Research on the Construction of College English Online and Offline Blended Teaching Platform Based on Web

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ABSTRACT

In order to effectively promote the reform and development of college English teaching mode, combined with the application advantages of current network information technology, this paper designs and develops a college English online+offline hybrid education platform. Web-based system technology adopts B/S mode and is built in ASP.NET. The front-end page is based on HTML+CSS+Javascript language, and the back-end server function development is based on C# language technology and related technologies of SQLsever database, which realizes the unified management of college English learning resources, takes into account the process evaluation of education and teaching, and enriches the interactive channels between students and teachers. The practice shows that by making full use of the blended teaching platform, the shortcomings existing in the current teaching process of college English can be effectively improved, the autonomous learning ability of college students can be enhanced, and the communication efficiency between students and teachers can be improved. In addition, it can also reduce the workload of teachers and improve work efficiency. While constantly improving the college English teaching system in colleges and universities, we will further promote the process of information-based reform of college education.

Keywords: *hybrid teaching; Web; ASP.NET; College English; network platform construction*

1. INTRODUCTION

In the process of the development of the new era, with the continuous improvement of China's international influence and competitiveness, the communication and contact between China and other countries have become closer, so China needs a large number of English talents in higher education. There are essential differences between college English learning and senior high school English learning. The improvement of contemporary college students' self-awareness and the change of their learning attitude are in a sensitive period. At this stage, college students are faced with difficulties in exploring English learning motivation and English learning environment. At present, most of college English learning still belongs to the form of solidified classroom teaching. With the implementation of the enrollment expansion plan in colleges and universities, the enrollment of colleges and universities has soared, so that the construction of education scale has become larger and larger. At the same time, the faculty of college English teachers is far from meeting the requirements of current educational activities, and it is difficult for teachers to realize customized teaching according to each student's different abilities in listening, speaking, reading and writing. This kind of classroom lacks interactive interest, which leads to many students' low interest in learning, low efficiency in class learning, and unfavorable for students' high-level knowledge of English. In order to change this situation, facing this situation, colleges and universities urgently need a new education and teaching mode to solve the current problems faced by college English courses. [3]

At present, great changes have taken place in the times, and mankind is gradually moving towards an all-information society. Informatization has brought about great changes in all walks of life, and so will the education industry. Therefore, educational informatization is the main development trend of higher education in China, and the construction of English teaching network platform is in line with the trend and comes into being. College English teaching platform is a

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platform that can help teachers to perfect and improve teaching mode with information technology, and it is the product of the times when information technology is effectively integrated into college English teaching system. However, more and more online English teaching platforms are springing up in the market, but the quality is uneven. According to statistics, the existing online teaching platforms in China are mostly single-functional, and they simply input the relevant English materials in advance into the learning platform for students to consult. They can't adjust the content according to students' different situations, and lack flexibility. When most students are too boring and monotonous because of the content involved in the platform, and the system can't be adjusted at any time, students' interest in learning English on this platform will be hit, and the practicality is still not high. [4]

In view of the above analysis, this paper holds that the development of a hybrid college English teaching platform based on ASP.NET in web technology and C# as the programming language can effectively alleviate the difficulties encountered in college English teaching. The platform integrates the advantages of other platforms for the second time, and provides a set of effective online and offline interactive teaching scheme integrating teaching, learning and evaluation. College English hybrid teaching platform can enable students to choose English learning resources through their own interests, and complete self-examination through test bank, so as to improve their autonomous learning ability. On the other hand, the teaching platform can supervise the whole online learning process of all students in real time, effectively inspect and supervise the students' learning situation and learning effect, effectively reduce teachers' teaching burden, and be more conducive to teachers' teaching management. [9]

2. KEY TECHNOLOGY INTRODUCTION

2.1. Web technology

Actually, the Web is the website that every one of us will come into contact with in our daily life. The website is composed of web pages, which are composed of various tag codes and data codes. Its implementation includes three common forms: hypertext, hypermedia and hypertext transfer protocol. Web technology is the technology used to develop these websites. It compiles the relevant codes of web pages and makes them recognized by browsers. After the conversion of browsers, the web pages seen by the public are presented.

Web technology development includes front-end development and back-end development, in which the front-end is compiled by three languages. They are HTML, CSS, and Java Script. HTML is a hypertext markup language, and the essential content of a WEBsite lies in HTML. It can be said that HTML is the foundation of web technology, because the text of HTML contains a URL pointer, a "hyperlink" point. By activating and clicking it, the browser can get new web pages more conveniently. CCS is called cascading style sheet, which designs a kind of "coat" for HTML web pages to decorate the pages by buttons, colors and other appearance elements. JavaScrip is a browser scripting language that makes static pages composed of HTML and CSS dynamic, and it can add new actions to web pages. The composition of the front-end requires a lot of data, while the back-end is responsible for processing these data and logic. The back-end serves the front-end content, and the back-end also provides the basis for the front-end content display. The back end is composed of the database for storing data and the language for processing logical data. These processing logic languages usually include JAVA, C, C++, PHP, Python, etc. They are mainly used to extract these data from the database for processing and send them to the front end for display. In addition, an important way to connect the browser with the front and back end is the server, and Apache tomcat, Jetty and other servers are responsible for responding to the instructions from customers. An overview of the whole web page development process is shown in Figure 1.

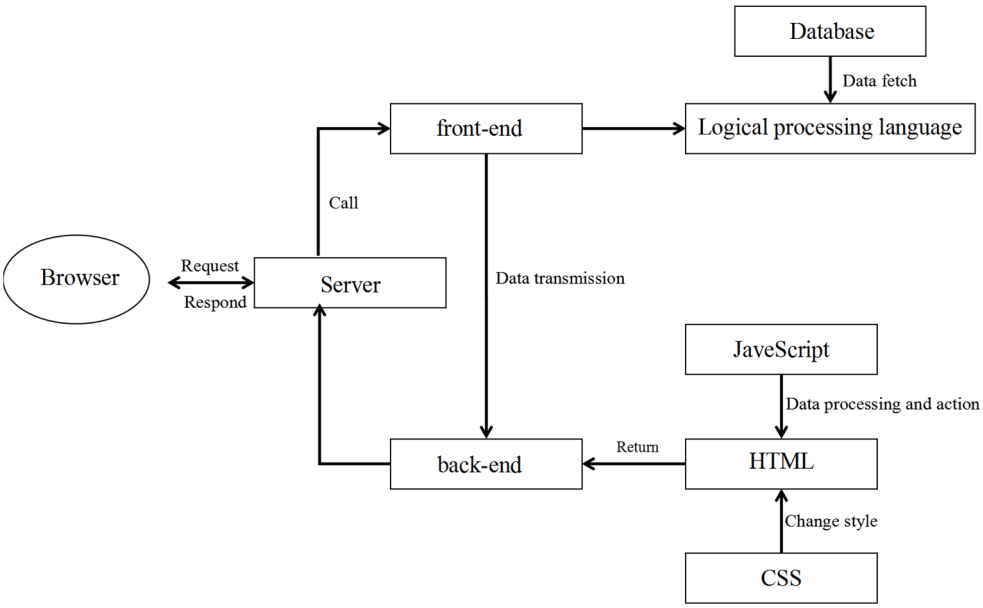

Figure 1: Web development process

2.2. *SQL sever database*

The database platform used in this teaching platform is SQL sever database developed by Microsoft Company, which is compatible with various built-in Microsoft softwares of common Windows systems, which makes SQL sever database more convenient to use in the environment. Compared with other relational database systems, SQL sever database has powerful data operation and data summary capabilities, and its operations of adding, deleting and changing queries are simpler and easier to operate. SQL sever database is very convenient for the integration of application systems, that is, it can access the database on the server side through database drivers such as ADO and JDBC, and supports a variety of data access objects and interfaces. [1]

2.3. *ASP.NET*

ASP.NET Platform is a system application development scheme developed by Microsoft, which can develop B/S and C/S. Its core features are free, open source and cross-platform. ASP.NET defines a set of enterprise-level application system development standards, and system developers can use C#, VC.NET, VB.NET and other development languages to complete the system design and development. When the application system based on ASP.NET platform is developed in different languages, the basic functions can be realized by calling the unified common component library. Under such circumstances, ASP.NET platform will have great advantages, because it can realize the effect of data sharing and technical framework sharing, and each development programmer can shorten the development cycle, achieve the effect of reusing different components, and improve the efficiency of system design and development. Its basic framework adopts the design pattern of separation of data, business and performance, which improves the convenience and scalability of testing and operation and maintenance of the later system. For example, when developers can modify the logical definition of the business layer to modify the business part of the project. It is a very difficult problem to change the database, and the developer can solve this problem only by adjusting the data operation interface in the data layer of ASP.NET. ASP.NET provides a complete set of application system development solutions, and Figure 2 shows the overall framework of ASP.NET.

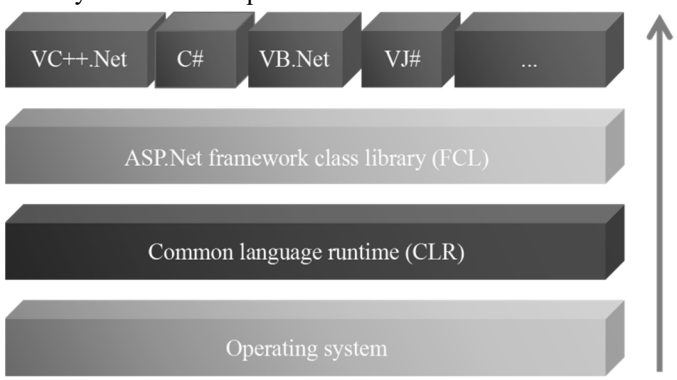

Figure 2: Overall structure diagram of ASP.NET platform

In the overall frame diagram of ASP.NET, it is divided into four layers: operating system layer, CLR layer, FCL layer and programming language layer. The operating system layer is the foundation of ASP.NET operation, and the operating system provides the basic runtime at the operating system level of ASP.NET environment. The operating system used by ASP.NET is the Windows series operating system. When the common language of CLR layer runs, CLR layer provides other runtime libraries developed by Microsoft, which is the foundation of system operation. When publishing. NET programs, the CLR common language runtime is essential, because when users install the software, the CLR runtime will be installed when the operating system used by users has no relevant runtime. The FCL layer is the system class library in the. NET framework, in which FCL includes the Basic Class Library (BCL) and the framework class libraries such as ADO.NET, WPF and WinForm. It provides the component running function set from the development level, and is the foundation of message calling and function realization of integrated components. Programming language layer refers to the above-mentioned common development languages. [6]

2.4. Development environment

The specific development environment of the system is as follows: the integrated development environment adopted by the system is VS core, through which the system modules can be programmed. Javascript, HTML and CSS are selected as the design and development languages for the front-end design, and the development language for the back-end ASP.NET framework is C#. There are no special requirements for the operating system of the open environment of the system. Windows 10 is used in this system. The database platform of the system adopts Microsoft SQL Sever 2019, which provides data storage and support for the system. Based on the installation of the above programs and the configuration of files, the overall development environment is established and the technical feasibility of the online teaching platform is guaranteed.

3. REQUIREMENT ANALYSIS

3.1. Functional requirement analysis

Web-based college English hybrid teaching platform aims at the current difficulties and shortcomings, according to the actual needs of students and teachers, and with the help of the advantages of network information technology, it realizes the transformation from traditional classroom teaching to online and offline hybrid teaching mode, and achieves the goal of information education reform.

Through this platform, teachers can publish teaching resources, initiate interactive activities in class, evaluate students comprehensively, and answer questions immediately with students. Students can participate in the whole learning, and complete their learning tasks by participating in online classes, browsing learning resources, answering questions online, and completing homework. [2]

3.2. Global design

This design of online and offline hybrid teaching platform for college English based on B/S mode of Web technology includes three core design contents: developing front-end and back-end, building server and establishing database. Using ASP.NET framework, ASP.NET Web Forms is combined with HTML interface language and JavaScript programming language to display each page. At the same time, the functions are designed in combination with SQL sever database commands, and various information, such as personal information of teachers and students, is stored and managed through SQL sever database. The system adopts APS.NET framework structure. In order to provide the maintainability and expansibility of the system, the system is divided into three layers: user interface layer (UI), business logic layer (BLL) and data layer (DAL). Its hierarchical structure is shown in Figure 3.

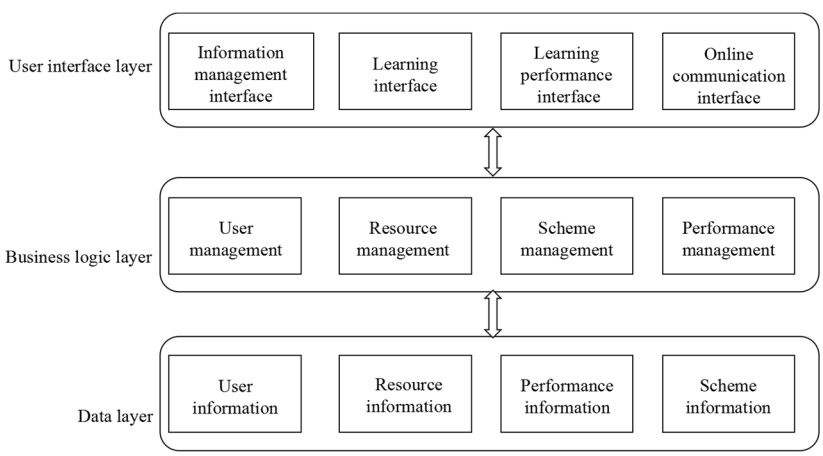

Figure 3: System software architecture diagram

1) The user interface layer is equivalent to the window of the whole system. Users can directly access the system through this layer to realize the interaction with the system, so as to complete the work that needs to be realized. In order to facilitate users to enter the system with different identities, the system is divided into three different user interfaces, namely, teacher interface, student interface and administrator interface. Different users have different permissions, and the permissions from low to high are students, teachers and administrators. Students are faced with what they want to learn. Teachers enter the background to manage teaching content through certification, and administrators have the highest authority. After certification, they can manage all content and system settings. The user layer adopts browser mode, and in order to facilitate users, the interface is as friendly as possible, which is mainly realized through WebForms in ASP.NET.

2) The business logic layer is the connection between the user layer and the data layer, but it is not a simple connection, but is established by classifying the user's needs in detail. It consists of many modules, which can be stored in the server according to their different functions. The business logic layer in this system includes user management, resource management, scheme management, performance management and other parts, and each part is composed of several modules. Including teaching material resource learning, online communication, online self-test question bank, homework submission, on-demand learning and so on. The business logic layer realizes fast data access to the data layer through ADO.NET.

3) The data layer is the foundation of the whole system. The information is connected by ASP.NET technology and database in. NET, and it consists of user information database, teaching resource database, performance information database, scheme information database, etc. Among them, the user information database includes the basic information of students, teachers and other administrators. The teaching resource database mainly provides data support for teaching and auxiliary subsystems, including teaching materials, video and audio, homework, test questions, etc. Program information database mainly organizes information resources rationally. All data layers adopt stored procedures to operate the underlying data. [8] Use the SqlCommand object to set the corresponding SQL commands to complete the corresponding operations. For example, execute a statement that queries SQL and return a data table, as shown in Figure 4. Execute non-query statements to operate the database, as shown in Figure 5.

```
public static DataTable executeQuery(string Query String)
      {
DataTable MyDataTable=new DataTable();//Initialize data table
DataSet MyDataSet=new DataSet();
try          {
sqlConnection .Open();
SqlDataAdapter
sqlDataAdapter-new
sqlDataAdapter(QueryStrng,sqlConnection); //Initialize an adapter
sqlDataAdapter. Fill(MyDataSet, "Table' );//Use the Fill method to read the data in the database
into the DataSet
MyDataTable=MyDataSet.Tables/["Table"];
}
catch(Exception e)
         {
MessageBox. Show(e.Message.ToString()):
               }
return MyDataTable;
          }
```

Figure 4: Query SQL statement returns a data table

```
public static void executeNonQuery(string cmdText)
    {
try
        {
sqlConnection .Open();
SqlCommand My SqlCommand =new SqlCommand(NonQuery String, sqlConnection);
My SqlCommand .ExecuteNonQuery();
        }
catch(Exception e)
        {
MessageBox. Show(e.Message.ToString(),

        }
}
```

Figure 5: Executing a non-query statement to operate the database

4. FUNCTION REALIZATION

4.1. Student side

Students log in to the system by entering their student ID, account number and password. The main page of the student side is divided into the following modules: online classroom module, on-demand learning module, homework management module, online question bank module, online communication module, classroom interaction module, and usual grade inquiry module. When students click on the online classroom module to enter, they can browse the related learning resources of classroom teaching materials, including teaching videos, English reading audio, text and other data modules. For any online learning system, the resources of related textbooks are the basis for students to complete various learning tasks. When students click on the on-demand learning module, the webpage displays the extracurricular vocabulary and grammar learning materials books, English movies, music and English speeches. On-demand learning belongs to the nature of autonomous learning, which enables students to complete their learning according to their own difficulty needs and interest orientation. [6] Click on the online question bank module, and students can practice English in judging multiple-choice questions on the webpage. After submitting the answers, the system will judge the correct answers, and give the scores and correct answers. The function of online question bank enables students to practice repeatedly after class anytime and anywhere. For the questions that are answered incorrectly in the self-test, it is helpful to find out their weak points of knowledge and review them pertinently. This learning process is not limited by time and space. [7] When students click on the online communication module, they can ask questions to the teacher in the dialog box that pops up on the page. When the teacher sees the message reminder, they can immediately answer online. In the process of learning, students will inevitably encounter various problems that cannot be solved academically, and they need to consult teachers for help, so the system develops online communication function. Click on the assignment management module, students can see the assignments assigned by the teachers, and they can choose to submit their assignments by uploading electronic word files or uploading JPG files that shoot paper versions, or they can finish the answers of the assignment questions directly online through the platform system. In English class, according to the teacher's instruction, students click to enter the classroom interaction module. All students can immediately answer the questions raised by teachers in class and submit them, or they can rush to answer the questions raised by teachers. When students click on the score query module, they can query the scores of classroom activity score, homework completion quality score and online classroom task completion score.

4.2. Teacher side

Teachers log in to the system through their account numbers and passwords. The teacher's main page is divided into the following modules: teaching materials management module, homework management module, online communication module, classroom interaction module, and usual grade scoring module. Click on the teaching material management module, and the teacher will upload and delete the relevant materials of online classroom module, on-demand learning module and online question bank module required by the students. When the teacher clicks on the homework management module, he can see the records of all students' homework submissions and the time records of homework submissions. Teachers can correct and grade homework online. When the teacher's webpage pops up with a message reminding, the teacher clicks on the online communication module, and can answer and communicate the questions raised by the students online. Teachers click on the classroom interaction module to

initiate interaction in online and offline classes. For example, in the rush-to-answer session, teachers ask questions in class, click the Start Rush-to-Answer button, and students click quickly to answer in class. There is also an instant question-and-answer module in the classroom. Teachers ask questions in the classroom, so that students in the class can answer the questions instantly or a certain number of students are randomly selected by the system to answer them instantly. According to the students' answers and the activity of the answering session, the teacher will give extra points on the platform. Teachers can click on the usual score module to input, view and change students' online class scores, homework submission scores, and class activity scores, and calculate the final students' usual score in proportion by integrating the above three aspects. [10]

5. CONCLUSION

At present, most online learning platforms pay attention to the management of basic information, and only provide online students and teachers with basic learning functions based on relevant and unified curriculum materials. Teachers can only complete the teaching process from the existing system, but can't form an integrated online teaching management environment, which leads to low efficiency of teaching management and can't fully improve the learning efficiency of college students. In order to solve the above problems, a web-based blended teaching platform for college English is designed and developed, which fully combines the existing design ideas of internet plus, and completes the system design with the goal of reflecting the interaction of learning. The main innovation of the system lies in the introduction of the performance appraisal mode for students in interactive teaching, and the evaluation of students' learning effect through the scores of students' learning situation, homework submission and classroom activity, which effectively improves students' learning enthusiasm, interaction and autonomous learning ability.

Due to the limitation of my own level and environment, many opinions put forward are still superficial, and there are still many problems to be solved in the implementation, such as the whole teaching platform is not comprehensive enough. I hope to design a more perfect teaching platform in the next work.

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