Online Assistant Teaching System of Brand Culture Creative Product Design Course Based on J2EE

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Abstract: In order to improve the adaptability of creative product design courses in colleges and universities to creative industries, and promote the integration of creative product design courses in colleges and universities from traditional classroom to "online+offline" mixed teaching mode, the author developed an online assistant teaching system for creative product design courses of brand culture. The system adopts JAVA language for programming, introduces SSH framework to complete the whole process construction, and selects SQL server database for data storage and management, thus completing a set of teaching assistant system with simple interface and powerful functions. This system can improve the teaching effect of creative product design course of brand culture in colleges and universities, and cultivate compound talents who can be competent for the whole industrial chain of creative products for creative industries.

1 INTRODUCTION

With the continuous improvement of our national living standards, the cultural and creative industries have developed in various fields and industries, and are showing a trend of continuous high-speed development. The development of industry is inseparable from talents. How to cultivate cultural and creative professionals with excellent professional knowledge and practical ability is an important research topic in colleges and universities. At present, the traditional teaching goal of cultural and creative product design in colleges and universities is to cultivate "craftsmen". Therefore, both teaching content and teaching activities are mainly aimed at students' manual skills. However, with the structural adjustment of cultural and creative industries, the job requirements have also changed greatly, from the original emphasis on manual skills to the talent cultivation in the whole process of "design, production and operation". But the traditional classroom teaching mode has obviously failed to meet the teaching needs. In order to promote the teaching of cultural creativity to adapt to the new format, new technology and new mode, colleges and universities urgently need to promote the teaching reform of cultural and creative product design, which will make a beneficial supplement to the traditional classroom teaching, maximize the role of cultural and creative product design teaching in colleges and universities, import more and higher-level talents for the development of China's cultural and creative industries, and promote the sustained, healthy and steady development of cultural and creative industries.

To sum up, the author thinks that an online assistant teaching system should be developed to solve the above problems in brand culture creative product design teaching. This system uses Java language for programming, SSH framework for process building, data storage and management, and SQL server database. It has completed a set of online auxiliary teaching system of brand culture creative product design course with simple operation, powerful functions and abundant resources.

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2 KEY TECHNOLOGIES

2.1 Java

The Java language is an object-oriented interpretive programming language. Because of its powerful functions, stable performance, cross-platform, dynamic loading and high security, it has become one of the most widely used languages. The biggest function of Java is to make web pages lively. It is simplified from C language, which not only inherits many advantages of C language, but also circumvents many complicated functions. And Java has a wide range of APPlications, including Android mobile app, large websites, PC software and so on. In JAVA, JDK is the development kit of Java and the core of the whole Java, including JRE, jar and so on. (Ning, 2021)

2.2 J2ee

The J2EE is an enterprise application development specification. In the client layer, the application supports C/S or B/S architectures to meet the various development needs of users. In the Web layer, the components supported by J2EE are JSP pages or Servlet programs. Both JSP and Servlet can get the requests from users in time and forward the requests to the Enterprise Bean on the business layer for processing. In the business layer, Session Beans realizes the temporary session between the business layer and the customer layer. The data of Session Beans will not be saved, but Entity Beans will save the data. The Essage-Driven Beans combines the characteristics of Session Beans and JMS message listeners, and allows business layer components to receive JMS messages asynchronously. (Lin, 2020)

2.3 SSH Framework

The SSH framework is an integrated framework composed of Struts, Spring and Hibernate, and finally realizes MVC layered architecture. The relationship between SSH framework and MVC architecture is shown in Figure 1. Among them, Struts is responsible for the separation of MVC, JavaServlet and JSP technology are used to control the process of request processing, Hibernate is responsible for the handover with the database, and JDBC is encapsulated to access the database from the perspective of objects. The core of managing Spring Struts and Hibernate is Control Reversal (IoC) and Aspect Oriented (AOP). The control inversion of Spring can play the role of decoupling,

so that Struts and Hibernate can be better combined and work harmoniously. (Fan, 2016)
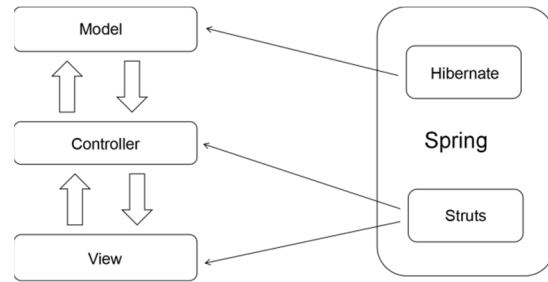

Figure 1: The relationship between SSH framework and MVC framework (Original)

2.4 Sql Server

The SQL Server is a kind of relational database management system, which is widely used. Its advantages mainly lie in its scalability (applicable to various platforms, providing rich interfaces), integration (providing the function of data warehouse, and being closely related to many server softwares), ease of use (graphical interface, more intuitive and concise), and high efficiency (reducing the time and cost for users to manage data). With this database, users can easily publish the required information and data on the Web, and users can view the data stored in SQL Server through common browsers.

2.5 Development Process

According to the system development requirements and the use requirements of the above key technologies, complete the configuration and deployment of the development environment. The overall development of the system is based on Windows10.0 operating system, with Java as the basic development language, JDK version 1.8.0_91 as the development kit, Tomcat 8.0 as the Web server, Eclipse as the Java integrated development tool and SQLserver as the database. Through downloading, installing and configuring the above software systems one by one, the development environment of the system is built. In Eclipse system, build a new Maven project. The overall deployment of SSH framework needs Struts, Spring and Hibernate to be completed respectively. Struts framework construction: introduce Struts-2.3.30-apps resource package, create an action class, and correspondingly create dao class and service class in the middle. Hibernate framework construction: you need to install the Hibernate Tools plug-in, introduce

the The Hibernate-release-5.2.2. Final resource package, and connect to the SQLserver database. The construction of Spring Framework: Introduce the Spring-framework-4.2.2.RELEASE resource package and configure the web.xml file. Then, the three frameworks are integrated, and the Action class of Struts is handed over to Spring for management. Spring manages and deploys hibernate's Session, and carries out the overall design and implementation of system functions. The specific function module settings are shown in Figure 2. When the simulation test is correct, all system files will be packaged and released, and deployed in Tomcat 8.0 server. After the IP address is set, it can be used by all platform users.

With the introduction of the above key technologies and theories, the overall framework process of platform development is determined, and the feasibility of establishing and running the online assistant teaching system of brand culture creative product design course is clarified.
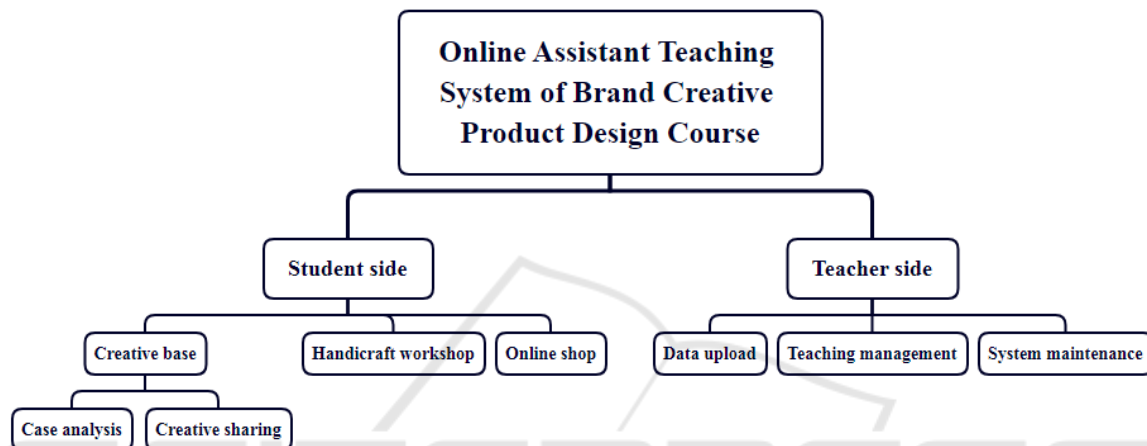

Figure 2: System Function Module Settings (Original)

3 FUNCTION REALIZATION

3.1 Student Side

The students click to enter the online assistant teaching system of brand culture creative product design course, and click to enter the "student entrance" to register and log in. After logging in, they will see the following three sections: Creative Base, handicraft workshop and Online Store. The specific functions are as follows:

The main purpose of "creative base" is to stimulate students' creative divergence, corresponding to the "design" link of cultural and creative products. There are two modules under it. Among them, in the "Case Analysis" module, there are both classic case analysis teaching videos uploaded by teachers from other famous schools, such as a series of courses such as "Museum Cultural Creation Design-How the 600-year-old Forbidden City Won 100 Million Fans of the 90s Generation", as well as the front-line teachers' own explanation videos and live lectures. Students can make an appointment for live lectures and receive countdown notices, and they can send barrage for real-time communication and interaction during the class. The "Creative Sharing" module is similar to an open forum. The left half of the page is a list of messages posted by students. Students can speak freely, share ideas they have learned or thought of, and post information such as words, pictures, videos, links, etc. Other users can like, comment, collect, etc. The implementation code of this module is shown in Figure 3. (Guo, 2015) The right part of the page is the hot list of network IP. There are IP of brand cultural and creative products uploaded by teachers, and students can click to view them for inspiration. According to the number of hits, the system ranks these IP in popularity and makes it more popular every hour.

```
//Modify or add
@RequestMapping("updateoradd.do")
public String updateoradd(HttpServletRequest request,Bankuai bankuai) {
    User user=(User)request.getSession().getAttribute(PublicStatic.USER);
    bankuai.setCreateUserid(user.getId());
    String img = bankuai.getImg();
    if(img!=null&&img.length()==0){
        bankuai.setImg("bankuai.jpg");
    }
    if(bankuai.getId()!=null){
        bankuaiService.update(bankuai);
    }else{
        bankuaiService.insert(bankuai);
    }
    new IndexThread().start();
    return "redirect:index.do ";
}
```

Figure 3: "Creative Sharing" module implementation code (Original)

The "handicraft workshop" section corresponds to the "production" of cultural and creative products. As a useful supplement to offline courses, it will provide students with a simulation of the manufacturing process of cultural and creative products. By clicking on the "handicraft workshop", students will see the game entrance of simulation manufacturing of various cultural and creative products classified by materials, including paper, cloth/rope, ceramic/glass, plastic, metal, wood, etc. After clicking on the material type of cultural and creative products, they will enter the corresponding workbench. Students can draw pictures online or select existing shapes for modeling design, splice the parts, select various tools to modify the details, and then color them, which can be toned on the palette. The painted part can be superimposed or erased, and the system will give the design effect in real time, including lighting and shading. Finally, it can output the renderings, either graphic design drawings or 3D renderings. Finally, it can be added to "My Shop" with one click. (Fu, 2022)

The "online store" section corresponds to the "operation" link of Wenchuang products. By clicking into the Wenchuang product simulation operation game, students can view the products uploaded by other students, visit other students' shops, or "open shop online" and decorate their own shops. In their own "shop", students can add the ID of Wenchuang products made in "handicraft workshop" or photos or videos of real products made offline, and put them in the "display cabinet". The JavaScript is used here to realize the movement of cultural and creative products, and the code is shown in Figure 4. (Ke, 2020) The Announcements can be issued. In the content classification of

announcements, the "Notice of Shop Activities" can be issued to hold exhibitions, special offers for a limited time and other activities. The "Shop Booth Solicitation" can publish the notice of collecting goods and exhibits, and other students can settle in the shop and display their works. The students can also customize the announcement type and create their own operation mode. All announcements will be broadcast in the banner position on the front page of "Online Store". (Xie, 2019)

```
<script type="text/javascript">
    window.onload = function() {
        var box = document.getElementById("box");
        var speed = 10; //Define the moving speed
        if (event.ctrlKey) {
            speed = 50; //Press Ctrl to speed up
        }
        document.onkeydown = function(event) {
            event = event || window.event;
            switch (event.keyCode) {
                case 38: //UP
                    box.style.top = box.offsetTop - speed + "px"
                    break;
                case 40://Down
                    box.style.top = box.offsetTop + speed + "px"
                    break;
                case 37: //left
                    box.style.left = box.offsetLeft - speed + "px"
                    break;
                case 39: //right
                    box.style.left = box.offsetLeft + speed + "px"
                    break;
            }
        }
    }
</script>
```

Figure 4: Product Mobile Implementation Code (Original)

3.2 Teacher Side

The teachers click to enter the online assistant teaching system of brand culture creative product design course, and click to enter the "Teacher's Entrance" to register and log in. After logging in, you will see the following three sections, namely, data uploading, teaching management and system maintenance. The specific functions are as follows:

In the "data upload", teachers can upload course videos, courseware PPT and other teaching materials, and manage the materials, including checking the number of students, publishing new class announcements, editing course information, adding exercises after class, adding/deleting courses, etc.

In the "Teaching Management", teachers can manage student accounts, including identity verification, account addition/deletion, etc., and manage information in the "Creative Sharing" forum, including viewing details, setting top, liking, commenting, deleting, etc. The teachers can manage the works uploaded by students in a project-based way, including the management of students' "shops", and give opinions and suggestions on the design of works and the operation of shops. (Hong, 2019)

In the "system maintenance", teachers can monitor the operation of the whole system, modify and adjust the problematic links, and upgrade and refine the functions.

4 CONCLUSIONS

The online assistant teaching system of brand culture and creative product design course under J2EE standard provides rich learning resources and platforms for teachers and students in brand culture and creative product design courses in colleges and universities, can improve the adaptation degree between cultural and creative product design courses in colleges and universities and cultural and creative industries, and provides new ideas for colleges and universities to cultivate talents that are more in line with industrial requirements, and is expected to continuously supply professionals for cultural and creative industries. In the future exploration and research, we will continue to deepen the reform of teaching mode of creative product design course of brand culture in colleges and universities, so that online teaching of creative design can exert greater influence and promote the higher and faster development of China's creative industry.

ACKNOWLEDGEMENTS

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