Design and Development of Higher Vocational English Learning System Based on Visual Studio Platform

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Abstract. Based on Visual Studio platform, in ASP Net framework, using C# language to complete the construction of Higher Vocational English online learning system, and improve the deficiencies in the current higher vocational English education and teaching process with the functions of online learning, key exercises, homework assessment and interactive communication. With the help of network information technology, this paper introduces the online learning mode into the daily teaching plan of Higher Vocational English, breaks through the dependence on teachers and teaching materials under the classroom teaching mode, gives full play to the richness of network resources and the variability of teaching means, and realizes the online and offline integrated education for the purpose of stimulating higher vocational students' learning interest and improving teaching effect. At the same time, higher vocational English online learning system can also become an important auxiliary means for college teachers to carry out teaching. While reducing the workflow and improving work efficiency, it can also further promote the improvement of Higher Vocational English teaching system, and provide reference for the reform of teaching informatization in Colleges and universities.

Keywords: Visual Studio · ASP.NET · Higher Vocational English · Online Learning System

1 Introduction

With the further advancement of the process of economic globalization, economic cooperation and cultural exchanges among countries are deepening, showing an interconnected and interdependent development trend. After China's integration into the environment of economic globalization, it will face fierce global competition, risks and challenges. In this wave of economic development, society and enterprises call for compound talents with wide caliber, strong adaptability and considerable English application ability [8]. For the current needs of social development, applied compound talents should have excellent foreign language knowledge and skills, as well as relevant practical work knowledge and ability. The cultivation of English talents is inseparable from the development of English teaching activities in China. In the current education system, as an important part of China's education structure system, higher vocational colleges aim

to cultivate comprehensive application skilled talents. Students' professional skills are the focus in teaching, so they often ignore the learning of English and other subjects, resulting in higher vocational college students unable to meet the current requirements of enterprises for compound talents, It has an impact on students' subsequent career development. According to the survey, among the people who can be competent for professional and technical work in domestic enterprises, only 7% have the ability to skillfully use English. The reason is that higher vocational college students do not pay enough attention to English teaching and have poor autonomous learning ability. In addition, there are still some problems in English education and teaching in higher vocational colleges, such as single teaching material content, outdated teaching mode, fixed teaching form, one-sided assessment method and so on. It is urgent to carry out English teaching reform in Higher Vocational Colleges in order to effectively improve students' mastery and application ability of English knowledge and skills.

English ability is not only a comprehensive ability, but also one of the symbols of modern qualified talents. How to improve students' English ability in higher vocational colleges is a problem that English teachers must solve [5]. Under the requirements of the new curriculum reform and quality education, network information technology will be widely used in education and teaching practice. Teachers in Higher Vocational Colleges boldly innovate the teaching mode, integrate network information technology with the innovation of English Teaching in higher vocational colleges, improve the disadvantages of classroom teaching mode with the help of technical advantages, optimize teaching content, enrich teaching forms, improve the assessment system, and practically combine the theoretical knowledge of English teaching with practical application, Promote the model innovation and application of network information technology in teaching. Therefore, this paper believes that in the network environment, based on Visual Studio platform, combined with ASP Net framework, using C# language to complete the construction of Higher Vocational English online learning system, completing the supplement to classroom teaching in the form of online education and teaching, and providing new ideas and models for Higher Vocational English teaching with the help of rich online education resources and various display forms, so as to improve work efficiency and optimize teaching results.

2   Introduction to Related Technologies

2.1   Web Technology

Web is the wide area network or World Wide Web. It is a global, dynamic interactive, cross platform distributed graphic information system based on hypertext and HTTP. It is a network service based on the Internet [7]. In the process of practical application, the Web can be simply understood as a website. The website provides users with a variety of page contents and rich functions. The presentation and operable functions of these contents are realized through Web technology. Web technology is a collection of technologies used to develop Web applications based on the Internet environment. Web technology can be divided into Web client technology and Web server technology according to different development and application levels.
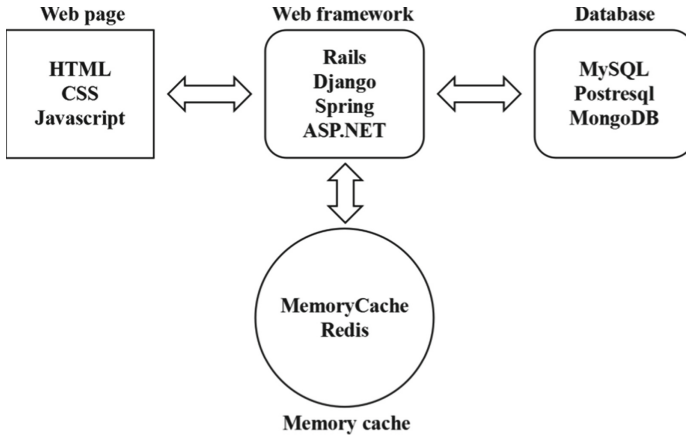
Fig. 1. Overall architecture of Web project

Web client technology, also known as front-end technology, enables users to view content and interact with Web pages through front-end technology. The main technical languages often involved include HTML, CSS, JavaScript and so on. The front-end technology relies on the browser to display, and many technical languages rely on the browser to complete compilation, operation, typesetting and rendering. The user uses the browser to send a request to the server, and after receiving, the server presents the processed information on the browser or returns the file content to the client browser after complex data query and calculation. This mode is called "request/response model". The communication basis between the client and the server depends on HTTP protocol. HTTP is a stateless protocol that does not save state. The HTTP protocol itself does not save the communication state between request and response. In other words, at the HTTP level, the protocol does not persist the sent request or response [3].

The Web server-side technology corresponds to the back-end technology, and its main function is to be responsible for the implementation of product service technology, including business logic, data storage and processing, message queue processing and the implementation of product service-side interface. As shown in Fig. 1, the key point of server-side development is to interact with the database to deal with the corresponding business logic. The development technology mostly selects object-oriented scripting languages such as Java, PHP, python, C, C# and so on, and is matched with various development frameworks such as Django, spring and ASP Net to complete the subdivision of Web server function level and the fine processing of customer requests.

2.2 Asp.Net Technology

ASP.NET, also known as ASP+, is a new generation of programming script language launched by Microsoft. ASP. Net based Net framework constructs an open-source Web application development framework. Compared with the classic ASP (Active Server Pages) technology, it can realize strong and standardized Web service support with faster running speed, better language support, more user controls and XML components.

Table 1. ASP Net framework

Application Framework	Relevant Experience	Development Style
Web Forms	Win form, WPF	Use the rich control library encapsulating HTML tags for rapid development
MVC	Ruby on, Rails	Completely control the separation of HTML tags, codes and tags, and make it easy to write tests. Best choice for mobile and single-page applications (SPA)
Web page	Classic ASP, PHP	HTML tags and codes in the same file

ASP.Net supports HTML, CSS and JavaScript to build Web applications and desktop applications, and can also complete the creation of Web APis.

ASP.Net provides three frameworks for creating Web applications: Web form and ASP Net MVC and ASP Net Web page. The three aim at different development styles. See Table 1 for details. Among them, ASP Net Web form can use simple graphical design pages, rely on a variety of functional controls and components to complete the drag and drop event driven model to build dynamic Web pages, so as to improve the design and development efficiency of Web applications. ASP. Net MVC can complete the construction of dynamic Web pages based on pattern. In this mode, ASP Net MVC divides Web applications into three different functional components: model for data, view for reality and controller for input. The part of the model used to process the application data logic; View is the part used to process data display; The part of the controller that handles user interaction. MVC layering helps manage complex applications and simplifies group development, that is, different developers can develop view, controller logic and business logic at the same time [6]. Razor is a tag syntax that adds server based code to Web pages. The combination of Web pages and razor syntax can help users complete Web sites with complex application functions with its advantages of fast and easy to learn.

2.3   C# Language

C# is an object - oriented software developed by Microsoft and runs on Net framework. C# language can be widely used to create Windows client applications, XML Web services, Web server applications, database applications and so on [9]. C# language originates from C language and attaches great importance to expression, that is, it faithfully integrates the advantages of C and C++ language, and greatly simplifies the complexity of the programming process of C and C++. With the introduction of syntax and visualization tools, it can bring great convenience to the practical application development. At the same time, C# language can support more data types and create one or more classes to facilitate subsequent calls and reuse. In addition, with the continuous update of C# version, C# has been able to support cross platform applications, breaking through the single dependence on Windows platform.
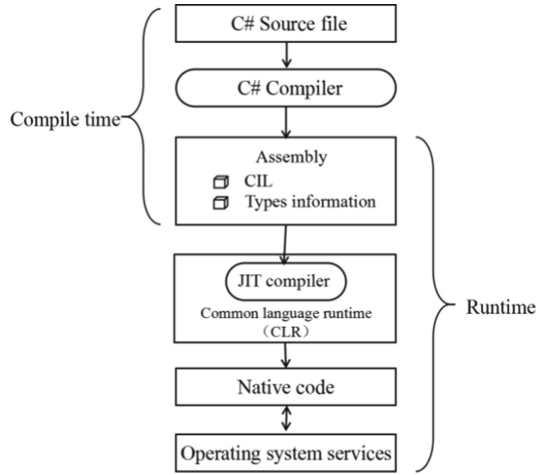
Fig. 2. C# language compilation execution process diagram

The C# language needs to go through the compilation stage before execution. The process is shown in Fig. 2, that is, the C# language is compiled into an intermediate language (CIL, common intermediate language, also known as MSIL) through the compiler, and then passed Net framework, the common language runtime (CLR) translates the intermediate code into binary machine code, so that it can run correctly [10].

2.4 Development Environment

Complete the configuration and deployment of the development environment according to the system development requirements and the use requirements of the above key technologies. The overall development of the system is based on Windows 10.0-64 bit operating system, using Net framework 4.7 development framework and visual studio 2019 provide an integrated development environment for developing applications in C# language. Select SQL Server 2019 as the database platform, and download SQL Server Management Studio at the same time to complete the configuration and management of the database. After completing the installation and configuration, you can select new ASP. Net under Visual Studio 2019 Net Web application (.Net framework) project and create Web forms under this project to complete the development environment of C# language. As shown in Fig. 3, part of the code is shown. The C# code is concise and elegant as a whole and has a high degree of symmetry. The fields <title>, <head>, <body> appear in pairs. The title and mark of the page are defined respectively to represent the beginning and end of the header information, and the display space of the actual content displayed in the Web page. After the system design and development are completed, the system will rely on IIS server under windows to publish the system, so that system users can log in and use the system through Web browser. Through the introduction of the above key technology theory, the overall environment of system development, the configuration of relevant software and tools are determined, and the

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<%@ Page Language=" C#"Aut oEvent Wireup=" true" CodeBehind= "WebF orm1.
aspx. cs" Irherit s="WebApplicat ion2. WebForm1" %>
< !D0CTYPE html>
<html xm1ns= "http://www. w3. org/ 1999/ xhtml" >
<head runat=" server>
<met a http- equiv ="Content- Type" content=" text/html: charset=utf-8' />
    <title></title>
</head>
<body>
    <form id="form1" runat=" server">
        <div>
            <h1> Higher Vocational English Learning System </h1>
        </div>
    </ form.
</ body>
</html>
```

Fig. 3. Basic environment of C# development

technical feasibility of the overall project of Higher Vocational English online learning system is also clarified.

3   Requirements Analysis

3.1   Functional Requirements Analysis

The overall function of Higher Vocational English online learning system needs to be divided into two subsystems: teacher side and student side according to different user roles. In this analysis stage, the functional requirements analysis will be completed from the perspective of different users according to the principle of object-oriented analysis and the process division of system functions.

As the main user of the system, student users need to meet the basic requirements of their daily learning and interactive communication. Higher vocational English online learning system can simulate and reproduce all links under the classroom teaching mode, that is, the system supports online learning, key practice, online homework, online examination, online communication and interaction and other functions. Among them, the online learning function is the key function to improve students' autonomous learning. The system can provide comprehensive teaching resource content, give consideration to textbook content, network content and expanded content, and solve the problem of single textbook content. The key practice function can provide special knowledge enhancement and key practice for the four basic skills of English "listening, speaking, reading and writing". Homework assessment can realize the online submission and evaluation of classroom homework, the evaluation and scoring of periodic tests and other operations. Under the interactive communication function, we can make use of the advantages of network information technology to strengthen the interaction and communication between teachers and students and students, and improve students' subjective initiative in learning.

For teacher users, the system changes the dominant position of teachers under the classroom teaching mode, and provides corresponding help for students with auxiliary
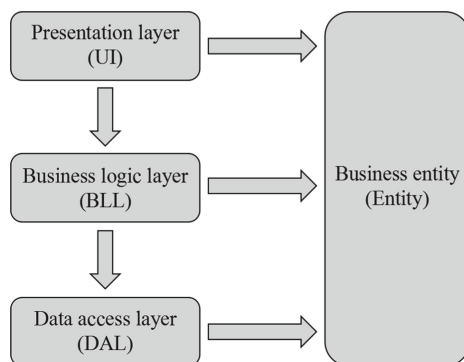
Fig. 4. System hierarchy diagram under B/S architecture

guidance and help. Teacher users can complete the production, upload, maintenance and update of teaching resource content and key practice content under the system. At the same time, teachers can complete the online release and review of homework, and the organization and implementation of phased assessment. Through the functions of the system, it can complete the auxiliary function of daily teaching tasks, greatly reduce the workload of teachers and improve work efficiency.

3.2 Overall Design

In view of the functional requirements of Higher Vocational English online learning system, combined with the development and configuration of the above related technologies, the overall design of the system is completed. Based on Web technology and B/S architecture, the system is divided into three parts: front-end presentation layer, business logic layer and data access layer, [4] as shown in Fig. 4. Among them, the front-end presentation layer is the user interface, that is, the network page for users to complete login and interactive operation, including information input, content viewing, homework upload, participating in assessment, interactive communication and so on. The business logic layer is mainly responsible for the control and adjustment of the request and response between the user and the database, so as to ensure the processing of various business logic and the normal operation of various functions of the system. The data access layer is mainly the responsibility of the database, which not only realizes the various operations of the system on data information, but also provides spatial support for the normal and smooth operation of the system. In addition, entity is represented by Model, which does not belong to any of the three layers. However, the entity layer can be called by any of the three layers [1]. In ASP.NET WebForm framework, the business logic layer and data access layer are composed of classes, while the UI layer composed by ASPX pages and ASPX.CS. After the system function design is completed, the project needs to be deployed to the Web server of Windows system to facilitate users to log in through the client browser. IIS 6.0 is selected for the Web server, and the corresponding application pool is selected through the new application pool NET Framework framework, and add the physical path of the system project to complete the deployment and enable.

4   Function Realization

4.1   Student Side

4.1.1   Online Learning

Under the online learning module, student users can learn English course content independently. The function is distinguished according to online teaching and classroom teaching. One part is the function of classroom teaching review and review, that is, students can view and obtain courseware materials, key and difficult explanations, after-school exercises and other contents in classroom teaching online. The content display is also mostly in the form of video, audio, animation, graphic combination and so on, which can stimulate students' interest in learning, meet the needs of contemporary college students for "network" learning, and improve students' autonomy in College English learning. The other part is designed to broaden students' vision and cultivate comprehensive quality, that is, the system contains a lot of extracurricular expansion knowledge, including excellent English works such as "evensong", "how will you measure your life", "the power of habit", etc. There are also English original videos suitable for higher vocational students, such as the film "dead pots society", "the intern", documentary "Wild China", etc. In the process of watching, let higher vocational students form the habit of English reading and English learning, combine teaching with fun, and greatly improve students' enthusiasm for College English learning.

4.1.2   Key Exercises

Under this function module, it emphasizes the mastery of professional application of higher vocational students, and can focus on the five directions of "listening, speaking, reading, writing and translation". This part of the exercise content can be highly combined with the majors of higher vocational students, and introduce students into the virtual environment of English learning in a situational and task-based mode. By simulating the real context, students can intuitively and vividly complete interactive exercises, master knowledge and develop skills in the latent transformation. The design of scenarios or tasks mostly refers to the basic requirements of Higher Vocational Students' majors or future careers, that is, scenarios can be created according to workflow, work content, work items and professional standards [2]. For example, international trade majors can simulate business negotiation and contract signing, and design corresponding special exercises according to the links and processes. Through the key contact, we can not only achieve the purpose of Strengthening Higher Vocational English teaching and application, but also provide help for Higher Vocational Students' future career development and improve their confidence in coping with external work pressure.

Job assessment Under this module, students can complete various assignments in English courses online and send them to teachers in the form of online submission, so as to consolidate the teaching content. At the same time, it can also help teachers complete the process supervision and assessment of students' daily learning. Help students to understand and improve their own knowledge in the online test stage in time. Through the design of daily homework and homework assessment function, the process assessment and final assessment of Higher Vocational Students' English learning are realized, the

improvement of English teaching assessment system is promoted, and the problem of one-sided assessment standard is solved. Interactive communication Under this module, students or teachers and students can have free interaction and communication. The function module is similar to the forum, and the contents of different users can be made public. On the one hand, it can realize the sharing and exchange of learning experience between students. On the other hand, it can also shorten the distance between students and teachers. Students can get professional Q & A and tutoring from teachers, and teachers can master students' learning situation. Interactive communication can not only build a good learning atmosphere for students, but also form a positive evaluation and feedback on teachers and higher vocational English teaching, and further promote the improvement of Higher Vocational English teaching system.

4.2 Teacher Side

On the teacher side, compared with the user function experience on the student side, the teacher side pays more attention to the overall management and supervision of College English teaching. Teachers can complete the production, upload and maintenance of learning resources and contents under the functions of online learning and key exercises. And complete the assignment and correction of homework, test organization and reading and evaluation under the homework assessment module. Using the online function of the system can reduce a large number of daily operations, achieve the purpose of auxiliary teaching, and improve teachers' work efficiency. The interactive communication function relies on the interactivity and convenience of network information technology, eliminates the sense of distance between teachers and students, and solves the problem of targeted guidance that can not be realized in classroom teaching.

5   Conclusions

The construction of Higher Vocational English online learning system can effectively solve the problems existing in the traditional classroom teaching of College English. Relying on Web technology and ASP Net technology to realize the implementation of online English education and teaching process in Higher Vocational Colleges under the platform of visual studio. The English teaching system in higher vocational colleges is optimized, and the English teaching ability of students in higher vocational colleges is improved. The English teaching system in higher vocational colleges is optimized and the proficiency of students is improved, To achieve the purpose of cultivating compound talents with English application ability, it also makes a new attempt for the reform of educational informatization in higher vocational colleges.

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