Construction of College Martial Arts Online Education Application Platform Based on JSP Technology

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Abstract

In the Java language environment, JSP technology combined with SSM framework is used to complete the construction of online education application platform of college martial arts. With the help of the application advantages of network information technology, aiming at the difficulties faced by the current college martial arts education and teaching process, this paper innovatively introduces online teaching into daily teaching, and puts forward practical and comprehensive solutions from the aspects of teaching content, teaching form, assessment and learning atmosphere. The application of the platform can not only meet the requirements of the content and standardization of martial arts education, but also further strengthen the talent cultivation concept of martial arts education in colleges and universities, and further improve the construction of professional teaching system while practically improving the teaching effect, thus making a new attempt to promote the implementation of the information education reform process in colleges and universities.

Keywords: *Java; JSP Technology; Martial Arts; Online Education Platform*

1 INTRODUCTION

As the quintessence of the country, Chinese martial arts originated from hunting and fighting in primitive society, grew up in the contradictions and wars of class society, and was rich in contemporary inheritance and development. It is not only a valuable cultural heritage gradually accumulated and developed by the Chinese nation in the long-term life and struggle practice, but also a traditional Chinese sport with extensive social value and national cultural characteristics. In the process of historical development, martial arts constantly absorbs the essence of Chinese traditional philosophy and integrates the theories and theories of sages, forming a unique high-level culture, which is a concentrated display of the collective memory of the Chinese nation and an important part of Chinese civilization [7]. Since 2006, martial arts has been included in the national intangible cultural heritage list, and the protection and inheritance of traditional martial arts has attracted people's attention. At the same time, as one of the representatives of national traditional sports, martial arts is an important part of the development of sports in New China. Under the influence of the profound cultural background and strong national style, martial arts has the characteristics of entertainment, interest, health care, defense, antagonism and performance, and constantly attracts people of different ages and constitutions to join it, becoming an important way to promote the national fitness program.

Since the emergence of martial arts, it has been inherited and educated. Facing the significant social value and significance of martial arts, people are more and more aware of the importance of martial arts education. The establishment of the Chinese martial arts Education Steering Committee of the Ministry of Education in April, 2021 has given the historical mission of promoting the inheritance of Chinese martial arts culture in the new era, which shows that the state attaches great importance to martial arts culture [3]. However, looking at the existing related research results, as well as the nationwide professional sports colleges and universities with national traditional sports majors, as well as the investigation and research on ordinary universities, it shows that the development of martial arts in Chinese universities is obviously lagging behind, and there are obvious deficiencies in the education and teaching process. First of all, compared with other sports, martial arts is on the decline, with numerous factions, chaotic environment, and low social attention to competitive martial arts, resulting in insufficient attention from schools. Secondly, there are deviations in teaching content, which emphasize technology over

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culture, actual combat over morality, and the cultural anomie of martial arts. As a result, martial arts directly becomes a violent means, so that the ideological level of college students is prone to deviation. Thirdly, the teaching model is outdated, lacking the support of scientific evaluation system, relying solely on the experience of teachers to complete the final evaluation, ignoring the differences among individual students. Finally, the construction of teaching staff is backward and the overall quality is not high, which has a great influence on the teaching effect. In view of this, the author believes that the solution of martial arts education in colleges and universities will depend on the macro-control and policy protection of martial arts education by the state in the new period, and give full play to the application advantages of high-tech such as Internet and big data. This paper introduces the form innovation of online teaching into the practice of martial arts education in colleges and universities, and constructs the application platform of online martial arts education in colleges and universities that meets the current practical application needs. Based on Java language environment, the platform is built by JSP technology combined with SSM framework. Through teaching resources, teacher class, martial arts culture, online interaction, comprehensive evaluation and other functional modules, the situation of martial arts education in colleges and universities can be improved, so as to boost students' learning motivation and enhance the teaching effect. At the same time, it promoted the reform of martial arts education mode in colleges and universities, improved martial arts education system, and further promoted the informatization construction of higher education.

2 INTRODUCTION OF KEY TECHNOLOGIES

2.1 Java

Java is the general name of Java programming language and Java platform introduced by Sun Company in May 1995. Java is a universal, class-based and object-oriented programming language. As a typical example of the successful application of object-oriented technology, Java language has won the favor of a large number of developers, and has quickly become a popular language in the field of Internet development. Java, with its obvious application advantages of simplicity, robustness, security, cross-platform, portability and multi-threading, can give developers great help, and constantly expand its application scope, and also make its broad development prospects [5]. From the traditional Web application development, to the enterprise-level management system, to the current popular mobile terminal application development, Java language is indispensable. And big data technology, Internet of Things technology, cloud computing technology, distributed technology and micro-service architecture development are constantly applying Java language to the extreme.

As for Java platform, its essence is the running environment of all kinds of software or applications written by Java language, and it is also the integrated development platform of Java language. The Java platform is divided into three versions: Java SE, Java EE and Java ME according to the actual development and application scope. Among them, Java SE is mainly used in the development of desktop application software. Java EE is the abbreviation of Java Enterprise Edition, which is mainly applied to the server side, and can complete the development of enterprise-level service-oriented architecture and the construction of Web2.0 applications. Java ME is a miniature version of Java, which is mainly used in embedded devices or mobile devices, so that compiled Java programs can be executed on it.

2.2 JSP technology

JSP (Java Server Pages) is a dynamic web page development technology, and its core function is to realize some functions of the user interface of Java web applications. The overall function and application style of JSP technology are similar to ASP technology. It is a JSP file with the suffix (*. JSP) [9] by inserting Java Scriptlet and JSP tag into the traditional webpage HTML (a subset of standard generalized markup language) file (*.htm,*.html). As shown in Figure 1, it is the execution process of JSP. After being compiled, JSP files can be directly saved and run on the server side, which greatly speeds up the response speed of the server side to user requests, improves the running efficiency of the system, and makes the program performance more superior.

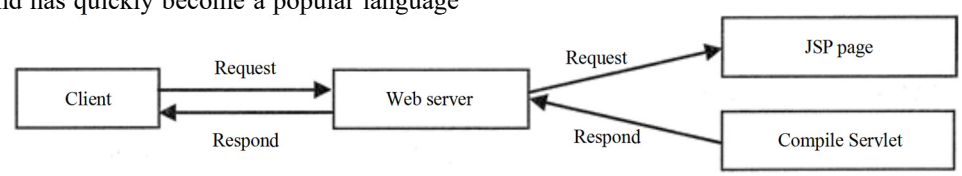

Figure 1: Execution process of JSP

The core of JSP technology lies in JSP page, which contains three elements, namely script, declaration and expression. A JSP is written in Java language, that is, a regular Java code segment. It is a tag that starts with <% and ends with% >. The declaration includes variables and methods, all with <%! Start and end with% >. The tag with the expression <% = beginning and ending with% > is shown in Figure 2. The normal operation of JSP pages requires not only script elements but also JSP instructions to handle the rest of JSP pages. The JSP engine on the

server side will compile the JSP according to the JSP instructions to generate Java files. When the generation is completed, the instructions will be automatically eliminated. The three JSP instructions include page, include and taglib, which are detailed in Table 1.

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
int a=1;
int b=2;
%>
<%!
public String dashuju(){
String str="dashuju";
return str;
}
%>
<% out.print(a+b);%>
<br/>
<% response.getWriter().print("yanmin");%>
<br/>
<% out.print(dashuju());%>
<br/>
<br/><br/><br/>
<%=a+b %>
<br/>
<%=dashuju()%>
</body>
</html>
```

Figure 2: Example codes of three JSP script elements

Table 1: JSP instructions information table

Instruction	Illustration
Page	Page instructions is used to define various attributes of JSP pages. Page is the most complicated instruction, and it has many attributes. The commonly used attributes are import, language and pageEncoding.
Include	Static include instructions are used to introduce other JSP files. Using other JSP files introduced by the include instruction, JSP engine will translate these two JSP files into a servlet, so include is called static include.
Taglib	Taglib is used to import tag libraries (JSP standard tag library, third-party tag library and custom tag library) in JSP pages.

JSP is an extension of Java Servlet. Its main purpose is to separate the presentation logic from the Servlet. Compared with other dynamic Web page development technologies, JSP technology has the characteristics of universality, reusable components, markup simplification language and separation of application and page display, which makes web-based application development quick and easy.

2.3 SSM framework

SSM(Spring+SpringMVC+MyBatis) framework set is the integration of Spring and MyBatis. SSM framework belongs to the standard MVC development framework mode, and the whole system is divided into four layers: presentation layer, Controller layer, Service layer and DAO layer. SSM architecture obeys J2EE development specification, which is a simple Web

application development framework in Java language development environment [2].

2.3.1 Sping

Spring is an open source container framework and a lightweight Java development framework that emerged in 2003. In SSM framework, Spring can realize the configuration and lifecycle management of business objects, and its core operations include the establishment, destruction and initialization of objects.

The core functions of Spring framework include control inversion (Ioc) and aspect-oriented programming (Aop). Ioc can realize centralized management of resources, reduce the dependency between users of resources, that is, objects, reduce the coupling degree, and make the system code easy to maintain. Aop function can quickly define aspect support to weaken the functional coupling of the code, so as to simplify the code development and improve the development efficiency, and can expand the new functional realization without changing the original code [4].

2.3.2 SpringMVC

Spring MVC is subordinate to the Spring framework, which provides MVC modules that can support Web applications based on the original Spring framework. Therefore, the function of SpringMVC is equivalent to the collection of Struts2 and Spring Framework, and the Model-View-Controller pattern can be efficiently implemented without integrating SpringMVC and Spring Framework, which can well separate the data, business and presentation in the system. In the running process of SpringMVC, five components (DispatcherServlet, HandlerMapping, Handler, ViewResolver, Model and View) need to cooperate with each other [1].

2.3.3 Mybatis

MyBatis is a Java-based persistence layer framework, which supports customized SQL, stored procedures and advanced mapping, and makes the underlying operation of database transparent by encapsulating JDBC. The core application of MyBatis is to decouple SQL code from program code, and it can support SQL code to be written into XML, which makes the system clearer and more flexible, and easier to manage and maintain in a unified way.

2.4 Development environment

According to the system development requirements and the use requirements of the above key technologies, we complete the configuration and deployment of the development environment. The overall development of online martial arts education application platform in colleges and universities is based on Windows10.0 operating system, with Java as the basic development environment, JDK version 1.8.0_251 and Eclipse Version 2020 as the integrated development tool. The Web server is Apache Tomcat 8.5, and the database is MySQL 5.7.

The overall design of the platform will be divided into two parts. The front-end development is based on HTML, CSS and JavaScript, with the previous framework, Jquery class library and JSP are selected to complete. Server development relies on SSM framework to complete the design. The integration of SSM framework needs to be completed in Eclipse and with the help of Maven, a project management tool. First, create a new Maven Project, determine the type of Web application, and set various parameters to complete the creation of Maven Project. Under pom.xml file, all kinds of Jar packages required by SSM framework are downloaded and introduced into Maven project by code, including Spring related packages, MyBatis related packages, MySQL related packages and so on. The key code of integrating Spring MyBatis is shown in Figure 3, and the key of integration lies in the corresponding version.

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/maven-v4_0_0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <groupId>com.huyonghua</groupId>
    <artifactId>ssm</artifactId>
    <packaging>war</packaging>
    <version>0.0.1-SNAPSHOT</version>
    <name>ssm Maven Webapp</name>
    <url>http://maven.apache.org</url>
<dependency>
            <groupId>org.mybatis</groupId>
            <artifactId>mybatis-spring</artifactId>
            <version>1.2.3</version>
        </dependency>
```

Figure 3: Spring integration of MyBatis key code

After the successful introduction of various Jar packages, the standard structure of Maven project will be further improved. There are four folders: src/main/java, src/main/resources, src/test/java and src/test/resources, which can be completed manually. After the configuration is completed, the system development environment can be built. Through the introduction of the above key technical theories, we have determined the overall environment of the system development, the configuration of related software and tools, and the technical feasibility of the overall project of online application platform of college martial arts education.

3 REQUIREMENTS ANALYSIS

3.1 System requirements analysis

The online application platform of martial arts education in colleges and universities will be guided by the idea of JavaWeb application development. In the Java language environment, it will combine the front-end development technology JSP with the server-side SSM development framework, and put forward a practical and comprehensive solution that meets the requirements of martial arts education and teaching practice in colleges and universities. The platform will follow the talent cultivation concept of "cultivating people with moral integrity and all-round development" in college martial arts education, and make changes and breakthroughs in teaching content, teaching form, assessment and learning atmosphere, and strive to promote the informatization construction of college martial arts education while realizing the reform of college martial arts teaching mode.

The platform will support users with different roles, teachers and students, to apply for account registration by submitting materials, log in and use the system with unique identification information, and complete the corresponding permission allocation and management according to the platform application requirements of different user roles. Among them, the student users have the right to use several functional modules, such as teaching resources, teacher class, martial arts culture, online interaction and comprehensive evaluation. For teachers, the design of functional modules focuses more on the management and control of courses, and its main functions include resource uploading, interactive answering, assessment and scoring, data statistics and other functions.

3.2 Global design

The application platform of online martial arts education in colleges and universities adopts B/S architecture, and is designed and completed according to the hierarchical component model of Java standard. Under the B/S architecture, the system will be divided into presentation layer, business logic layer and data layer. The presentation layer is the data source and UI part of the system, which undertakes the interaction between user operation and logic layer. Business logic layer is the core part of the system, which determines the realization of system functions and the overall running effect. While the data layer is responsible for accessing and calling the database [10]. In addition, the system server uses SSM framework to further divide the system into view layer, control layer, business layer, data access layer and persistence layer. Figure 4 shows the overall operation process of the system, with arrows pointing out the direction of control and data flow among all levels. When a user sends a request to the Controller through a page, the controller calls the processing logic of the Service layer, and the logic layer sends a request to the persistence layer (Dao). The persistence layer interacts with the database, and then returns the result to the service layer, which sends the processing logic to the controller, and the controller calls the View layer to display data [8]. Among them, JSP technology will act on the view layer, accept the control of SpringMVC under SSM framework, and realize the display of client pages.

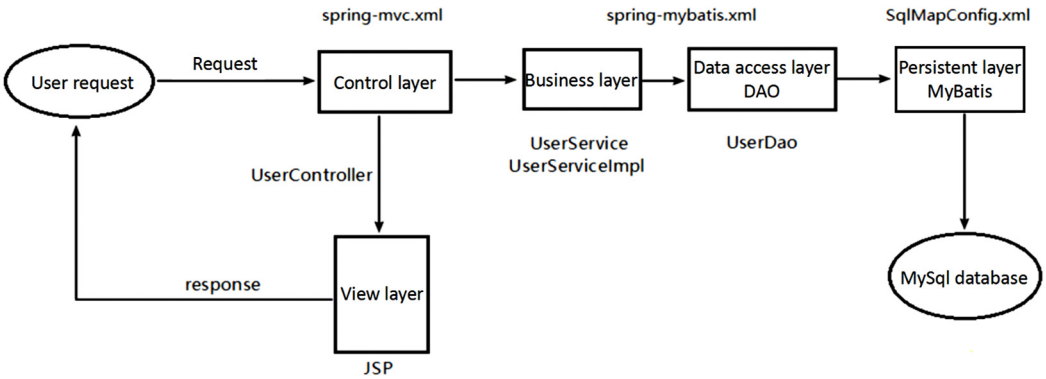

Figure 4: Overall architecture diagram of the application platform

4 DETAILED FUNCTION IMPLEMENTATION

4.1 Student client

When the student user logs in the system through the unique account number and password verification, they can see each functional module on the home page. Under the teaching resource module, students can obtain the basic contents of routine curriculum syllabus, knowledge system, study guide, PPT courseware, video micro-lesson, etc. in daily classroom teaching. This part of the content is designed and produced by teachers and published in the platform in advance, which is convenient for students to preview in advance and consolidate their subsequent study. In addition, systematically and centrally classify and store the expanding extracurricular teaching resources, so that students can use their fragmented time to acquire knowledge related to martial arts education. For example, documentaries like "Hermit master" and "Kung Fu Shaolin", movies like "fearless" and "Fist of Legend", and books like "Arm Record" and "Self-defense". The online teaching platform has effectively solved the shortage of teaching content and teaching resources in the current martial arts teaching process, and has become a necessary supplement to traditional classroom teaching. It broadens students' horizons and knowledge and improves students' learning efficiency.

Under the function module of famous teachers' class, the system will provide students with decomposed teaching videos and actual combat videos of famous teachers according to the core items of current martial arts teaching, such as long punch, Tai Chi, escrime, knife, cudgel, bare-handed duel and armed combat. For example, Chen Xiaowang-Chen's 38-style Tai Ji Chuan decomposition teaching, the third set of international martial arts competition routine swordsmanship teaching, Wudang swordsmanship practical teaching and so on. Relying on the advantages of the network platform, students can acquire more and more standard martial arts knowledge, which is helpful for students to establish a correct concept of movements, deepen their understanding of teaching materials, analyze the essentials of movements and experience the drill style of routines, and improve the teaching effect.

Under the function module of martial arts moral culture, students will constantly feel the significance of excellent Chinese martial arts culture education through online exhibitions, interviews with characters, spiritual preaching and other forms, and can also correctly recognize the relationship between martial arts culture education and their own quality education. In the critical period when the outlook on life, values and world outlook are formed, we should earnestly accept the education of martial arts culture, improve our comprehensive qualities in patriotism, ideology and morality, personality cultivation, etc., and promote our comprehensive, healthy and harmonious development of mind and body, and aspire to become a comprehensive applied talent who is committed to the prosperity and development of martial arts and traditional national sports, and has the mission and feelings of inheriting and spreading martial arts and traditional national sports culture [6].

Under the interactive Q&A module, students can communicate with each other about the problems encountered in daily training, or ask teachers for help directly. This helps to form a good learning atmosphere, and at the same time, it is convenient for students to get targeted guidance and help from teachers in time. In addition, for the evaluation of students' training results, the system can support students to upload the evaluation content on the platform in the form of video, and support the comprehensive evaluation method of students' self-evaluation, students' mutual evaluation and teachers' evaluation, which can improve students' sense of participation in teaching practice and make the evaluation method more accurate and fair.

4.2 Teacher client

Compared with the functional design of the student client, the teacher client pays more attention to the guidance, supervision and control of martial arts teaching activities. When teachers log in to the system, the main work lies in sorting out, making, uploading and

maintaining all kinds of educational resources. As for students' communication and questioning, they can also actively participate in it. With the help of the learning platform, the distance between students and teachers can be quickly narrowed, making communication and communication more convenient and efficient. As for the evaluation of students' training results, teachers can synthesize the results of students' self-evaluation and students' mutual evaluation, and give objective and fair evaluation according to their own experience and students' daily training. Teachers can also use the platform's data statistics and analysis tools to make a fine grasp of students' achievements and levels, so as to respect the differences and uniqueness of students' development, which is conducive to the follow-up teaching work and the improvement of teaching effect.

5 CONCLUSIONS

The construction of online martial arts education application platform in colleges and universities can aim at various problems existing in the current practice of martial arts teaching in colleges and universities, and fully realize the reform of teaching mode with the help of the application advantages of network information technology. The platform can accurately meet the actual needs of current students and teachers, and can form a joint force with classroom teaching. It can effectively improve the teaching effect and pay more attention to the individualized and differentiated cultivation of talents, improve the martial arts education system, and make a useful attempt to promote the informatization construction of higher education.

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