

The Design and Implementation of Moodle-based Network Teaching Platform for Aesthetic Education in Colleges and Universities

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Abstract: With the vigorous development of China's economy, social contradictions have gradually changed. After meeting the people's material needs, their spiritual needs are increasing day by day. In this critical period of ideological transformation, aesthetic education is particularly important. This paper designs a network teaching platform of aesthetic education in colleges and universities based on Moodle. The Moodle software is used to build the platform, PHP language is used for secondary development, B/S structure is used in system architecture, and MySQL database is used for data storage management. The establishment of this platform broadens the participation ways of aesthetic education, enriches the teaching resources of aesthetic education, perfects the teaching system of aesthetic education in colleges and universities, and contributes to the important task of educating people with aesthetic education and educating them with culture.

1 INTRODUCTION

In the report of the 19th National Congress of the Communist Party of China, it was mentioned that the main contradiction in our society has changed. At present, the main contradiction is the contradiction between people's growing demand for a better life and unbalanced development. People's longing for a better life reflects people's desire for beauty. So, in this important stage of mass concept transformation, colleges and universities, as the main positions of aesthetic education, should make timely changes. At present, the problems of aesthetic education are still complicated. Firstly, students' understanding of aesthetic education is still lacking in depth and height, and they only regard aesthetic education as a single art subject education. Secondly, the reform and innovation of curriculum system, teaching methods and textbook compilation in colleges and universities are still insufficient, which leads to outdated textbooks and single teaching forms, and reduces students' enthusiasm for learning aesthetic education. Finally, the teachers of aesthetic education in colleges and universities are scarce, and the teaching resources are poor. Aesthetic education is superficial in the teaching process, and it does not play a real role. In order to

ensure the effectiveness of aesthetic education in colleges and universities, we should face up to these educational problems and innovate the traditional aesthetic education mode.

For this reason, this paper combines digital technology with aesthetic education in colleges and universities, and builds a network teaching platform of aesthetic education in colleges and universities based on Moodle. Based on Moodle online teaching system, it adopts B/S basic architecture and PHP secondary development of aesthetic education design form, and uses MySQL database to store teaching data to complete the construction of network teaching platform of aesthetic education in colleges and universities. (Xu, 2020) This platform combines online teaching with offline practice, changes the traditional teaching methods of aesthetic education in colleges and universities, enriches the teaching resources of aesthetic education, solves the fundamental problem of the shortage of aesthetic education teachers in colleges and universities, and provides a new practical way for the development of aesthetic education in colleges and universities in the new era.

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2 INTRODUCTION OF KEY TECHNOLOGIES

2.1 Moodle

The Moodle is the abbreviation of modular dynamic learning-oriented environment component. It is an open-source curriculum management system, also known as learning management system. It is a dynamic learning website tool for students, which is usually installed in a web server. The Moodle platform uses PHP as the environment development language, and its core focus lies in the highly modular structure design. The interface is defined by shared library, data abstraction layer and cascading style sheet, which increases the convenience and extensibility of this platform, so as to facilitate the use of teachers and students. The interface of

Moodle platform is simple and clear, and users can adjust the content or page layout at any time according to their personal needs. In the course list, the detailed description of each course can also be displayed. Users can classify and search courses, and learn courses according to their own needs, which changes the traditional linear learning mode and facilitates students' learning. Compared with other platforms, Moodle is easier to install, can support a variety of different courses, and the overall security of the system is relatively high. The overall architecture of Moodle platform is based on the B/S three-tier structure, as shown in Figure 1, which can effectively separate the user interface, business logic control and data access, make it easy to apply and understand the platform, and greatly reduce the difficulty of subsequent upgrade and maintenance.

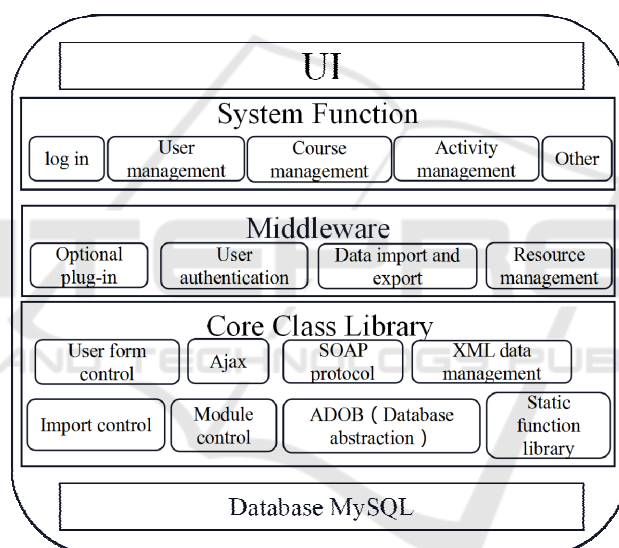


Figure 1: Moodle platform architecture diagram

2.2 PHP

The PHP is a script programming language used on the server side, which is characterized by open source, free, fast and efficient. Linux+Nginx+Mysql+PHP is its classic installation and deployment mode. The function is comprehensive, and out-of-the-box program code is concise. The PHP array supports dynamic expansion, which can greatly improve the development efficiency; As a weakly typed language, PHP has a high success rate of compiling programs, and is more efficient than other strongly typed languages. The grammar absorbs the characteristics of C language, Java and Perl, which

is conducive to learning and widely used, and is mainly applicable to the field of Web development. The unique syntax of PHP is a mixture of C, Java, Perl and PHP's own syntax. It can execute dynamic web pages more quickly than CGI or Perl. Compared with other programming languages, PHP embeds programs into HTML (an application under the standard generalized markup language) documents to execute dynamic web pages, and its execution efficiency is much higher than CGI which completely generates HTML tags. The PHP can also execute the compiled code, which can encrypt and optimize the code running and make the code run faster. With its cross-platform, high compatibility, open source and easy-to-learn habits, PHP has

become an excellent solution for the development of Web applications. During the actual development process, LAMP or LNMP mode is mostly adopted, namely Linux, Apache, Mysql and PHP or Linux, Nginx, Mysql and PHP. There is little difference

between them, both belong to synchronous development mode, and the requirements for hardware configuration are basically the same. The process of PHP application processing request is shown in Figure 2.

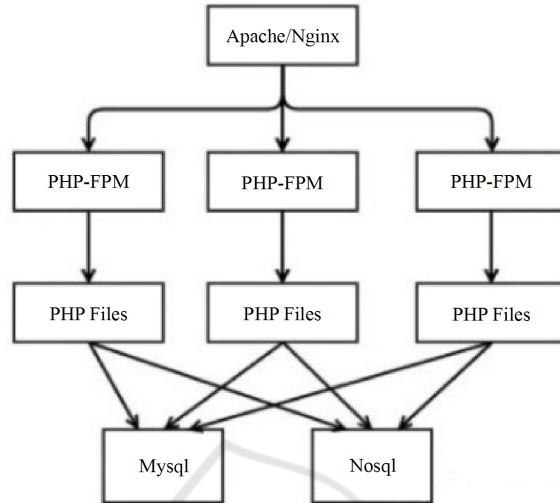


Figure 2: PHP application processing request flow

2.3 MySQL Database

The MySQL is a relational database management system, which stores data in different tables, thus increasing the running speed and flexibility of the system. With excellent database performance, MySQL can form a good development environment with PHP and IIS. And it has the characteristics of small size, high speed, low development cost and open source. MySQL is the first choice for the development of small and medium-sized websites. (Jing, 2016)

2.4 WEB Server

The Web server is a kind of Website server and a computer program, which can be used to process the user requests of web clients and make corresponding responses. It can also configure websites, which can be browsed by all people, and can also provide data files for all people to use. At present, the three most popular Web servers are Apache, Nginx and IIS. The web usually uses HTTP for information exchange, which is why it is called HTTPD server. The Web server is a passive program: only when a browser running in another computer on the Internet makes a request, the server will respond that the Web server can not only store information, but also

run scripts and programs based on the information provided by users through the web browser.

2.5 Development Process

According to the system development requirements of this platform, complete the overall deployment of the development environment of aesthetic education platform in colleges and universities. In order to improve the extensibility and practicability of the platform, this paper uses Moddle course management system to build a platform for aesthetic education in colleges and universities, uses PHP language to redevelop Moodle, selects B/S structure as the overall framework of the system, uses MySQL 8.0 database for data storage management, and the overall development of the system is based on Windows 10.0 operating system. As for the secondary development of Moodle college aesthetic education online teaching platform, we also need to rely on the integrated development tool IDE—PHPStorm of PHP to realize the detailed code realization of functional modules. (Sun, 2019)

At first, install the above required software under the Windows system. After the basic environment is installed, copy the Moodle platform installation file to the root directory of IIS server. This system adopts Moodle 3.1.1. In the configuration process of Moodle platform, we should make use of the

screening of databases, servers and other items, and first ensure the correct order of software installation. After the configuration of the functional modules of the platform is completed, the basic settings such as the configuration of the main account, the basic settings of the platform, and user management will be entered. And then, using PHPStorm 2018 version, complete the configuration of environment variables, set up with server and database, and then use it normally. Through the introduction of the above-mentioned professional technology, the general framework of the online teaching platform is planned, and the feasibility of constructing the online teaching platform of aesthetic education in colleges and universities is clarified. (Shi, 2021)

3 FUNCTION REALIZATION

3.1 Student Side

3.1.1 System Login Module

When students log in to the system for the first time, they need to fill in the corresponding information according to the user guide to complete the system registration. After logging in, students can use all the materials of aesthetic education courses under this platform. In this platform, as the main body of aesthetic education courses in colleges and universities, students' specific functional design is systematically divided into three parts: autonomous learning, practice extension and interactive communication, so that students don't have to learn according to the conventional linear mode, and the freedom of aesthetic education learning is expanded

while students' planning learning ability is cultivated.

3.1.2 Autonomous Learning Module

The purpose of this platform is to improve students' aesthetic ability and cultivate their learning planning ability. Therefore, students mainly study by themselves under this module. This module is divided into the following three parts: theoretical aesthetic education courses, appreciation aesthetic education courses and art and skill aesthetic education courses. Students can choose the corresponding modules to study according to their interesting content. The course of theoretical aesthetic education mainly focuses on the basic theoretical knowledge of aesthetic education, which covers the development history of aesthetic education and the spirit of the times. Through the study of this module, students can clarify the specific meaning of aesthetic education, and lay a foundation for further study. (Hao, 2022) The aesthetic appreciation course is mainly aimed at cultivating students' aesthetic senses and improving their ability to create beauty. The specific course consists of three parts: appreciation of drama music, appreciation of poems and beautiful texts, and appreciation of famous paintings and calligraphy. The Artistic aesthetic education courses are more inclined to students' hands-on practice, such as practical training courses such as paper-cutting, carving, playing the piano, painting, etc. These courses are uploaded to the resource database by video for students to watch. The video playing code is shown in Figure 3.

```
require_once("../././config.php");
$urlparam=$_GET['url'];
$timeparam=$_GET['time'];//total time
global $DB;
global $USER;
if($DB->record_exists('videoseek_my',
array('videourl'=>$urlparam,'userid'=>$USER->id)){
$response=$DB->get_record('videoseek_my,array('videourl'=>$urlparam,'userid'=>$USER->id);
//echo $response->videotime;
If(int)$timeparam-(int)$response->videotime> 20){
echo $response->videotime;
```

Figure 3: Video playback code (original)

3.1.3 Practice Extension Module

This module focuses on the experience feedback of

offline teaching activities. On this page, students can participate in the practice activities or competitions released by the school by themselves, and share their

feelings on the platform after the practice experience. They can also upload their own literary and painting works or musical instrument playing audio for other students to appreciate and evaluate, and gradually improve their personal aesthetic thinking in communication. This part of function is realized based on the secondary development of Moodle platform. (Zhao, 2014)

3.1.4 Appreciation and Communication Module

This function is realized based on the secondary development of Moodle platform. On this page, students can share and communicate as they please, and they can add comments by using Add Question.PHP. In the personal page, students can check the progress of the course and the works or comments published by individuals, and they can

```
//File:/mod/mymodulename/view.php
require_once(' ../config.php');
$cmid = required_param("id", PARAM_INT);
$cm=get_coursemodule_from_id('mymodulename',$cmid,0,false,MUST_EXIST);
$course=$DB->get_record('course',array("id" => $cm->course),'*', MUST_EXIST);
require_login($course, true, $cm);
$PAGE->set_url('/mod/mymodulename/view.php',array('id'=>$cm->id));
$PAGE->set_title('My modules page title');
$PAGE->set_heading('My modules page heading');
```

Figure 4: Courseware upload code (original)

also share their own learning trends in real time to support other students and teachers to check. (Huang, 2020)

3.2 Teacher Side

After the teacher successfully logs in to the system, the courseware resources are uploaded by Courseware upload.PHP, and the specific code is shown in Figure 4. As far as the functions of students are concerned, teachers focus on the guidance and organization of teaching activities. The courseware uploaded by teachers is included in the teacher center, which is convenient for subsequent secondary development. The teachers should also actively answer questions for students and improve their learning efficiency.

4 CONCLUSIONS

In the new era, the construction of aesthetic education system in colleges and universities is based on the needs of three different levels: family, school and society. At present, aesthetic education should pay more attention to the direction and effectiveness, broaden students' artistic thinking and improve their aesthetic level in a subtle way. The construction of this platform emphasizes the penetrating role of aesthetic education in educating people, attaches importance to the embodiment of aesthetic education in specific subject courses, clarifies the necessity of aesthetic education in improving students' comprehensive quality level, cultivating students' practical innovation ability and healthy and complete personality, and opens up a new path for the exploration of aesthetic education in the new era.

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