

Research on the Construction of Full-Time Distance Live Broadcast Teaching System

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Abstract—In this paper, a new system frame of distance live broadcast teaching is constructed, the teaching method of "five simultaneous" is given, and the organization mode of "trinity" is established, which can provide high quality education for the students in the backward mountainous areas and realize the sharing of high quality resources. It is of great practical significance to improve the quality of education.

Keywords—Live broadcast teaching system; Full-time; Five simultaneous; Trinity.

I. INTRODUCTION

With the rapid development of modern education and communication technology, a new educational technology platform has been set up for distance live broadcast teaching. The teaching method of modern distance live broadcast education with computer network, multimedia and video system as the main teaching information transmission carrier has undergone historic changes. Teachers have also changed from the core leading position in traditional teaching to the auxiliary, guiding and service position, and the functions of teachers have undergone fundamental changes. The distance live broadcast teaching implements a large-scale teaching and talent cultivation model in which the lecturers and students are separated from each other, so that students in impoverished mountain areas, especially those with poor teacher resources, can also get high quality education, the balance and equity of educational resources have been greatly developed [1,4].

Full-time distance live broadcast teaching is a special form of education. Its main characteristic is to realize the full-time same class in different palace and cooperative teaching of front-end and distance classroom by means of the stable and reliable data transmission for satellite.

II. SYSTEM STRUCTURE RELATIONSHIP

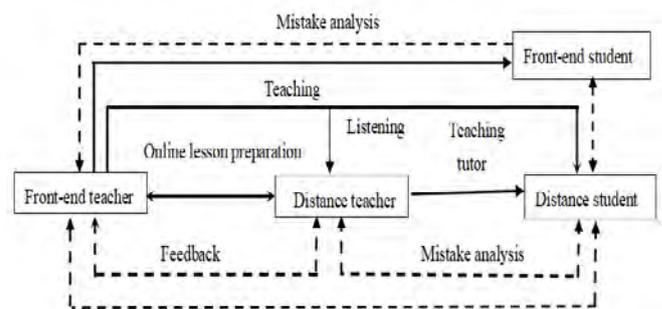


Fig. 1. Structure diagram of live broadcast teaching system

In order to improve the teaching quality and management level, the main structure of the distant live broadcast teaching system is constructed according to the characteristics of the distant broadcast teaching system.

III. DESCRIPTION OF SYSTEM STRUCTURE

1) Teaching subject

- A) *Front-end teachers*: Actual teaching teachers;
- B) *Distance teachers*: Terminal tutoring teachers;
- C) *Front-end students*: Students on site;
- D) *Distance student*: Terminal attendance students.

2) *Realization mode*: "Five simultaneous", means simultaneous lessons preparation, simultaneous teaching, simultaneous doing homework, simultaneous testing, Simultaneous correction of mistakes;

3) *Organizational model*: "Trinity", refers to "the mutual cooperation of the tutor, teaching teachers, distance teachers, technical personnel";

4) *Communication mode*: Live broadcast by satellite. Video images, audio signals and courseware materials are transmitted to distance schools in real time; distance students can also feedback their own images and sounds to achieve the same class in different areas .

IV. SYSTEM RELATIONSHIP STRUCTURE ANALYSIS

Full-time is embodied in "Five simultaneous". The "Five simultaneous" ensures that the excellent educational resources

of the front-end schools are carried out in the whole teaching process of the distance schools; and the cooperative teaching is embodied in the "Trinity" mode. The trinity embodies the concept of "learner-centered". The four roles of teachers work together, centered on the front-end and distance students, in order to promote the growth of the students.

The front-end teachers write the teaching plan, make the teaching design and the multimedia courseware in advance, soliciting opinions from instructors, and exchange the teaching intention with the distance teachers one week ahead. With the assistance of the technicians, the instructors, the front-end and the distance teachers prepare online course simultaneously.

The content of communication should include teaching idea and the concept of a complete and scientific teaching system to achieve the purpose that distance teachers can carry out the teaching intention of front-end teachers.

Front-end teachers teach both front-end and distance students simultaneously. Distance tutors not only cooperate with questions and answers on site, but also attend classes with distance students. Therefore, the teaching of front-end schools has the function of training for teachers in distance areas.

Distance students can not only experience live teaching in front-end schools through live classes, but also use the same educational resources as front-end students including simultaneous assignments and simultaneous testing.

The mistakes of distance students that occur in the class, homework, and test should be collected by the distance teachers in time and fed back to the front-end teaching management department or the front-end teachers. The front-end teachers should adjust their teaching according to the feedback information, and collectively correct mistakes in practical teaching.

As the role of learning support service, the front-end teaching management department should not only contact the front-end and distance schools, but also provide feedback statistics, diagnose problems and give the evaluation results of front-end and distance teaching. Furthermore, the suggestions of the front-end teachers' teaching adjustment are given, etc.

V. FEASIBILITY OF SYSTEM IMPLEMENTATION

A. Consistency of culturing objects and objectives

The audience of full-time live broadcast teaching is the students of primary and secondary school. According to the curriculum standards set by the Ministry of Education of the people's Republic of China, students gradually develop positive system of values, essential character and key abilities through subject learning. Therefore, "based on student development and cultivating core literacy of the discipline" is the key idea and starting point of the teaching and learning of the distance live broadcast education, and it is consistent with the goal of training students.

B. Consistency of teaching time

According to China's full-time teaching system, each semester has the same start time, the same class time and the same vacation time, and the same test time (including unit test, mid-term and final examination, college entrance examination). Even the time of each class and rest is the same, which makes it possible to choose full-time for live broadcast teaching.

C. Consistency between teaching content and educational purposes

The training goal of the core accomplishment is the same; the evaluation methods are the same; the testing methods are the same; the curriculum standard, the teaching plan and the textbook content are consistent; the teaching objectives, teaching contents, emotional goals, key points and difficult points, and the basic knowledge and ability requirements of each class are the same.

D. Teaching of front-end teachers and on-site guidance of distance teachers

The front-end instructors are selected according to the principle of noble morality, exquisite professional skills, excellent teaching art, and skilled in information technology. They can design and develop teaching models that are more suitable for the students' physical and mental development. To achieve the goal of developing students' thinking quality and selecting reasonable methods of training talents.

The full-time distance live broadcast teaching is different from distance teaching for adults. The students study under the collaborative guidance of the teachers, and study in live broadcast classrooms that is similar to traditional classrooms. It is the combination of the traditional education and the modern education. The distance teacher can still ask and answer questions, tutoring and explanations according to the students' situation in the classroom, and develop plans suitable for individual development according to the uniqueness of the students, and teach students in accordance with their aptitude.

E. Support of modern information technology

The full-time live teaching class replaces the traditional blackboard with multimedia courseware, PPT and electronic board, and uses the computer, satellite live broadcast, internet and other modern information transmission technologies to transmit the video images, audio signals and courseware materials of the front-end teachers and students to the distance schools [2, 3]. The distance students can also feedback their own images and sounds back to the front-end classroom, realizing real-time and two-way interaction with the front-end teachers, and finally realize that distance students are integrated into front-end classes and are taught in the same class as front-end students.

From the above "Five consistency" analysis, with the support of collaborative teaching team and the modern information technology, the system is operable.

VI. THE PROBLEMS THAT SHOULD BE PAID ATTENTION TO IN THE FULL-TIME DISTANCE LIVE BROADCAST TEACHING

A. Information collection and analysis

There are several ways to collect information at present.

First, questionnaire survey, education measurement and evaluation statistics emphasize the way of collecting questionnaire; statistics and analysis of data using the developed questionnaire tools.

Second, foreign PISA, this is a way of human-computer interaction. For example, two students do the exercises together, but the answers to the first question are different. The computer will analyze and guide the two people to work on different questions. It is a response mechanism designed to collect information and make feedback on personal problems.

Third, the online marking systems of different versions used by many schools will automatically collect and analyses data. These systems will not only give each student a specific score for each problem, but also give the analysis results of the whole class, grade, and even all areas.

The fourth is to use tablet to collect students' daily homework preparation, asking questions in class, reviewing homework, test scores and other data. Because tablet can collect all the operation data of a student before, during and after one class, including click time and the ratio of right to wrong. The amount of data is huge, and the requirement of data analysis is very high.

Fifth, the information collection and data analysis based on the bidirectional detail table can be directly linked with education and teaching, so it becomes the main way of collecting the data and information of full-time distance live broadcast teaching. Based on all these, an evaluation system is established.

B. Establishment of evaluation systems

If the number of distance classes is small, some schools take the test this time, but they don't take it next time, so that the sample space changes, which has a great impact on the accuracy of the evaluation. However, as the number of distance classes increases dramatically, the sample space will gradually stabilize. From the technical point of view, it is easier to realize the teaching evaluation of teachers and students.

The advantage of informatization in the evaluation system is that it is easier to detail the individual data of each student. Neither big data nor artificial intelligence is strong enough to link knowledge points to the question to be examined, but it is indeed possible to make a data model for each student through multiple tests. As long as the test paper is produced, and the bidirectional teaching quality evaluation is done well, the students' scores can be divided into scores corresponding to the mastery of dozens of knowledge points involved in this test. Data accumulation can make more and more detailed

descriptions, and give a student a grasp of the various points of knowledge. This means that big data is built for this student. The analysis of student data based on the bidirectional detail table has a great relationship with the viewpoint and level of the teacher's proposition. In turn, it is an index to check a teacher's quality of producing text papers and teaching.

How a front-end teacher makes a comprehensive evaluation according to the data given by the evaluation system and the distribution of weights, so as to improve the attention of distance students in organizing teaching content and designing teaching activities. Compared with the traditional teaching, the psychological problems of the distance students in the mode of distance broadcast teaching are more complicated and regional. How to improve the distance student's problem collection mechanism and learning feedback system, strengthen the psychological guidance to distance students, and improve the effectiveness of learning support service; How to realize the dynamic connection between front-end teaching and distance teaching more effectively; How to pay attention to the connection of different regions from macro aspects such as human environment and ideology, including: the cohesion of ideas, the connection of information, the dynamic cohesion of mentality, etc. These topics will be further explored in the future teaching practice.

VII. CONCLUSION

In this paper, the structure of the distance live broadcast teaching system is constructed, through the teaching process of "five simultaneous" and the organizational form of "trinity". A new teaching and learning platform is set up for distance broadcast teaching, which is a new attempt of distance broadcast teaching and has maneuverability.

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