The Role of Network Teaching System in Training Innovation Talents

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ABSTRACT: The essay proposes the idea of improving the teaching model based on network teaching system. With effective application of a variety of advanced teaching ideas, it designs OurCourse network teaching system. OurCourse provides teachers with the whole teaching process management in order to know the quality and effect of student learning. The heuristic teaching takes the inspiration of students as the core to motivate students’ initiative and enthusiasm. It could improve teaching resource sharing mode, spreading outstanding teaching ideas among universities. The online test and analysis effectively promote students' mastery of knowledge, reduce the workload of teachers in handling papers, and finally improve teaching efficiency.

KEYWORDS: Network teaching system; OurCourse; Architecture; Examination management

1 INTRODUCTION

With the rapid development of the network, network education is becoming a development trend of education reform, a feature of modern education and a new driving force. Network-based teaching system could support knowledge-oriented self-learning and other new teaching methods. Making effective use of teaching experience, it could improve teaching efficiency and provide important technical support for teaching activities. The development of information and network technology bring about revolutionary change in technical means and form of teaching. The open networks and its enormous computing capacity enable students’ self-learning breaking the restriction in time, space and form. Network teaching system will lay foundation for improving teaching quality, training innovation talents and promoting teaching mode reform\(^1\).\(^2\).

2 OURCOURSE NETWORK TEACHING SYSTEM

In order to improve network teaching situation and to apply innovative teaching mode effectively in teaching practice, the OurCourse network teaching system is designed. It uses advanced network information technology, and concise advanced teaching ideas and excellent teachers’ experience. It motivates the students’ enthusiasm and teachers’ leading role, supporting the whole teaching process management\(^3\).\(^4\).

2.1 System design

OurCourse network teaching system is designed to serve and promote the reform of teaching mode. Compared with the traditional education system, it has the following design ideas.

(1) Time-driven: teachers will combine teaching contents with course implementation plan. With the axis of time, the system would regularly push teaching and learning contents to teachers and students.

(2) Allow students to be more involved in teaching: before class, prep would be planed for a specific problem. In class, discussion would be arranged for some difficult issues. Targeted experiments would be designed to verify some key knowledge. After class, online discussion would provide more opportunities for independent thinking, self-learning, real-time learning, and collaborative learning. Students could also do questions-asking, homework, quizzes and other learning activities. Students’ learning activities would be monitored through teaching effect tracking module embedded in system.
(3) Virtual Classroom: it provides a self-teaching with video/courseware, discussion, problem solving, homework assigning and review, knowledge test, and exam management functions. The system could manage various teaching resources of all types of textbooks, materials, videos, cases, personalized favorites, exercises, and exams, effectively supporting teacher preparation, online courses making, and network courses construction.

(4) Overall incentives: the platform could provide specialized scoring strategy according to teaching requirements. In each teaching step, students could be managed, evaluated, and encouraged to actively participate in learning. Proportion of various learning forms could be set. For example, theories (closed book exam) accounts for 60%, experiments for 20%, preview for 6%, homework for 6%, (class and network) discussion for 8% and so on.

(5) Efficient test: test bank management and online test module could combine testing, marking, scoring and evaluation of teaching effectiveness together. It could not only greatly enhance the teaching quality and efficiency, but also promote students’ self-learning and save time, manpower and financial resources to make the test results more objective and fair.

2.2 OurCourse system structure

OurCourse network teaching system is shown in Figure 1. The main functions of the system are divided into five parts: (1) system management: teaching administration branch creates a database; (2) management of teaching resources: it manages a variety of teaching resources; (3) courses management: it relates a variety of teaching resources with related chapters, and pushes them to students; (4) teaching process management: it promotes interaction and exchanges between teachers and students,[5]; (5) examination management and test analysis: it combines marking, scoring and evaluation of teaching effect, not only enhancing the teaching quality, but also promoting student self-learning efficiency.

OurCourse network teaching system correlates teaching content with implementation plans. By pushing to students, the system not only subverts the traditional teaching system of passive learning, but also reduces the learning difficulty to gain knowledge in a limited period of time. The system will assist teachers to teach before class, in class and after class, promoting students’ scientific thinking. OurCourse takes the three-phase mode of course resources management, teaching content organization and teaching process management. The designed system could be upgraded, which greatly reduces the difficulty of the application of advanced teaching ideas and lays foundations for teaching reform.

3 SYSTEM MODULE DESIGN

OurCourse uses B/S system architecture and adopts various advanced software designs. It not only realizes a multiple of teaching modes, but also provides customers with easily operating system.

Figure 1. Architecture of OurCourse Network Teaching System.

The following describes the system core module design.

3.1 Teaching resources organization and management model

OurCourse integrates heuristic teaching and whole process management into the organization and management of teaching resources, so that teachers could take inspiration of students’ thinking as a core and motivate students’ enthusiasm and initiative. The system has the functions to know learning effect, progress and quality in each teaching phase. Teachers could make assessment according to students’ learning, and timely identify and solve problems, better guiding students to complete the course[6].

OurCourse teaching resources organization and management model is shown in Figure 2. The system divides teaching process into three phases, namely before class, in class and after class. In each phase, teacher would set questions to guide students in active learning, developing their ability to find and solve problems. The following details the heuristic teaching method and process management in the three phases.

(1) Before class: students complete this phase before the classroom instruction. Teachers would collect the origin and development of knowledge. They associate new knowledge with learned knowledge and propose a guide for students to learn new knowledge. The preview would be a discovery of knowledge and mobilize students’ desire of knowledge[7]. Teachers should choose questions which relate old and new knowledge. It has higher requirements for teachers. The before class phase could yield twice result with half effort, but the
The primary means to examine the teaching effect is analysis. Its structural model is shown in Figure 3.

(2) In class: teacher organizes classroom activities. The questions raised in the before-class phase would be used to introduce new contents. Through discussions with students, teacher would know their understanding of the new knowledge. Then the teacher would propose the correct way to solve the problem and introduce the new knowledge. Teachers could make subjective evaluation according to the classroom performance, notes and group discussion. It could be recorded in the system as a reference of the score.

(3) After class: the teachers designed in-depth questions for students develop their ability of independent thinking. In addition, teacher should be able to design comprehensive experiment for students. They could carry out it individually or in group. The theory and practice skills would be developed to solve practical problems. In this stage, teachers could make objective evaluation based on students’ work, experiment and test scores.

3.2 Examination management and testing analysis model

The primary means to examine the teaching effect is the proficiency test. To this end, OurCourse provides a full-featured online test questions management and analysis. Its structural model is shown in Figure 3.

OurCourse is able to provide appropriate test at each stage of teaching, rather than relying on the traditional "one test for life" mode. Test results can be fed directly to the teacher as the evaluation of teaching effectiveness of previous stages, enabling teachers to timely adjust and improve teaching content. In order to develop students’ capability and to encourage students’ learning of something more textbook, the system provides students with the function of self-test of self-learning. In test questions management, the system provides functions of questions input, binding questions with knowledge or chapters (reflecting the learning stage), etc. In forming test paper forming, the system is able to provide homework, chapter test, knowledge test, midterm test and final test paper. In addition, the system can provide automatic rating and/or a hand scoring function, scores treatment and teaching effectiveness analysis. As a result, question bank management and test analysis module are capable of combining testing, marking, scoring and evaluation of teaching effectiveness. It could not only greatly enhance the teaching quality and efficiency, but also promote students’ self-learning, save time, manpower and financial resources, and make test scores more objective and fair.

Figure 3. Model of Test Management and Analyze.

4 CONCLUSION

At present, the network education has become a feature of modern education and a new driving force of educational development. This essay designs OurCourse network teaching system with the application of advanced teaching ideas. OurCourse realizes a whole teaching process management with the integration of heuristic teaching thought. Taking the inspiration of students’ thinking as the core, the system could motivate students’ initiative and enthusiasm. The introduction of incentives promotes the student-centered teaching mode, strengthening the scientific thinking of students. Through online testing and analysis, the system effectively promotes students' mastery of knowledge, reduces the workload of teachers in handling papers, and improves teaching efficiency.

The main work of the following step is to promote the use of OurCourse network teaching system in colleges all over the nation, and to have network teaching cloud platform in the CERNET.

REFERENCES


