



Design and Implementation of Interactive Multimedia Teaching System for Oral English Under the Background of Internet Plus

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Abstract. In order to solve many problems in college oral English teaching, such as the limitation of teaching resources and the lack of practice opportunities, this paper takes oral English teaching as the research object, and develops an interactive multimedia teaching system for oral English with the help of network information technology, database management technology and computer application technology. By adopting B/S architecture to simplify the development process, the server side follows the MVC three-tier architecture design idea, and the JAVA language is used for programming. MySQL database is used to realize data support, and an “online + offline” oral English teaching mode is constructed, which creates an applied oral English learning environment for students and contributes to the cultivation of oral English talents in China.

Keywords: internet plus education · oral English · interactive teaching · multimedia · streaming media

1 Introduction

With the globalization and the improvement of China’s economic status, the importance of English learning has become increasingly prominent. However, English education in China generally reverses the learning sequence of “listening, speaking, reading and writing” step by step, showing a test-oriented English tendency of “emphasizing writing over speaking”. However, there are some problems in specialized oral English teaching, such as insufficient professional teachers, imperfect software and hardware conditions, mainly relying on textbooks and lagging updating, tight class hours and few opportunities for practice [1]. At present, domestic universities are actively seeking solutions, and one of the most important reforms is online education. With the continuous development of Internet and computer technology, the “internet plus” model has been integrated into all walks of life in society. Internet technology has been fully integrated with education, but English teaching, especially oral English teaching, seldom involves online education.

To sum up, the author of this paper believes that it is necessary to design an interactive multimedia teaching system for oral English, which provides a chance for students to

have a direct conversation with teachers' oral practice by building an online "face to face" communication platform between teachers and students. The system uses streaming media technology to build the oral English learning resource base, which provides good assistance for college oral English classroom teaching and creates a good atmosphere for students to learn oral English [2].

2 Key Technologies

2.1 Streaming Media

Streaming media is a media transmission mode of streaming, which is divided into sequential streaming and real-time streaming. The workflow of live broadcast is simply as follows: the live broadcast initiator collects video, audio and screen through cameras, mobile phones, computers and other devices, encodes and compresses the information, and then pushes it to the server to decode and store the video and audio. The live broadcast receiver pulls, decodes and renders the video and audio, which can present sound and pictures to users [3].

2.2 MySQL

MySQL uses a reliable high-performance storage engine to store or access non-relational data through SQL. It can support a large number of built-in MySQL functions or transactions by using its own syntax and protocol. The advantage of MySQL document storage is that it supports transactions from the beginning of the session. The new MySQL shell provides a convenient command line interface for handling document objects, and supports scripting with SQL, JavaScript and Python [4].

2.3 Development Environment

According to the design requirements of interactive multimedia teaching system for oral English and the use methods of key technologies, there are two technical lines in the overall development and design. One is to realize the live teaching function, and the other is to realize the online learning function.

Under the function of live teaching, the overall architecture is divided into three parts: encoder, streaming media server and client player [5]. Among them, FFmpeg is used for encoding, ACC is used for audio, and H.264 is used for video. The push flow end uses RTMP protocol, the pull flow end uses HLS protocol, and the streaming server selects SRS.

Under the online learning function, the design idea of JAVA + Spring + Tomcat + MySQL is adopted. The overall design scheme of Web server will adopt MVC mode to ensure the regulation and control of users' needs by Web server and the integration of database [6].

Through the introduction of the above key technical theories, we have determined the overall environment of the system development, the configuration of related software and tools, and the technical feasibility of the overall project of the interactive multimedia teaching system for oral English.

3 Function Implementation

3.1 Student Side

The functions of the student side are mainly “listening training” and “oral training”. Click on the “Listen” page, and students will see a large list of oral English courses, including open classes, videos of oral English lessons by teachers in our school, courses recorded by teachers outside the school and foreign teachers. According to the difficulty, the courses are divided into elementary, intermediate and advanced, covering CET-4, CET-4, CET-8, IELTS, etc., which can meet students’ oral learning needs at all stages [7]. The system will automatically count the number of searches, the number of viewers, the broadcast rate and the number of downloads of all courses to calculate their popularity and popularity, which will be reflected in the ranking of search results. The statistical results are shown in Fig. 1.

The “speaking” module is mainly presented in the form of live class. Entering the live broadcast page, students can choose to have oral training with teachers, who can give guidance or organize online exams. On the right side of the page are “Blackboard” and “Hot Discussion” [8]. Teachers can type on the blackboard while lecturing, and students can discuss the content of the live class in the “Hot Discussion”. The main technology used in live broadcast is Ffmpeg, and the push stream code is shown in Fig. 2.

3.2 Teacher Side

The function of the teacher side is to host the live class and upload resources. In the live broadcast section, teachers can make an appointment for live broadcast and issue live broadcast notices. Teachers can use live broadcast to conduct face-to-face oral test and score [9]. It should be noted here that the system default calculation formula of student achievement evaluation is shown in Formula 1, and teachers can also modify it as needed.

$$C * 20\% + R * 20\% + L * 20\% + I * 20\% + T * 20\% \tag{1}$$

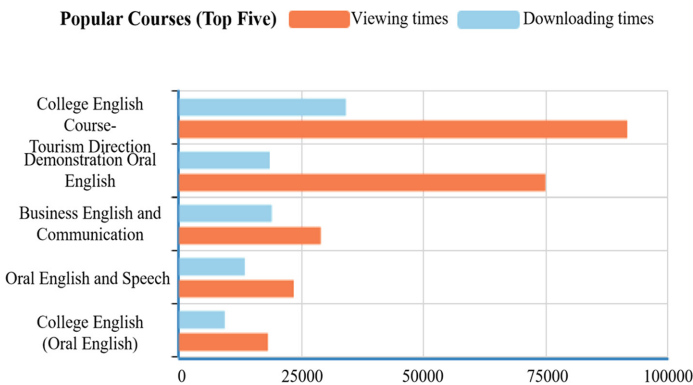


Fig. 1. Ranking of popular courses (top five) (original)

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