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Application of New Media Technology in the Design of Higher Vocational Chinese Online Teaching System Based on Random Forestry Model

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Abstract:

New media technology is widely used in industrial manufacturing. In this paper, the school media technology used in Higher Vocational Chinese teaching. Random forest has fast operation speed and excellent performance in processing big data. Random forest is convenient to calculate the nonlinear effect of variables, and can reflect the interaction between variables. The Chinese education mode should keep up with the accelerated development of the Internet era, promote the development with the help of the Internet platform, and promote the compatible development. In this paper, through the research on the development of education online platform and network information technology at home and abroad, combined with the Internet audio and video interaction technology framework and video transmission, the remote video interaction mode of P2P communication technology is adopted. According to the actual needs of Chinese online education management of Chinese Publishing House of the Ministry of education, this paper expounds the deployment architecture, business composition, user system and teaching system of its development system from a technical point of view. This paper discusses the functional requirements design, engine design, technical difficulties and database design of the management system. Finally, through the comprehensive test and online implementation of the system, the expected goal has been achieved, and the construction and implementation of the Chinese online education system has been formally completed.

Keywords*: New media, industrial manufacturing, random forestry model, higher vocational education, Chinese teaching.*

I. INTRODUCTION

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With the advancement of national education information construction, the application of digital campus network and multimedia technology has also developed rapidly. In the new curriculum standard, Chinese teachers are positioned as organizers and guides of teaching and learning activities, with more emphasis on equal communication between teachers and students. In the teaching process, we need to actively introduce modern information technology, according to the junior high school Chinese teaching objectives and the actual environment and conditions of the school information construction, around the junior high school Chinese subject knowledge and teaching resources integration, many elements of Chinese teaching resources integration through information technology [1-2]. Through the new carrier of network technology, we can build a multimedia Chinese teaching environment, and realize the learning strategies and goals of "task driven, independent exploration, cooperation and communication". Through multimedia network technology teaching, junior high school Chinese teaching can get rid of the traditional "cramming" teaching mode in the past, and can better simulate the actual scene of life by using multimedia teaching means [3-4]. Let students become the protagonist of Chinese classroom, in order to form a positive learning attitude, so that students can contact Chinese in a variety of channels and ways, and realize a more flexible and free information teaching mode. In recent years, the network teaching of Chinese in middle school has made great achievements, a number of special websites and a large number of network courseware about Chinese teaching in high school have emerged, and a variety of teaching modes have emerged, such as research-based learning under the network environment. Because most of the network teaching system is only "teaching content and material network", making the vast majority of middle school Chinese network teaching and did not achieve the desired effect [5].

With the continuous improvement of most of the campus network facilities in China, the development of education information system based on the network environment has become the main trend of online learning and auxiliary teaching in the future. To realize the sharing of excellent teaching resources and the complete digitization of network office and auxiliary teaching system has strong practical significance for improving the Chinese teaching and application ability of middle school students [6-8]. In view of the development trend of middle school Chinese network teaching, this paper designs and develops a set of auxiliary system suitable for middle school Chinese network teaching with the help of database and network programming technology, fully according to the characteristics of network environment, the goal and curriculum content of middle school Chinese new curriculum standard.

II. INTRODUCTION OF DEVELOPMENT TECHNOLOGY AND THEORY

2.1 B / S structure

Browser / server structure is the structure of browser and server. B / S structure is a program

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structure based on browser and server. It runs on IIS information service manager, which is a very popular program structure. B / S architecture solves the problem that the developed program can not be connected to the Internet. The program based on this structure only needs to be deployed and configured on the server, and can realize the permission to use the system anywhere. It is a very perfect program structure, which has many advantages compared with the traditional C / S program structure. The program of C / S architecture can only be accessed on one computer, at most it can only be interconnected in a small LAN, and it can not be accessed on the Internet, so this structure has certain access limitations [9].

In the software development world, many people adopt b/s architecture because it has two advantages: simple acceptance and low cost. Moreover, the b/s structure can manage access rights, so that the database is not affected by the outside world. But everyone outside the world can access the same database in different ways in an office or home in a city. Based on the b/s architecture software, the system installation, modification and maintenance are all solved on the server side. When users use the system, they can run all the modules only by one browser, which can achieve the function of "zero client", and it is easy to upgrade automatically at runtime. The b/s architecture also provides the most realistic open foundation for the online, networking and unified services of heterogeneous machines, heterogeneous networks and heterogeneous application services. If you want to make it fast, easy and awesome, you can use JAVA language [10]. The specific structure of b/s is shown in Figure 1.

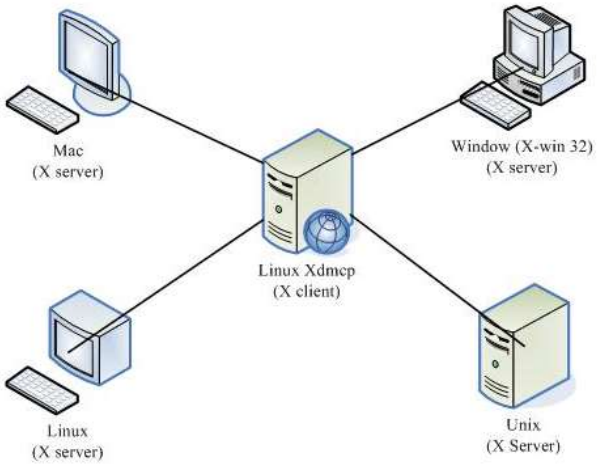

Fig 1: B / S model

2.2 C language

C # is an object-oriented high-level programming language based on. Net framework

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released by Microsoft. It evolved from "C language" and "c++ language", but later on the basis of the above two languages, it has learned the advantages of many other languages, including many features similar to Java language, which has many advantages. It not only absorbs the advantages of C language and C + + language, but also gets rid of some of their disadvantages, and becomes more and more simple and convenient, that is, it has the efficient data operation efficiency of C + + language, and has the cross platform nature of Java language. Therefore, when we are developing the system, we all choose C language because it has different writing grammar, novel characteristics, huge operation ability and so on.

C # language has been certified by ECMA and some international standards organizations, and has been adopted by most software development companies. This high-level programming language has the characteristics of other languages, such as encapsulation. C language is easy to learn and master because it has many characteristics that other languages don't have. The code written in C can interact with the code written in other high-level languages. C language has many data types. C language and COM are closely related and interact with each other. Because of various advantages, we chose C # language.

2.3 Database technology

According to the technical requirements and various considerations of the development of middle school Chinese teaching system, this paper chooses the second generation database system based on relational data model, which is popular nowadays. The theory of this kind of database product has been fully mature, and its implementation is relatively simple. There are many successful cases to refer to. Its main products are SQL server, Oracle, Sybase and so on. Microsoft SQL Server 2005 is an excellent database management software currently used in enterprise data storage, which is compatible with various windows operating systems of Microsoft. It has become the first choice to establish a data solution of educational information management oriented to distributed browser / server mode and centered on relational database management system.

When using SQL Server 2005 to create applications, mastering T-SQL programming language is very important for the development of database applications. Programming with SQL mainly includes four parts: data query language, data operation language, data definition language and data control language. SQL is a non-procedural language in SQL Server, and the stored procedures written by it are similar to those in other programming languages. If an operation needs a lot of T-SQL code or needs to be executed repeatedly, and according to the statement execution situation, the SQL query analyzer optimizes the code to improve the execution efficiency. SQL statements allow users to work on high-level data structures, and can operate single records or record sets. Therefore, SQL can support input and output operations of

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sets. In addition, the language does not need to specify data storage methods like other languages with syntax definitions.

III. DESIGN OF CHINESE TEACHING SYSTEM

3.1 System overall structure

Software design is a process of transforming software requirements into software representation, which mainly includes the overall software structure design and component level design stage, which can also be called the summary design and detailed design. The overall structure design defines the overall structure of software, which can be derived from the system specification and analysis model. The overall structure of software is designed according to the system requirements such as integrity, maturity, stability, openness, flexibility and availability of the continuing education network platform and performance requirements. In the process of transforming software requirements into software design, we need to adopt the principles of abstraction, modularization and information hiding to ensure the high independence of the main functional modules of the system.

3.2 System network structure design

The network topology structure of the whole teaching system follows the network structure design mode of other education management information systems, which is mainly divided into three parts from the logical structure: client, server and network transmission part (data exchange and sharing). The network topology of middle school Chinese teaching system can be divided vertically into centralized methods, which can be used to ensure the data of the system in a relatively isolated form. Through this separation scheme, the database of the Chinese teaching system can only be processed in the server, and the data security of the network teaching system can be ensured as far as possible. In order to protect the security of the system source program, the firewall isolation system is adopted to isolate the external ports in the intranet server. At the same time, the intrusion detection system and anti-virus software are installed on the server to prevent the invasion of Trojans and viruses. The following figure shows the specific network topology of the system, which is mainly composed of client, server and network connection. The specific structure is shown in Figure 3

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Fig 2: System overall data flow chart

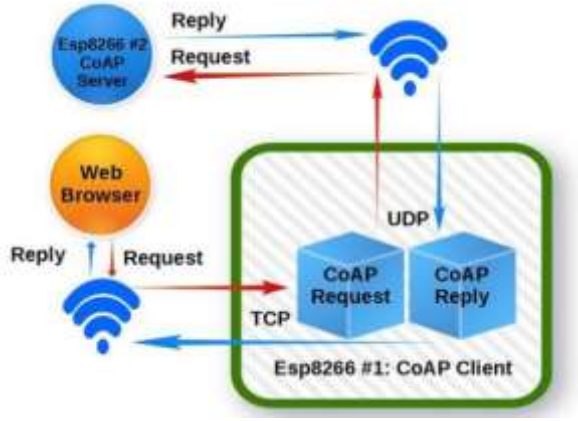

Fig 3: Network design of Chinese teaching system

3.3 Function module outline design

(1) Student user module

Because students want to watch videos and browse pictures or text information, and the browser supports videos, texts and pictures very well, the student user module uses the browser as the client. Students have the main function of teaching information management, local resource management, personal information management. Students mainly have three modules: teaching information management, local resource management and personal information management, namely teaching information management, local resource management and personal information management.

Teaching information management module: in this module, students can view the teacher's teaching plan, which includes the arrangement of courses, the time of class and other basic information. The viewing function of teaching content includes what to learn in each course and what the teacher explains, including specific tutorial, experiment, purpose and other

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information, which is convenient for students to plan their own learning arrangements. The function of starting a course is to facilitate students to view the course they have started. The information they can view includes the progress of the course and the number of students. Local resource management module: This module is to facilitate students to manage learning materials. This module includes adding local resource management, viewing local resource management and deleting local resources. Adding local resource management is to download the information uploaded by teachers, which is convenient for subsequent learning. Viewing local resources is to facilitate the effective management and search of local resources. Personal information management module: This module mainly includes three modules: improving personal information, modifying personal information and hiding personal information, in order to better manage their personal information and facilitate learning and communication.

(2) Teacher user module

The teacher user module is the teacher side, which uses the RCP technology. It uses the same database service as the student side and the administrator side, but the program uses different services. This distributed architecture can improve the performance of the system and have a better user experience. The teacher end mainly has the functions of student management, curriculum management, teaching management and personal information management.

(3) Administrator side

The student end and the teacher end are for the teaching service, the administrator end is for the management of the whole system service, mainly including the website basic information management, student management, teacher management and learning materials management and other functions. The administrator client uses the browser mode, and uses the same database as the student and teacher.

IV. THE REALIZATION OF CHINESE TEACHING SYSTEM

4.1 System implementation environment

The system must consider the influence of the configuration of the system operating environment when developing it. It is very important for the actual running speed, the access speed of the system users and the maintenance and upgrading of the system in the future. It is mainly divided into two parts: hardware environment and software environment. In the hardware environment, for the client, because the system is based on b/s architecture, the client has no high requirements. As long as the operating system of the computer can be run normally, the web page can be browsed normally. But for the server, it determines the performance of the system, which is also a factor to consider when deploying after the development of the program. The client and the server need to match each other, which meets the software and hardware

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requirements of the system. The running environment configuration is shown in Table 1.

TABLE I. System implementation environment

ENTRY NAME	DESCRIBE
Server model	P4 or Xeon CPU
Memory capacity	8g RAM (default system and database on one machine)
External storage capacity	Above 120G
Network situation	Networking
Monitor	Resolution: 1024*768 color number: more than 16 bits
Operating system	Windows 2000 Server or Windows XP professional
Database server	MS SQL server2005
Runtime environment	IIS server + Microsoft. Net framework SDK v2.0 Web front end server: Microsoft IIS 4.0 or above
Web browser	Internet Explorer 5.5 +

4.2 Realization of main function modules of the system

(1) System login module

The operation of all functional modules of the system needs to access the database to store and operate the relevant data, so the database connection is the key code of the system. In this paper, we read the connectionstring field information from the web.config file to get the database login parameters for database related operations, which makes the database connection more secure and reliable, and also easy to transplant the system.

When the user logs in to the system, the whole login process is divided into the following steps: the first step: the user enters the user name and password in the login interface, selects the login role, the role is divided into system administrator, language teacher and student, and click the "login" button. The second step: the system starts to verify immediately. First, verify the user name and match whether the user login name in the database exists. If it does not exist, return the information to the user. If it exists, go to the next step of verification. The third step: verify the password, match the password in the database, if the password is different, return the information to the user, if the password is the same, then enter the next step of verification. Step 4: verify the user role and match whether the set user role in the database is the same as the role selected by the user when logging in. If it is different, return the information to the user. If it is the same, the login is successful.

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(2) System management module

The management module of the system includes many subsystems, which are mainly used to manage all kinds of basic information of the system. The user information management is the key subsystem of the system management. In this section, the user management module is used to describe the implementation process of the module function. User management is mainly operated by the system administrator after login. The system administrator can add other users, set role permissions, modify passwords and initialize other users' passwords. Other users can only modify passwords. So the following describes the application of the whole user management module from the perspective of system administrator.

(3) Teacher side function module

The teacher side module mainly has the Chinese teacher identity operation, is the main user of the middle school Chinese teaching system, mainly completes all kinds of teaching resources (such as teaching plan, teaching courseware and other information management), and completes the students' online behavior and network question answering operation function. Data management is mainly for Chinese teachers to upload all kinds of teaching resources to the server and manage them online according to the needs of Chinese network teaching. In the process of middle school Chinese online teaching, all kinds of teaching materials and resource files must be involved, such as teaching video, PPT courseware, audio, word document or Flash teaching animation, etc. Chinese teachers upload according to the course content and store it in the server. The system provides each user with a storage space (the default is 50m, if the space size is not enough, you can contact the administrator to adjust), which is used to store the user's personal resource files. Personal resources can be used for sharing, or for your own teaching and learning. You can edit the directory structure of personal resources area according to your own needs.

(4) Student end function module

Students can see the learning content arranged by the teacher, and click the link of the specific content title to learn the corresponding content. The default course interface will include: course management panel, which includes study group settings, student performance view and course learning activity statistics; Learning activities: add relevant learning contents and activities to the course content, and list relevant items in the learning activities area; So that users can quickly enter the relevant types of learning content; Study notes: for students to record some relevant learning experience. To learn a course, you can directly click the link of the course you need to enter in the course list on the desktop.

V. CONCLUSION

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According to the investigation and Research on the construction of the network teaching system of Chinese development in a middle school in Kunshan City, according to the Chinese teaching objectives in the new curriculum standard, aiming at the various problems existing in the current Chinese network classroom teaching, combined with the author's many years of Chinese teaching experience, this paper makes an in-depth demand analysis on the current middle school Chinese teaching network system. Based on the comprehensive examination of the cultivation of middle school students' practical ability in Chinese, this paper uses modern education theory and online learning behavior analysis method to smoothly integrate computer information technology with the new Chinese teaching mode, formulates the overall goal of Chinese teaching, and collects and sorts out all kinds of multimedia resources in line with the network classroom teaching. According to the development goal of the function demand of the network teaching system, this paper redesigns the form of network classroom teaching, formulates the principle of system development, makes full use of modern network technology and programming technology, and designs and develops a middle school Chinese network teaching system based on B / S structure.

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