



The Design and Development of Online Learning Platform of College Mathematics Based on PHP

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Abstract. With the development of science and technology and the popularization of computer technology, mathematics has been widely used in various engineering fields, such as natural science and engineering technology. The society has put forward stricter requirements for mathematics teaching in colleges and universities. In order to ensure the training quality of high-level mathematics talents, this paper takes the computer as the development hardware, combines the Web technology with multimedia technology, and constructs a PHP-based online learning platform for college mathematics. The platform development chooses linux as the system development environment, PHP as the script language for platform development, and ThinkPHP framework is introduced to improve the system function of the teaching platform. Analytic Hierarchy Process (AHP), which combines qualitative analysis with quantitative analysis, is used to calculate the data, which guarantees the effectiveness of advanced mathematics teaching.

Keywords: college mathematics · Online learning platform · PHP scripting language · Analytic hierarchy process · Web technology

1 Introduction

With the rapid development of science and technology and the wide application of computer technology, the ideas, methods and technologies of mathematics are playing an increasingly important role in natural science, engineering technology and other fields, and have been widely penetrated into various fields of economics, management and social science, which also puts forward higher requirements for the teaching of college mathematics [1]. However, as far as the development of mathematics teaching in colleges and universities is concerned, there are still some problems. Firstly, the teaching method of mathematics in colleges and universities is single, and the traditional classroom teaching can no longer meet the knowledge needs of students. Secondly, the teaching system of mathematics in colleges and universities is not perfect. Most colleges and universities still focus on book knowledge, ignoring the importance of practical education, and the evaluation system of students' practical achievements needs to be further optimized.

In view of the above problems, this paper constructs an online learning platform of college mathematics based on PHP, and makes full use of Internet technology to build a comprehensive learning environment before, during and after class, which is more in line with students' learning habits.

2 Key Technologies

2.1 PHP Scripting Language

As a popular Web application development language, PHP combines the characteristics of C language, Java and Perl and creates its own grammar, which is more suitable for the design and development of dynamic pages. The biggest advantage of PHP scripting language is that it can quickly build dynamic web pages, and it has the characteristics of open source code, cross-platform commonality (Windows/Unix/Linux, etc.), compatible servers (Nginx Apache IIS, etc.), and a large number of cases to support secondary development, and it can be object-oriented. [2].

2.2 ThinkPHP

ThinkPHP is an object-oriented PHP development framework, transplanted from the Struts framework of Java, inherited TagLib (tag library) of Struts, and improved and perfected. Combining with the database framework ORM and conforming to the architecture concept of MVC, ThinkPHP can be used on multiple platforms and supports multiple databases. ThinkPHP is completely open-source, rich in Chinese documents and examples, compatible among multiple versions, low in CPU utilization and low in maintenance cost, and has become a popular language for medium-sized project development. [3].

2.3 Development Process

Based on the technical requirements of the above-mentioned related applications, the configuration and deployment of the development environment of online learning platform of college mathematics network based on PHP are completed. The development of the platform is based on Web technology, with linux as the system development environment, Apache server as the Web server, PHP as the script language for platform development, and ThinkPHP framework as the introduction to improve the platform. MySQL is used to store data and expand the platform content. In the installation process of PHP, there are two parts: the configuration of the development environment and the configuration of the production environment, and it needs to work together with Apache server. PHP is combined with Apache in the form of module. After MySQL is downloaded and installed, the common Db class is used to call the database adapter to connect. The whole development environment can be built by creating an empty folder thinkphp in PHP Storm, and then starting Apache and MySQL databases. Through the above key technical theories, the overall environment of platform development and the configuration of tools are determined, and the feasibility of establishing online learning platform of college mathematics based on PHP is clarified.

3 Function Realization

3.1 Online Learning Module

When the user accesses this system for the first time, it is necessary to complete the user registration according to the page instructions. [4] The system will also make intelligent recommendation according to the user's course browsing records. For example, when the user starts learning, the basic content of Calculus is taken as the main learning object, then the learning of Higher Functions is introduced, and finally the learning results are consolidated through composition and exercises. During the learning process, if you encounter problems that are difficult to solve, you can use the online communication function provided by the system to ask teachers or other students for help in time. [5] In online teaching, the responsibility of teachers and users is more inclined to upload learning resources and organize and guide practical activities. The implementation code of resource uploading is shown in Fig. 1.

3.2 Extracurricular Extension Module

The extended part mainly takes movies, documentaries or high-quality open classes related to mathematics as the specific content [6]. The content of this part shows that the knowledge of mathematics is not limited to what is learned in the classroom, and it covers a wide range of knowledge. For example, the series of courses of Advanced Mathematics, the film Good Will Hunting, and the book Ancient Mathematics of China, given by Wu Zhongxiang, can stimulate students' interest in learning and enrich their logical thinking ability [7]. The video viewing code is shown in Fig. 2.

3.3 Practice Evaluation Module

In this platform, students should attend the mathematics practice courses published by teachers in the activity center on time, such as practical research on the derivation and operation of Taylor formula, the proof method of inequality, the solution of limit, etc., and the form of activities is not limited [8]. The evaluation method of systematic mathematics practice has been improved, and the final score of student users is calculated by AHP, which combines qualitative and quantitative analysis. [9] In this part, the concrete implementation steps of AHP method will be elaborated in detail. In this part, the

```
<title>file upload</title>
</head>
<body>
  <form enctype="multipart/form-data" action="test.jsp" method "post">
    Name: <input type "text" name="username" /><br>
    File: <input type"file" name="myfile"/><br>
    <input type "submit" value"submit"/>
  </form>
</body>
</html>
```

Fig. 1. Resource upload code (originate)

```

public partial class play : System.Web.UI.Page
{
    public string url;
    protected void Page_Load(object sender, EventArgs a)
    {
        if(session["username"] == null);
        { Response.Redirect("denglu.aspx");
        if (!IsPostBack)
        {
            int add_id = Convert.ToInt32 (Request["fadd_id"]);
            Int f_num= Convert.ToInt32 (Request["f_num"]);
            film f= new film();
            f.film_updateclick(f_num);
            film_ add f_add = new film add();
            sting film_add= f_add. Film_play(add_id );
            url = "admin/ film/" + film_ add;
        }
    }
    protected void Button1_Click(object sender, EventArgs e)
    {
        Response.Redirect ("BigFilmPic .aspx?FilmID="+Session["FilmID"] .ToString());
    }
}

```

Fig. 2. Course video viewing code (originate)

Table 1. Standard matrix values (originate)

A	B1	B2	B3
B1	1	2	4
B2	1/ 2	1	2
B3	1/4	1/3	1
B4	1/4	1/4	1/3

concrete implementation steps of AHP method will be elaborated in detail. Based on the in-depth analysis of students' learning characteristics, it is concluded that the main points of students' evaluation are teachers' evaluation of first-level index A, second-level index learning attitude B1, learning achievement B2 and learning method B3, as shown in Table 1. The student's total score M = the usual score P + the final score Q + the teacher's score G . The final calculation formula of the student's total score is shown in Formula 1, where i represents the degree scores of different assessment points, and r is the evaluation confidence [10].

$$M = \sum_i [(p_r \times 40\%) + (q \times 40\%)] + (g_i \times 20\%) \quad (1)$$

4 Concluding Remarks

In order to further improve the teaching quality of college mathematics and improve students' ability to understand and apply knowledge, this paper constructs an online learning platform of college mathematics based on PHP, which provides a practical learning platform for college teachers and students around the teaching and learning of college mathematics courses, training and practice of mathematical modeling, and promotes the further transformation of college mathematics teaching mode.

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3. Name of the project: Practical Research on Teaching Quality Improvement Path of Higher Mathematics Course in Higher Vocational Colleges Based on QFD Theory, Item number: 2022ZJXH431071

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