Design and Implementation of Network Educational Platform for Ideology and Politics Based on the Concept of Smart Campus

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Abstract

Based on the concept of smart campus, the network educational platform for ideology and politics in colleges is designed and implemented by using PHP and MySQL language in this paper. The background, sources as well as the practical significance of the network educational platform for ideology and politics is also analyzed here in the paper. With three modules, including virtual community module, resource management module and news release module, the platform realizes the functions of centralized video teaching, platform chat room, autonomous learning and others. Based on the practical testing results, the platform has been modified and improved to fully realize the information convenience function advocated by the concept of smart campus.

Key words: Smart campus, PHP, MySQL,Ideological and political education,Educational platform.

1. INTRODUCTION

In recent years, with the development of information technology, especially the Internet technology, smart campus has gradually entered colleges, providing a modern means for efficient teaching and expanding educational space and channels (Barbato et al., 2016; Xin et al., 2-16; Bates and Friday, 2017). Smart campus refers to the integration of various application service systems to build a smart and intelligent teaching, learning, and living environment suitable for the integration of management, teaching, scientific research, as well as campus life on the basis of Internet of things (Kamada et al., 2014; Zhang et al., 2014; Nati et al., 2017). It means a new model of campus where with applications of advanced information technologies mainly including the Internet, cloud computing and virtualization, the interactive mode between campus resources, school teachers and students is changed, and campus resources, teaching, management, scientific research and other application systems highly integrated to improve the response speed, flexibility and accuracy of interactions between applications for people to quickly and accurately obtain the required information, so that the intelligence services and management can be ultimately realized (Moreno et al., 2016; Seidita et al., 2016; Du et al., 2013).

As a public compulsory course for undergraduate students in colleges and with its class hours reaching about 9.3% of the total class hours, the ideological and political course is the main channel and position to provide a systematical education on Marxist theory and ideologies and politics for college students and it plays an important role in improving the ideological and political quality of college students, helping them to establish a correct outlook on life, values and world so as to become a pillar of society with all-round development (Markowski, 1997; Aberbach and Walker, 1970; Shook and Fazio, 2009). For a long time, due to the separation of political course from students' actual situation, most students lose their interest in learning, resulting in a widespread truancy phenomenon (Dunmire, 2005; Perry and Sibley, 2009; Anderson and Singer, 2008）. It is not satisfactory seen from the teaching effect too, as it often happens that the students' political course exam results are inconsistent with their actual political level.

In view of the problems existing in the ideological and political education in colleges, this paper designs a network educational platform for ideology and politics on the basis of the concept of smart campus, so as to ensure the smooth progress of ideological and political education in colleges and universities.

2. TECHNICAL AND THEORETICAL BASIS

2.1 Introduction to PHP

PHP, a hypertext processor, is a new server-side scripting language that can be compiled into a function through databases that contains many types of data. Moreover, the cooperation between PHP and MySQL is flawless as PHP can write a new function interface inside it, access to the database by other means, and use different databases as the basis of operation. Its other advantages include good expansibility, good scalability, etc(Coopey, 1995; Rudolph, 2005).

2.2 Introduction to MySQL

MySQL is jointly written by C and C++, and can be operated effectively in many computer systems, such as AIX, FreeBSD, HP-UX, Linx, Mac OS, Nonell Netware, OpenVSD, OS/2 Wrap, Solaris, Windows, etc. A lot of programming systems need MySQL to provide API for them. In view of its advantages in operation and price, MySQL is chosen as the main research object in this paper (Settle and Fowler, 2008).

3. REQUIREMENTS FOR PLATFORM

3.1 Overall requirements

In this paper, the following discussions are made with educational subject and educational object as the subjects.

Educational subjects should improve their educational methods from various aspects to ensure the best education for educational objects. In so doing, the educational subjects can get better feedback, so that they have the motivation to reform their educational method and change the rigid education mode fundamentally, enabling the educational objects to upgrade their ideological and moral and professional knowledge, as shown in Figure 1.
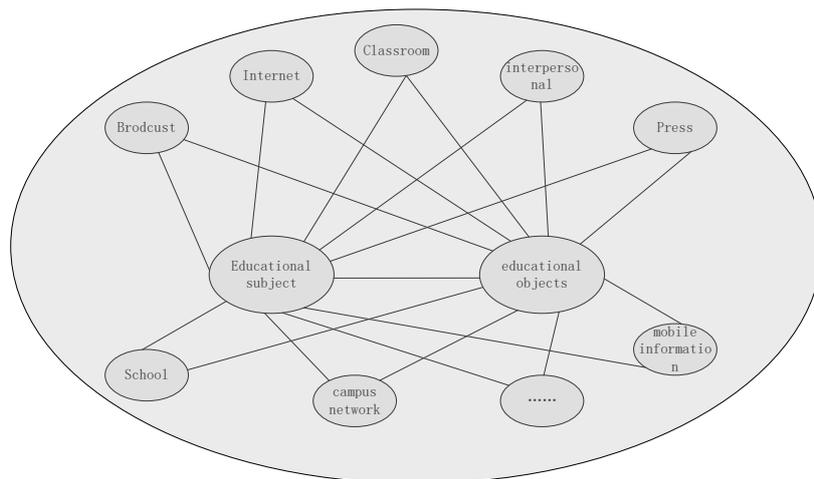
Figure 1. Interactive Learning Mode

(2) The educational objects should know preciously about their own progress and inherent level, and then select suitable learning methods according to their own situation. In so doing, they can more effectively improve their learning efficiency.

3.2 Functional requirements of the system

The main function modules of the platform are: virtual community module, internal information module, and news release module. The following is the specific analysis of these modules.

3.2.1 Analysis on virtual community module

The internet virtual community (CLUB) is place for a group of people with similar interests and hobbies, where they can discuss interesting topics. The community members communicate mainly through chat rooms, blogs, forums and mails. Tag provides operational guidance for members.

3.2.2 Analysis on system information resource module

System information resource module is the core system of the platform, which is responsible for most of the functions of the entire platform, including: core information system, resource system, network teaching and library information query module.

The personal information module is a module that stores individual information about each student. Resource module is a module for students to query a variety of information, which can be divided into news, education, life, academics, technology and discussion and research modules.

3.2.3 Analysis on news release module

The news release module is the public notice department of the club's internal information. Its main operation is to import the target information into the database, then import the valid information in the database into the homepage of the platform for students to browse. There is a variety of information types, including news related information, ideological and political education information, public welfare information, video downloads and picture areas, etc.

4. DESIGN OF PLATFORM

4.1 Platform system architecture

The ideological and political network educational platform system is abbreviated as PHP+MySQL, with a three-tier architecture operation process, namely, load balancing, WEB and database, as shown in Figure 2.
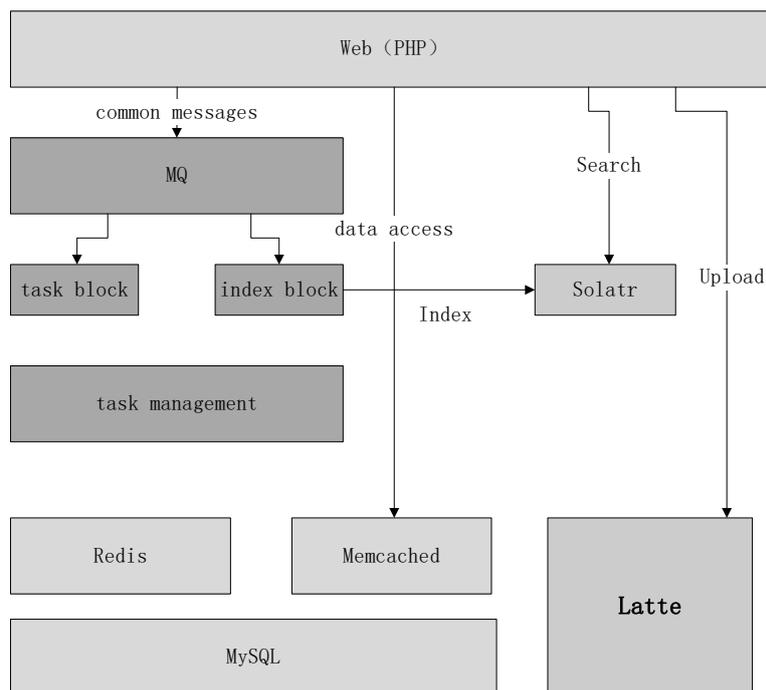

Figure 2.PHP+MySQL Architectural Pattern

(1)Load balancing architecture. It is also referred to as LVS layer, a new type of Linux server. LVS cluster is mainly composed of three layers of structure, load scheduling, server pools and shared storage. Being at the core, the function of load scheduler is to ensure the operation of the routing table, to monitor the operation of the server, and to replace LVS if there appears problems in the LVS of the system with the backup LVS.

(2) WEB. WEB is a system composed of hypertext, among which there are close connections. WEB records and analyzes the details of user access in different time with Internet as the medium.

4.2 Module design of network educational platform for ideology and politics

It can be seen from the design of each module of the platform as shown in the following figure that both the virtual community and the resource library are one-way mode, and form an information network in the same pattern. Therein the information resource database is composed of the library information database, the user information database, teaching resources database, online teaching resources and others. Theses resource databases can be stored in digital devices for transmission to achieve resource sharing, so that the relevant information is the most widely circulated and used.
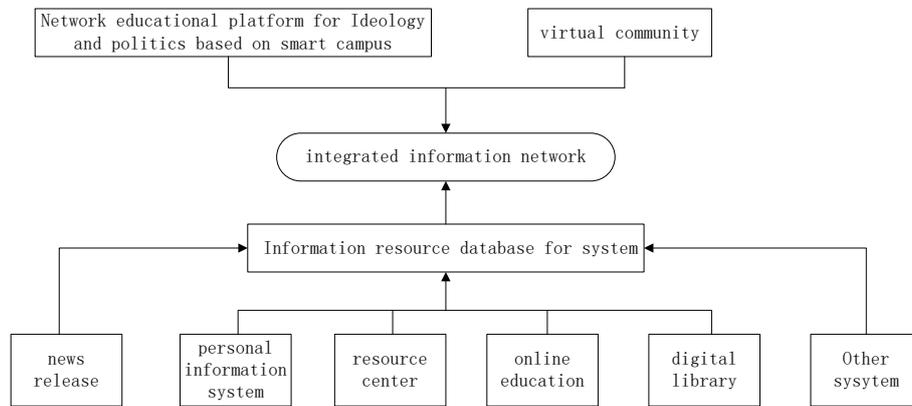
Figure 3. Module Design of Network Educational Platform for Ideology and Politics Based on Smart Campus

4.2.1 Virtual community

Virtual community is a platform for users to chat and exchange, thus bringing together a lot of useful information. Everybody can talk about the topics of interest through postings, replying to posts, blogging, muti-chatting and other activities, which has greatly increased the interest in the platform to a certain extent. Thus it is conducive to the expansion of the number of users. Students can find their favorite books through the digital library, and communicate reading and learning experiences via emails afterwards. After the students finish their ideological and political courses, they can express their views and opinions about the course by blogging, and then exchanged views, so that their ideological consciousness and depth of understanding is constantly improved.

4.2.2 Personal information system

It is no different from other platforms that everyone can change their account information through account information management, including online examinations and curriculum planning and other personal information.

4.2.3 Resource center

The resource center module is also at the core of the whole platform, because it contains a variety of content and types, such as document management information, video library, test database integration, news release, etc. The information management is to increase and delete the information or to undertake other forms of reprocessing when necessary. These management rights can only be exercised by the platform administrator to prevent the chaos in information arrangement and information push. The operation of resource center module is as shown in the following figure. Resource module is divided into two types, namely resource management and sharing communication, both of which have their specific operation methods.
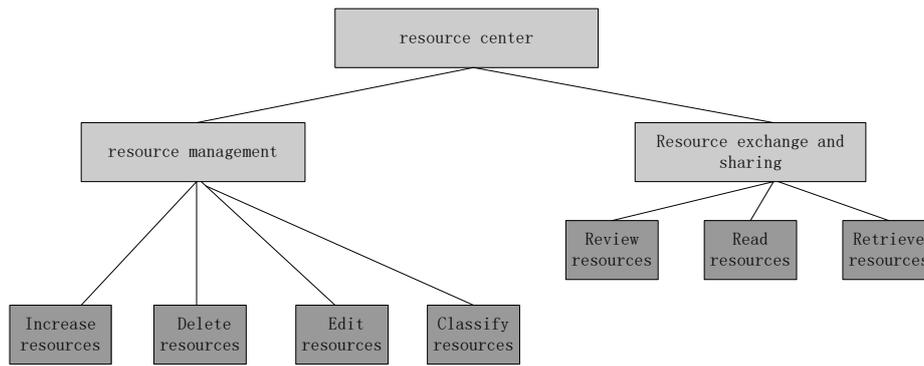
Figure 4. Detailed Design of Resource Center

4.2.4 Network education

Network education is the most important core of the system, with a great number of contents, including network test assembly, network scoring, questionnaires, after-class discussion, cultural transmission and nurturing, news release and others. In the process of network test assembly, administrators enter the scoring requirements into the system, such as the main answer to Short Answer Questions, the number and scores of knowledge points, and others. Afterwards the system will uniformly extract a test paper with proper difficulty that can not exceed the average level of students, otherwise, it will be necessary to re-extract a test paper. The test questions are divided into subjective and objective questions, of which the former can only be scored by people, while the latter by the system. In the latter case, the students' answer is compared with the question bank. It will be considered correct if it is consistent with the question bank, otherwise, it is incorrect. The execution part after the investigation is Manager PollAction. After the execution, the system is redirected back to the homepage. The online courseware preparation configuration process is as follows, firstly, input the nature of the work and the name of the courseware; secondly, select the corresponding courseware information from the database according to the input information, which should be processed by the teacher later; finally, submit the courseware information to the server. Online discussion and communication module is similar to forum. The online culture transmission is a platform for students to speak freely so that they can understand their knowledge from different perspectives, get rid of excessive self-awareness, and master a more flexible speculative model. The overall functions of network educational platform is as shown in Figure 5, which reflects an organic combination of functionality and resources by the platform that can maximize the value of these educational resources and talents.
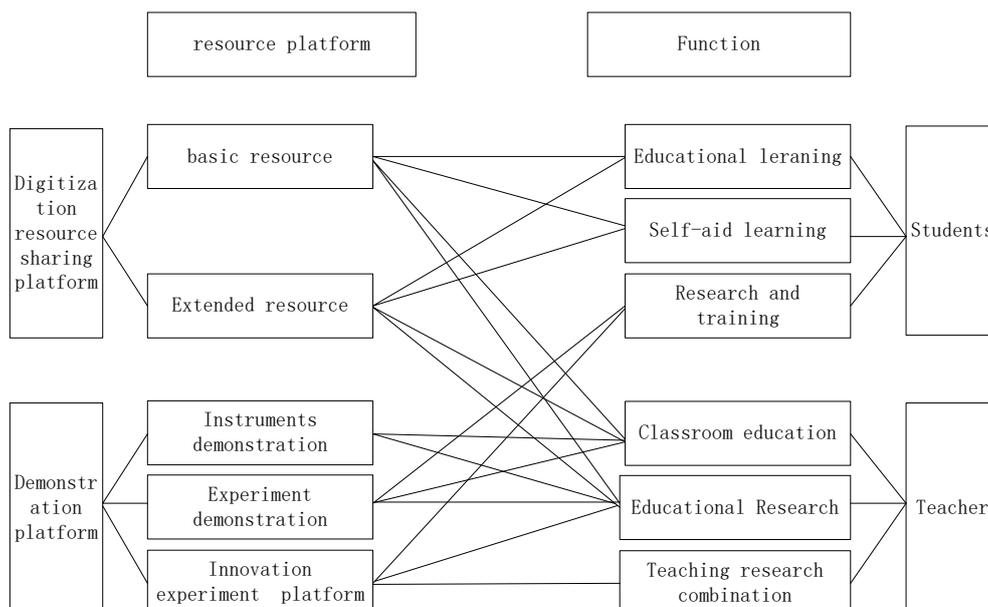
Figure 5. Function of Network Education

4.2.5 News release

The news release module is the push of the latest news events, with its main function divided into two parts: frontground and background. The frontground is for students to browse the news and express their views so that they can have a general understanding of current affairs at home and abroad. Background, which can be subdivided into news management, news addition and news type selection, is for the selection and screening of the push news content by the administrator.

4.3 Database design

The database design has great impact on the quality of the platform. High-quality database with faster speed can meet most users' demand of the operation, thus will naturally attract enough users. The database discussed in this paper includes several tables that are necessary for the platform, with focus on the most important ones, including customer information table (Customerinfo), document information table (Documentinfo), video information table (Videoinfo), and test information table (Testinfo), etc. The specifications are as follows.

4.3.1 Customer information table

The customer information table (Customerinfo) contains some personal information of the platform members, including gender, school, phone number, address and household registration type. In the specific structure of these customer information tables (Customerinfo), CustomerlD is the main function key of the table (Customerinfo), which plays a basic role in identification.

Table 1 Customer information table(CustomerInfo)

Attribute name	Fieldname	data structure	explanation
Personal No.	CustomerID	Int (11)	Autogeneration by system
Name	CustomerName	Varchar (16)	Input by the user's creator
Sex	CustomerGender	Int (11)	User Input
Home address	CustomerAddr	Varchar (100)	User Input, can modify
Tel	CustomerTele	Varchar (100)	User Input, can modify
Type	Type	Int (11)	Distinguish teacher or student (0 or 1)
Birthday	CustomerBirth	Varchar (16)	date of birth
Registration date	Register Time	Datatime	Registration date
Status	State	Int (11)	0 login; 1 start using; 2 forbidden
Department	Department	Varchar (100)	mark as department

4.3.2 Document information table

The document information table (Documentinfo) is a record of students' published documents. The DocumentID field is the primary key of table ProductInfo, and plays a basic role in identification.

4.3.3 Video information table

Video information table (Videoinform) is a record of the videos needed for the platform, which can realize one touch play when the platform plays videos. The Video key is the function key that identifies the video property.

4.3.4 Test information table

The test information table (Testinfo) is a record of the former test questions, which can be called out when it is necessary for the teacher's teaching.

4.4 Platform development

PHP+MySQL is the most frequently used technology in the ideological and political part as well as the operating system of the CentOS Linux while main hardware environment is NF8420M3IE5-4603 of the Inspur Group.

The server is running with Web technology. The essence of WEB is the B/S property architecture and content of Web is in the Web server (B end). Users (S side) can visit the Web site anytime and anywhere.

The login interface is as shown in the following figure.

Figure 6. Login Interface

The login page also contains a registration page where new users can register in the platform in a short period of time. Registration function mainly includes three main parts, namely new user registration reg.php, new user related information storage and database creation mydb.sql, and PHP registration page redirection regcheck.php. The process of redirecting the registration page is as shown in the figure. Data-related formats are flexible, which can be chosen by the administrator or the type of pages known through questionnaires that students like so as to increase the number of users. The main operation of the entire platform is the adjustment of the database. Different types of data and links will affect the operation of the network educational platform.

Table 2 Operation Table for Managing Registration Page

Operation Name	Example
Create session	$conn=mysql_connect"lll","root","00000")or die("connection fail")
Select database	Mysql_select_db("user information");
Set encoding type	Mysql_query("set names utf8");
Single table insert	$sql="insert into userinformation(name,pwd)values('{$name}', '{$pwd}') "
Execute statement	Mysql_query($exec);
Get number of rows	$row=mysql_affected_rows($getRow);

Code is as follows,

```
<body>

<form name="frm method="post" action="checkreg.php">

<table width-"49%" boder="6" align="center">

<tr>

<td width="29%" height="36" align="right">用户名: </td>

<td width="85%" height="24" ><input type="text" name="name"/></td>
```

\<tr\>

\<tr\>

\<td height="63" colspan="3" algin="center"\>\<input type="sub" name="s" value="login"/\>\</td\>

\<tr\>

\</table\>

\</form\>

\</body\>

5. PLATFORM TESTING

Software testing methods include testings for data volume, data integrity, data capabilities, UI capacity and performance, etc. In general, the more important test content is platform performance testing, which can be subdivided into load testing, strength testing, information quality testing, benchmark testing and competition testing, etc.

Table 3 Performance testing

Test name	Target value	Actual value	Reach the standard
Response time	<=3s	1.35s	Yes
Operation successful rate	>98%	99.9%	Yes
Cpu usage rate	<50%	25.6	Yes
Memory usage rate	<50%	33.4	Yes

The results of the system testing are as follows:

(1) With various functions and convenience for operation, the network educational platform for ideology and politics discussed in this paper is suitable for most teachers to operate. (2) The system can meet the requirement of the majority of people for educational platform, thus can facilitate their daily learning.

6. CONCLUSIONS

(1) Based on the concept of smart campus, the network educational platform for ideology and politics that can meet the requirements of the majority of teachers and students is designed by using PHP and MySQL language, greatly facilitating the teaching and learning of teachers and students in colleges.

(2) The designing background, process as well as the practical significance of the network educational platform for ideology and politics is analyzed in details.

(3) The focus is on the introduction of three modules, including virtual community module, resource management module and news release module, whose functions and advantages are also introduced in this paper.

(4) Some new functions of the platform has also been introduced, such as video teaching, platform chat room, autonomous learning and others, which can provide more alternatives for teachers' teaching activities with their practicality.

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