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Design and Implementation of Online and Offline Mixed Teaching Platform Based on WeChat Applet

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Abstract: It is difficult to find the problems in the process of students' learning accurately in the traditional teaching process of colleges and universities, for carrying out targeted teaching. In view of the lack of interactive and interesting learning platform in the implementation of flipped classroom, PBL teaching and other new teaching modes, this paper studies the design and development of teaching platform based on WeChat applet.

Keywords: Mixed Teaching; WeChat Applet; Teaching Platform

1. Introduction

Nowadays, with the continuous introduction of new teaching models and teaching methods in colleges and universities, such as flipped classroom teaching or PBL teaching with students as the main body and problem as the guide[1], it means that the current teaching platform needs to be improved and optimized.

In the teaching process, Chinese scholars gradually combine WeChat small program for teaching practice. For example, in References[2], Zhang Liying combined with educational technology curriculum designed corresponding small program; in References[3], after in-depth analysis of WeChat applet, Liao Dejun and other scholars proposed to establish a teaching platform for Parasitology; in References[4], Wang Yuyang developed and designed a mobile platform based on the WordPress platform, using the template framework provided; at present, in the field of education, such as Aiqihang and classroom pie and so on, they have developed educational programs for mobile learning platform.

Mobile learning practice is also widely used in foreign countries. For example, in primary and secondary education, Pudu University has designed and implemented a targeted application-"Hotseat". Students can use the program to ask questions and show their opinions in class; teachers can change teaching focus according to real-time feedback.

2. Design of mixed teaching platform based on WeChat applet

2.1 System requirements analysis

At present, the majority of teachers and students generally believe that the existing mobile applications have comprehensive functions, but they need to be downloaded, which takes up a large space and is not easy to promote. Therefore, the key point to be considered is to realize a platform with small size and convenient sharing. Students also have a higher demand for the platform's interest, and the design of functions that can enhance students' interest should also be an important demand.

Combined with flipped classroom and PBL teaching mode, the mixed teaching program enables students to learn and

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exchange online courses on the mobile terminal. In this platform, teachers can make targeted exercises at any time according to students' learning reactions and knowledge points; students can also put forward their own questions, express their views and participate in the discussion of these questions through online WeChat applet online; the teacher adjusts the classroom focus according to the students' mastery of learning problems, so as to achieve targeted classroom teaching.

2.2 System function design

According to the above demand analysis, this paper designs the functional framework of mobile learning applet. The complete functional framework is divided into two parts: front-end design of small program and background design of administrator. The user use functions include browsing courses, authorized login, searching courses, publishing comments, viewing, modifying personal information and other functions; system management functions include course management, system management, user management and other functions.

The following is the form display of the main function structure of the system, as well as the introduction of some modules.

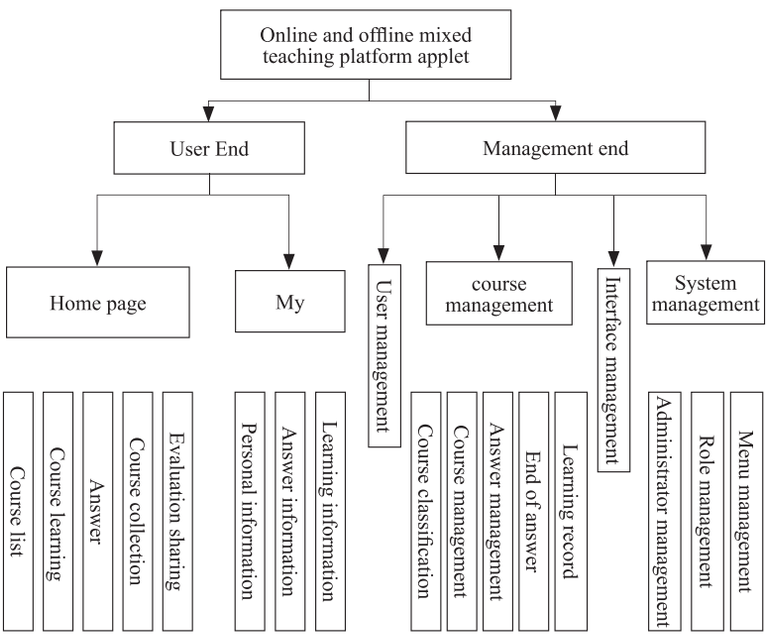

Figure 1. system function module diagram

Course management module: the administrator uploads the video related to the course, selects the course cover, fills in the course name and describes the course, and selects the course classification through the drop-down menu. The user can see the corresponding course information in the applet. After learning the course, the system will record the user's learning time and learning duration (superimposable).

Administrator list module: give the administrator corresponding roles, different roles have different background permissions. The background roles and permissions can be managed through the role management module. For example, super administrators have all the rights in the background, while teachers only have some rights such as user management and course management.

Answer module: the teacher administrator designs the relevant questions and answers of the course in the background, and sets the correct options. After learning the corresponding course, users can answer the course questions raised by teachers under the course. After answering the question, checking with the correct option in the database, the correct answer will be displayed in the final interface, and the user can answer the question again. The administrator can view the answer situation of the corresponding course of the user, and make corresponding adjustments according to the answers.

Menu management module: Administrators can modify the display of navigation menu through this module, and select different types (directory, menu, button) to achieve different operations. The menu can be divided into multi-level menu, which makes the interaction more convenient, and realize the maintenance of background menu.

3. System implementation

3.1 System architecture and development mode

System overall design: background maven build project, with many advantages of maven, the biggest advantage is

modular, which relies on automatic download, at the same time the development of the project standardization, model, more perfect than Ant tools; the background of Java language development, mainly uses the spring boot framework, encapsulated servlets, improving development efficiency and integrating servlet container, with simple configuration and flexible application; mybatis is used, which mainly encapsulates jdbc, providing flexible sql configuration file; background management interface adopts bootstrap framework, bootstrap flat design, makes the interface overall beautiful and generous; Js uses vue. js, which has many advantages, such as easy to use, high efficiency, easy to coordinate with a third party. After the Vue application is created, the data and DOM have been bound. At this time, users no longer interact with HTML directly, and the operation is more simple and convenient. Small programs only use their own tags to implement.

The connection between WeChat and the database is made by calling the background interface through small programs, without directly connecting to the database. Applet sends http request through wx. requst to the background interface, and the background springboot provides restful interface through controller.

3.2 Interface implementation

The playback progress bar shows the heat (high tide / high energy part): after hovering by touch, you can preview the content. The progress bar shows the most frequently played part of the current video. Users can directly drag to the peak position to watch the highlights. At the same time, the preview image displayed when users swipe the progress bar is the result of analysis and selection of user behavior data by the platform.

Figure 2. playing interface

4. Conclusion

As a new media, WeChat applet is not perfect for educational research projects. However, due to the frequent use of WeChat among students, the implementation of mixed teaching platform system based on WeChat applet is conducive to the development of education.

Using the mixed teaching mode of WeChat applet, teachers can inform students of the key points of teaching content in advance and upload video materials. This mode is conducive to cultivating students' autonomous learning skills, improving the use of learners' fragmented time, and solving the disadvantages of heavy teaching content, so as to improve the students' awareness of learning difficulties.

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