

# Autonomous English Online Learning System based on Web

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## ABSTRACT

With the update and development of the Internet, online English learning has gradually become the mainstream teaching method. At present, the traditional form of teaching has been difficult to meet the needs of modern education, so more and more students begin to use the network environment platform, which is both advanced and common learning methods to meet the needs of the development of modern education. This paper introduces an English online learning system based on Web, and details the design scheme and key technical problems of the system.

**Keywords:** Web system; English teaching; Online learning system

## 1 INTRODUCTION

With the rapid development of science and technology in the Internet era, traditional teaching has shown a variety of disadvantages, not only low efficiency, but also high cost. At present, it is difficult to meet the needs of modern education. Therefore, more and more students begin to use the network environment platform, which is both advanced and common learning method, to meet the needs of the development of modern education. Internet is a technology platform with the characteristics of two-way exchange. With its faster and faster speed and function, it shows a strong vitality. The processing technology of application information is also gradually transiting to a new period. At the same time, in the online teaching activities, learners can express their views at any time without affecting others' listening, take notes in class, and learn more conveniently, more targeted and more efficiently through the English online learning platform according to their personal needs[1].

The system adopts the ladder teaching mode, has a good course learning plan, from entry to improvement, so that students can not only master the basic knowledge, but also learn the latest and cutting-edge technology. Therefore, the research on this topic is of great significance[2].

(1) through the various learning resources provided by the system, students can comprehensively learn relevant technologies and knowledge, and at the same time, they can test their mastery level through English online test and examination system[3].

(2) Domestic education mode is mainly based on classroom teaching and training institutions, which

leads to a great waste of resources in terms of manpower, material resources and time.

(3) In traditional education, students' learning materials are taught by teachers in class or purchased by themselves, while online education enables anyone, anytime, anywhere to reuse teaching resources, which promotes the cooperation and interaction between students and teachers. Figure 1 shows the English online learning system.

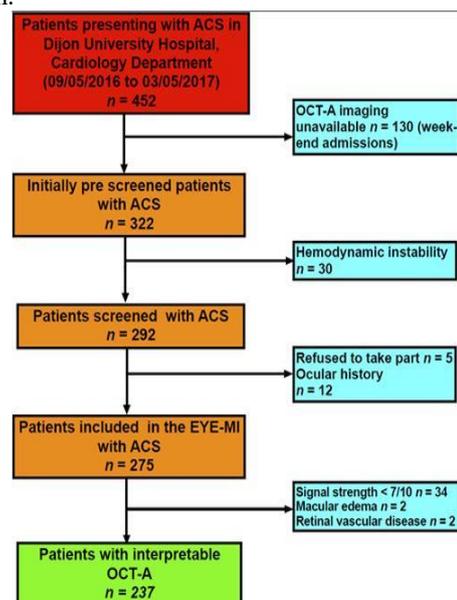


Fig. 1. English online learning system

English online learning system provides registration and login functions for students and teachers, including course management[4], course resource release, examination management, English online examination, video on demand, homework submission, recording students' learning process, etc., which is more convenient and efficient than traditional teaching methods.

## 2 RELATED WORK

B / S is mainly composed of local browser and remote server host, which is widely used in network application software in recent years. Components are required to have independent functions and high reusability. It has become the mainstream mode in the era of Web 2.0. This mode unifies and simplifies the use of local clients. Developers can focus on the functional modules of the server side, while users can get remote services only from the browser. In this way, they can easily browse and use the web system. Compared with CIS mode, it is much more convenient, generally with only one-time investment cost, It has strong operability. For users, it can reduce the number of software installed on the computer, the management personnel of the client only need to do a good job in the maintenance of hardware, only a small part of the function will be put on the front end, which provides convenience for the later maintenance work, and greatly reduces the consumption of time and economy in the development process[5].

In this structure mode, users only need to access remote services through a browser to complete the communication and interaction of information in the background processing process, and some necessary information involved in the system business processing process will be saved in the database. This constitutes a three-tier structure as shown in Figure 2 below:

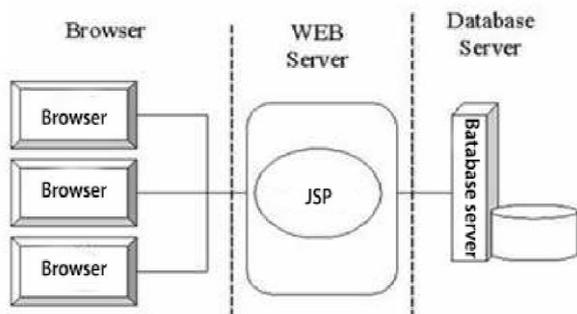


Fig. 2. B / S basic structure diagram

### 1. Web browser

Browser is a program running on the client, which is a layer used by users in this mode. The browser helps

users to complete many invisible tasks. Users use it to transmit request messages to remote hosts deployed in various networks. The server parses the received request messages, and then sends them to the script program in the background for processing. Finally, the server sends the response message of the background service program to the client. The browser analyzes the HTML syntax and renders the web page to the user.

$$\lim_{k \rightarrow \infty} \|\Delta e_{k+1}(t)\| = 0 \quad (1)$$

$$\lim_{k \rightarrow \infty} \sup_{0 \leq t \leq T} \|\Delta e_{k+1}(t)\| \leq \lim_{k \rightarrow \infty} e^{-\lambda T} \|\Delta e_{k+1}(t)\|_{\lambda} \leq e^{-\lambda T} \left( \frac{m_1 m_5}{b-\lambda} \frac{1}{1-\bar{p}} + \frac{p}{b} \right) cd \quad (2)$$

### 2. Web server

In B / S mode, the remote or local server plays an important role. It usually accepts and parses the request message, and then encapsulates the processing result in the response message and sends it back to the client. In this process, the processing results are usually generated by each functional module in the background, and then sent to the server software to make a rapid response, or directly process the data from the user, and the results of the processed data are encapsulated in the response message and sent to the user browser interface.

### 3. Database server

The database server is located in the third layer of the mode, which is mainly responsible for processing data query or data update request, using the common data access language SQL. This part is mainly used to persist the relevant data of the platform, and according to the needs of different business processing, read, write, retrieve and update the system database.

## 3 DATA ANALYSIS

### 3.1 System design objectives

The design of English online learning system in this paper is to provide more efficient and convenient services for students, teachers and system administrators, so the purpose of system design is to facilitate the communication between teachers and students, administrators can manage the system conveniently. Therefore, the system needs to have several advantages[6]:

(1) The system includes three types of users, so the interface design must meet the requirements of multiple users, so that users can operate and manage all kinds of information through navigation and clear interface.

(2) The system needs to provide a convenient way of communication between teachers and students to answer questions and discuss problems.

- (3) The system needs to design a convenient background operation for the administrator, so that the administrator can quickly add, delete, update and query users and data.
- (4) The system provides summary function for teachers and administrators to improve teaching quality and save teaching resources. Figure 3 shows the management of English online teaching system.

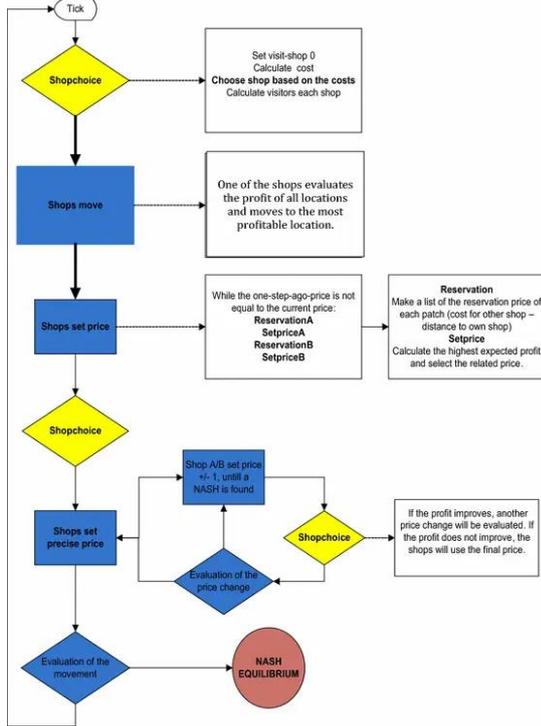


Fig. 3. English online teaching system management

### 3.2 System function design

The roles of the system are mainly divided into three categories, including teacher, student and system administrator. For the web-based online learning system, the teacher is a very important role[7]. In the teacher operation module, the main functions are: after logging in as a teacher successfully, enter the teacher's personal home page, and the teacher can see the main information of the previously published courses, including course name Course duration. Each course has a delete button. Click to delete it. Click a course to enter the details page of the course. The teacher can edit the previous information, including course name, course duration, course cover map, course introduction, chapter name, chapter overview, section name, section overview and replacement video. There will be students learning this section under each section. Click to view the login times, learning duration, learning progress, random photos and web

page screenshots of this student for this section. Teachers can also publish new courses, which gives full play to the functions of teachers and can make better management.

$$\|\Delta x_{k+1}(t)\|_\lambda \leq m_1 \frac{1-e^{(pk_f+m_2+m_3-\lambda)t}}{pk_f+m_2+m_3-\lambda} \|\Delta u_k(t)\|_\lambda + pd \frac{1-e^{(pk_f+m_2+m_3)t}}{pk_f+m_2+m_3} \quad (3)$$

$$\lim_{k \rightarrow \infty} \|\Delta u_k(t)\|_\lambda \leq \frac{1}{1-p} m_5 d \quad (4)$$

#### 1) Online learning module

Students also play a very important role in the web-based online learning system. The online learning system needs to target not only students in the traditional sense, but also some students who enter the online learning system through different ways to join the online learning courses. Because different students are in different stages and have different learning needs, they need different resources for students in different learning stages. Students can choose different teaching contents according to their own needs. Students can view other students' notes and publish notes during learning. Problems encountered in the learning process are fed back to the administrator through messages and other functions. After successfully entering the system, the system administrator can interact with the user, summarize the user's feedback messages and report them in time. Whenever a new user enters the system for the first time, the administrator sends a welcome message to make the user experience more extreme[8]. The online learning system adopts the integrated architecture design, which is based on the existing popular framework ThinkPHP. It is released in accordance with the Apache 2 open source protocol. It is born for agile web application development and simplified enterprise application development. ThinkPHP has been adhering to the simple and practical design principle since its birth. It not only maintains excellent performance and simple code, but also pays attention to ease of use. With many original functions and features, it has grown into the most leading and influential web application development framework in China. ThinkPHP adopts MC design pattern, and MVC (model view controller) application structure is used to analyze the characteristics of distributed applications. This abstract structure can help to divide the application into several logical components, making programming easier. Scoring, storing results and statistical reports and analysis, etc.

3.3 Overall system design

First of all, the system adopts MVC development mode under BS mode, and connects the server, database server and client browser through the Internet for corresponding information and logic processing[9]. The B / S mode is shown in Figure 4.

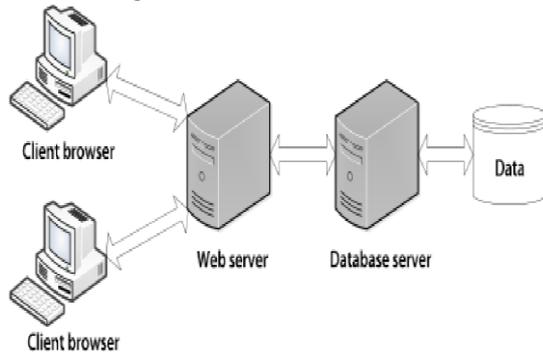


Fig. 4. B / S mode structure diagram

The main purpose of students entering this system is learning, so the online learning function belongs to the core part. The module includes the functions of watching videos and publishing notes. Students can check the course[10]. The course can be displayed in two ways: card type and list type. Students can switch freely according to their favorite style, so as to better meet different types of people. After selecting the course, students can see the introduction of the course, the title of the chapter and the introduction of the instructor, giving students a general impression. If students choose to continue learning, they will enter the course details page, which contains additional information for students to learn the course. Select a section to learn. The course resources of this system are displayed by video, which can not only improve the course quality, but also improve the enthusiasm of students. Secondly, the development and operation of online learning platform is carried out in lamp environment[11]. The function of the background is mainly written in PHP, the bootstrap framework is adopted in the front end, and jQuery and Ajax are used to realize the interaction between page and users and asynchronous communication between the front end and the background. The software architecture of the system is shown in figure 5:

Finally, in the implementation, the user accesses the browser of the client, successfully logs in to the system and modifies the data. The browser of the client connects with the remote server through the Internet, and the server calls the database to store and update the information.

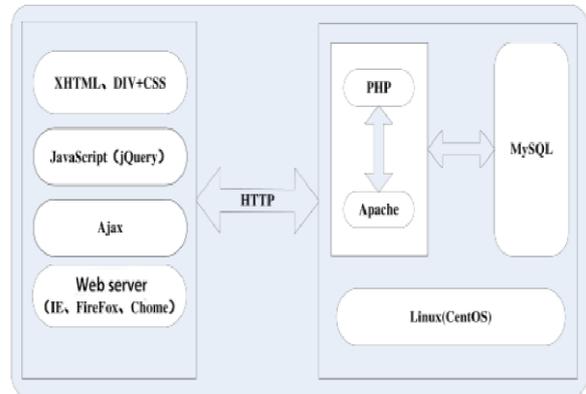


Fig. 5. System software architecture diagram

4 EXAMPLE ANALYSIS

The service object of the online examination function module is teachers and students of the system[12]. The function module can provide students with the functions of taking part in the examination, consulting the analysis of the examination and my test paper. It also provides teachers with topic management (topic types support single choice, multiple choice, material, application and other types of questions), intelligent generation of test papers according to the difficulty and course scope It has the function of teaching management, such as marking test papers, importing test papers in batches, etc[13]. The output mode of the test paper is to select the way of presenting all the test questions at one time, that is, output the data in HTML to word, and then adjust it to improve the output effect of the test paper. At the same time, you can fine tune the test paper to improve the quality of the test paper

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1) Define document type and character encoding
Response.Clear();
Response.Buffer=true;
Response.Charset = "UTF-8" / filename = fileflow.xls
specify the name of the output file. Note that its extension is consistent with the specified file type. It can be.
Docl. Xls | L. TXT |. HTM
Response.AppendHeader("Content-
Disposition", "online; filename=FileFlow.xls");
Re-
sponse.ContentEncoding=System.Text.Encoding.GetEn
coding("utf-8");// Response.ContentType specifies that
the file type can be application / MS Excel / [application
/ MS]-
Word | application / MS TXT] / application / MS HTML
or other browsers can directly support documents
Response.ContentType="application/ms-excel";
this.EnableViewState=false;
    
```

```

2) Define an input stream
System.IO.StringWriter
oStringWriter=new
system.IO.StringWriter();
System.Web.UI.HtmlTextWriteroHtmlTextWriter=new
System.Web.UI.HtmlTextWriter(oStringWriter);
3) Bind the target data to the input stream output
this.RenderControl(oHtmlTextWriter);// This represents
the output of this page. You can also bind DataGrid or
other controls that support obj. Rendercontrol
Response.Write(oStringWriter.ToStringO);
Response.End();

```

## 5 CONCLUSION

This paper introduces the design idea and implementation method of Web-based English online learning system. The system can facilitate students' autonomous learning, testing and timely feedback information, so as to adjust the learning progress in a planned, step-by-step and systematic way and improve the efficiency of online learning; At the same time, teachers (or administrators) can analyze and count students' scores through the system, and provide targeted guidance for students. The next step is to further improve the statistical analysis function of question bank and test questions, and guide to update the question bank through analysis, so as to make the question bank more scientific and effective, so as to improve the quality of test paper generation and the effect of online learning

With "how the application of AI language assessment and feedback technology can assist teachers' English Teaching" and "the impact of the core learning path based on dynamic evaluation theory on students' improvement of English listening and speaking ability", as well as "dynamic analysis of Chinese teenagers' English auditory function". It is the research goal of ETS vision educational technology.

ETS qishiyu education technology hopes to build a systematic and structured English education model and thinking method through its academic ability, resource advantages and scientific and technological energy, and become a breaker of English listening and speaking in China.

In addition, when answering the feedback on the current listening and speaking practice software, Mr. Li stressed: "teachers and students expect intelligent learning products with comprehensive scoring dimension, targeted feedback and personalized learning path." many software are difficult to achieve Title Quality and provide feedback with real teaching significance.

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