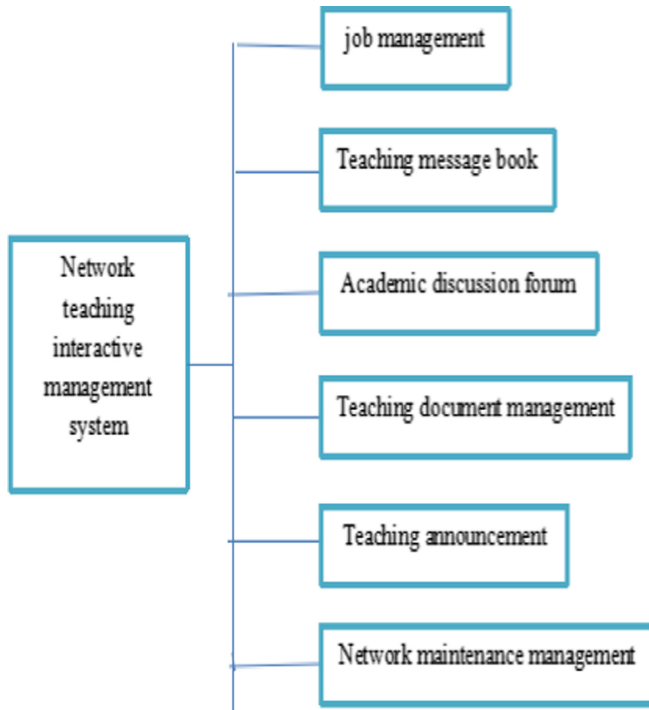


Fig. 4. Functional structure of network system

(3) Deepen the network cooperative teaching method.

The network cooperative teaching method based on CSCW technology is divided into three stages. The first stage is the preparation stage, teachers need to achieve the determination of teaching objectives and teaching plans through collaboration and collaborative work in the network environment. The second stage is the online teaching stage, teachers carry out online real-time teaching, the main way of this stage is to use M: M teaching method between students and teachers to carry out real-time interactive discussion teaching and learning. The third stage is the online teaching auxiliary stage, this process between teachers and students can use time-sharing asynchronous, can also use synchronous real-time progress, so as to strengthen and improve the learning effect of students.

Establish a high quality educational technology platform and create a good mixed learning environment.

First of all, the teaching industry should jointly optimize education platform technology and resources. Optimizing the network environment and providing convenient learning platform for college students is an important prerequisite for hybrid learning, and a stable network environment is the guarantee of learning, which is also concluded from the above survey results. Therefore, it is particularly important to enrich online resources and create intuitive teaching resources. Second, provide offline and online

interaction mechanism. This information technology ability put forward higher requirements for teachers, teachers can learn animation and video production, marking and difficulties for online courses, main points, more Shared student learning work, work, and organization in offline team discussion and case analysis, provide more communication experience operation and fellow students the opportunity to learn, embody online cooperative characteristics of blended learning.

6 Conclusion

This paper discusses the application of network learning model based on CSCW technology in network teaching in colleges and universities, through the analysis of CSCW personalized learning model and the application of CSCW technology in network teaching management information flow, puts forward a new design to support network teaching system, and puts forward some suggestions for the popularization and application of network teaching technology. The author believes that CSCW technology provides an open, distributed and integrated collaborative working environment, and creates more development space for collaborative teaching development in network teaching [4]. It will become the focus of network teaching research and bring new opportunities for the development of network teaching.

References

1. Abbas, Z. I. (2018). Blended Learning and Student Satisfaction: An Investigation into an Writing Course. *J. Advances in Language and Literary Studies*, 9(1): 102-105.
2. Jones, N, Lau, A. M. S. (2010). Blending Learning: Widening Participation in Higher Education. *J. Innovations in Education & Teaching International*, 47(4): 405-416.
3. Li, F. (2011). *Educational Knowledge and Ability*. Higher Education Press. The Beijing.
4. Li, R. (2009). Research on network collaborative teaching based on CSCW technology. *J. China west science and technology*, 8(06): 94-95.
5. Wang, C. X. (2005) Design and implementation of interactive management System supporting Network teaching under CSCW Environment. D. Inner Mongolia Normal University.

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