



Research on the Application of “Webcast” Teaching Mode in Finance and Accounting Major Courses

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Abstract. In the current context of the transformation of education informatization, the traditional teaching mode is facing unprecedented challenges and opportunities. Especially after the global epidemic, the rapid rise of webcast teaching mode has become an important direction to lead the development of innovation in the field of education. In this regard, this paper will focus on the actual needs of education and teaching in colleges and universities, with the finance and accounting major as the research object, in-depth discussion of the implementation path of the webcast teaching mode in specific teaching practice, and combined with the feedback data of student users to analyze the effect, in order to promote the application of the webcast teaching mode in the college and university education on the ground. Practice has proved that the webcast teaching mode, with its interactive, real-time and convenient features, can match the practical teaching requirements of the finance and accounting major and make up for the shortcomings of the classroom teaching mode. At the same time, the webcast teaching mode is more beneficial to the promotion of the concept of open education, which not only realizes personalized learning, but also strengthens students' independent learning ability and innovative spirit. It has positive significance for enhancing the effectiveness of course teaching and optimizing the modern education ecology of colleges and universities.

Keywords: informatization education; webcast teaching; finance and accounting major; teaching mode innovation.

1 Introduction

In the field of education in the new era, education informatization has become a core issue in promoting the high-quality development of education and realizing the deepening reform of education. In this context, the traditional teaching mode is accelerating the innovative integration with digital information technology, prompting the realization of profound changes in education concepts, education resources, education methods, education processes, education systems and other dimensions. Among them, the webcast teaching mode, as one of the important achievements of the transformation of education informatization, is increasingly receiving widespread attention by virtue of its powerful interactivity and real-time, which can provide students with a

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more convenient and efficient way of learning. ^[1] Especially after the global COVID-19 epidemic, the webcast teaching mode has jumped to become the hottest teaching method, and its development prospect and application potential are very broad. Thus, how to integrate the webcast teaching mode into daily education and teaching practice is also an important task for colleges and universities at all levels in the current and future development.

In the face of this problem, scholars at home and abroad have conducted extensive research on the application of webcast teaching mode in practical conditions. Among them, foreign research in webcast teaching started earlier, has formed a set of more mature webcast teaching system, the corresponding research focuses on the interactivity of live teaching, personalized learning path design and technical support and other aspects. For example, Andre Rodacki ^[2] in his research focuses on completing the comparison between classroom teaching mode and remote live teaching mode from the perspective of interactivity, and points out the degree of influence of information technology on teaching and learning outcomes. And domestic scholars mainly focus on the localized adaptation of live teaching, the innovation of teaching content and the evaluation of teaching effect. For example, Lu Yunchuan ^[3] proposed a “new form of teaching materials” and “new mode of teaching” combination of teaching programs for the application of webcast teaching mode in higher education to make a useful attempt. In view of this, this paper takes the actual needs of the education and teaching of finance and accounting majors in colleges and universities as the entry point, carefully analyzes and explores the specific practice of webcast teaching mode in this professional course, and combines the specific application scenarios to provide students and teachers of finance and accounting majors with a highly efficient and interactive online learning experience. In addition, we will collect and analyze the feedback data of student users on the webcast teaching mode, and put forward optimization suggestions accordingly, with a view to promoting the wide application and in-depth development of the webcast teaching mode in the modern teaching of colleges and universities.

2 The Construction and Implementation of Webcast Teaching Mode

The core idea of the webcast teaching mode lies in the adjustment of the students' role positioning and the pursuit of interactivity, practicability and efficiency in the process of teaching practice. ^[4] This is highly integrated with the actual demand of cultivating compound application talents for the finance and accounting majors in colleges and universities. Therefore, this study will fit the actual situation and propose specific practice programs from the three stages of pre-course, in-course and post-course respectively. ^[5] Figure 1 shows a schematic diagram of the implementation path of the webcast teaching model in the finance and accounting major, in which teachers and students as the core user groups have the right to participate in a number of learning activities. In the implementation process, the teacher will release the course information and upload the pre-study materials in the pre-course stage, guiding students to

understand the teaching tasks and learning care in advance, so as to prepare for the classroom teaching. In the classroom phase, teachers use the live broadcast platform to conduct real-time lectures, case studies, practical operations, and guide students to actively participate in classroom discussions, questions and case studies through interactive features. After class, teachers will upload classroom video, homework and auxiliary learning materials for students to review and consolidate what they have learned.

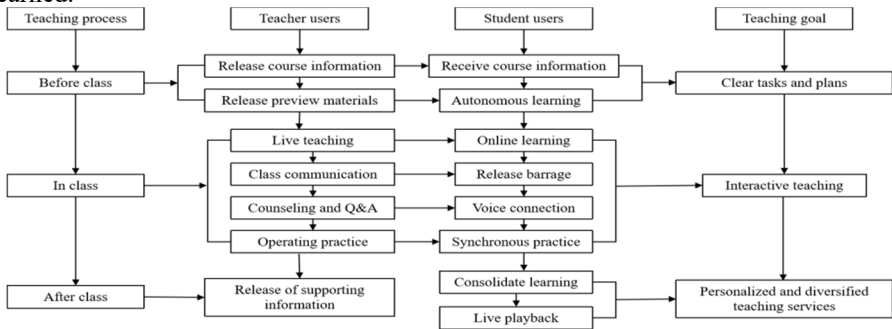


Fig. 1. Implementation path of webcast teaching mode

3 Technical Environment and Service Support

3.1 Construction of Webcast Teaching Platform

First of all, the overall framework of the live teaching platform consists of Javaweb technology stack and streaming media technology stack. Among them, the Javaweb technology stack will be responsible for the construction of the user application interface and the background server. For the user application interface side, HTML, CSS, JavaScript and other front-end technologies will be used, with React, Vue and other front-end frameworks for development. And the backend server side will use Java scripting language, with Spring Boot framework, and Maven management tools to realize.^[6] The streaming media technology stack part mainly involves audio and video acquisition, encoding tools, transmission protocols, streaming media servers, and players and other core modules, which are the key to realizing the live teaching function.^[7] In this study, the teaching platform uses FFmpeg as the live broadcasting tool, and controls the microphone and camera to complete the audio and video content acquisition, encoding, encapsulation, and push streaming operations. In the selection of streaming media service, more consideration is given to the versatility and adaptability of the transmission protocol, and CRTMP SERVER is used to ensure the broadcast performance. In addition, EasyPlayer-RTMP player needs to be deployed to support users to decode and play the audio and video data on the streaming media server by pulling it.

Secondly, the functional modules of the webcast teaching platform will be planned and developed for the two user groups of students and teachers respectively. The teacher side integrates the functions of course construction, live teaching, teaching

resource management and data analysis, so that they can complete the implementation and management of the entire teaching process online. The student side focuses on the learning experience, including course preview, live viewing and post-course consolidation, enabling students to conveniently participate in a variety of learning activities, breaking through the time and space limitations of the traditional teaching model.

3.2 Interactive Teaching Services

From a technical point of view, the teacher-student interaction function in the webcast teaching platform is a core component, which allows student users to interact with the teacher in real time by means of barrage in the live broadcasting room.^[8] In the actual development process, the barrage system needs to have certain data processing and transmission capabilities, and also needs to take into account the synchronized review and filtering of text content to prevent the spread of undesirable information. In addition, the barrage system also has a stable data storage and backup mechanism to ensure the reusability and durability of the barrage data. The barrage system under the live teaching platform in this study will rely on the message queue Kafka and Redis storage structure to realize, the following pseudo-code for the function when the barrage occurs to the user:

Function: Build Kafka message queue

```
public class BarrageProducer {
    private static final String TOPIC = "barrage_topic";
    public static void main(String[] args) {
        Properties props = new Properties();
        props.put("bootstrap.servers", "localhost:9092");
        props.put("key.serializer",
"org.apache.kafka.common.serialization.StringSerializer");
        props.put("value.serializer",
"org.apache.kafka.common.serialization.StringSerializer");
        KafkaProducer<String, String> producer = new KafkaProducer<>(props);
```

3.3 Statistical Data Analysis Services

The data statistical analysis service in webcast teaching platform is a complex and important system project. The system contains a complete set of business processes such as collection, cleaning, analysis and visualization within the system, which can provide teachers or student users with valuable information and suggestions to help them teach and learn better.^[9] Table 1 shows the results of the live teaching data statistics of the finance and accounting major courses, through which teachers can intuitively obtain the students' learning preferences, and then optimize and adjust the teaching content and teaching methods in order to enhance the actual effect of the live teaching mode.

Table 1. Statistical table of live course data

Live course time	Course title	Cumulative viewers	Per capita viewing time	Total number of barrage	Total number of comments
23.12.05	Elements of accounting	2355	32.3min	1866	166
23.12.08	Double-entry accounting	2069	33.3min	1919	209
23.22.10	Tax planning	3325	35.7min	2051	259

4 Feedback Data on the Webcast Teaching Mode

In order to further analyze in depth the application effect of the webcast teaching mode in finance and accounting courses, this study will be conducted for some student users. The method used is a questionnaire survey, the main content includes personal information, learning mode, learning attitude, course participation, course satisfaction, a total of 315 copies were issued, 307 copies were effectively retrieved, with an effective rate of 97.46%.

After finishing and statistics, the specific survey feedback results are as follows: Figure 2 shows the statistical results of the number of times students participated in the live webcast course, and Figure 3 shows the playback ratio of the weekly webcast. Among them, the playback ratio $P = T1 / T2$, where T1 represents the total length of time that student users watch the live playback, and T2 represents the actual length of the live course. ^[10] The higher playback ratio indicates the higher preference of students for this live course, which can reflect the learning attitude of students and also help teachers to obtain the recent situation of students' learning more accurately. In addition, Table 2 and Table 3 react to deal with the satisfaction degree of student users to the webcast teaching mode and some current practical problems.

Table 2. Statistical results of student satisfaction

Very satisfied	Quite satisfied	Average	Dissatisfied	Other
83.23%	10.59%	6.18%	-	-

Table 3. Statistics of practical problems

System Function Operation	Live streaming fluency	Audio and video out of sync	Noise, murmur	Other
13.26%	46.94%	24.51%	-9.56%	5.73%

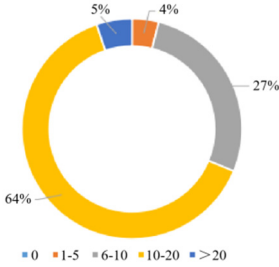


Fig. 2. Number of times students participated in webcast sessions

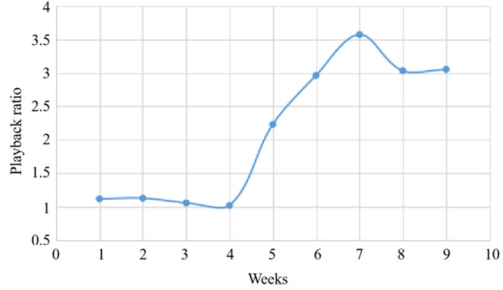


Fig. 3. Percentage of playbacks of weekly webcasts

5 Conclusion

In order to promote the application of webcast teaching mode in college finance and accounting major education, this paper focuses on the actual demand for college education and teaching, focusing on the construction and implementation of the mode of the path and the effect of feedback data in two aspects of the investigation. The results show that the webcast teaching mode has certain application feasibility in theoretical ideas, technical services, and practical effects, which is beneficial to the enhancement of the effectiveness of course teaching. In the face of the current shortcomings, in the subsequent research will focus on strengthening the network infrastructure construction, as well as the optimization of the function of the live teaching platform, to strengthen the application of the new generation of digital information technology, in order to cultivate high-quality, composite finance and accounting talents to make due contributions.

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