# The Design and Application of Information System of Undergraduate Vocational Education Talent Training Mode in Java Language Environment

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**Abstract.** In order to solve the problems of single training mode of undergraduate vocational education, such as the separation between production and education, this paper takes the training mode of vocational education as the research object, and develops a set of information system of undergraduate vocational education training mode with the help of network information technology, database management technology and computer application technology. The system adopts B/S architecture, follows MVC design idea, uses Java language to write server and introduces SSH framework to complete the overall design of Web Server, and uses MySQL to realize data support. In order to build an "online+offline" talent training mode, modern information technology is used to promote the reform of talent training mode, and cultivate talents with solid knowledge and excellent skills who meet the needs of society.

**Keywords:** Java; SSH; Education; Talent training; Computer application

## 1 Introduction

The development of society is inseparable from the support of talents, and colleges and universities are an important scene of talent cultivation. "What kind of talents to cultivate, how to cultivate talents and who will cultivate talents" is an eternal topic in colleges and universities. Compared with the general education, the talent training mode of vocational education is more market-oriented and post-oriented, and it is an important outlet for professionals. [1] However, at present, there are still many problems in the training mode of vocational education talents in China, such as: Firstly, the training mode is too single, the teaching has fallen into the misunderstanding of simple teaching, and there is a lack of social practice; Secondly, the emphasis on learning is placed on neglecting research, the innovative research of students is ignored, and the academic atmosphere construction is backward; Finally, the students' evaluation dimension is thin, resulting in the phenomenon of "high scores but low energy". [2]

Therefore. Based on many years' front-line work experience, the author has researched and designed a set of information system of vocational education talents training mode at undergraduate level, which deeply integrates basic knowledge and practical activities, integrates online and offline high-quality education resources, and improves the vocational education talents training mode from innovation of teaching ideas, design of teaching process

to acceptance of teaching results in an all-round way, making contributions to training applied talents with solid professional knowledge and excellent professional skills.

## 2 Key technologies

### 2.1 Java

As a programming language, Java has learned many advantages of C++ language, and removed the concepts of pointer, multi-inheritance, etc., which are difficult to understand and useless in C++. The biggest feature of Java is object-oriented (OOP), which supports classes, objects, inheritance, encapsulation, polymorphism, interfaces, packages and so on. [3]

### 2.2 SSH

The SSH is not a framework, but a combination of several frameworks (Struts, Spring, Hibernate) to develop multi-tier Web applications. The SSH framework integration realizes the separation of view, controller and model, reduces the coupling degree, improves the flexibility and reusability, and makes the development of large-scale applications simpler, faster and more efficient. [4] The SSH framework structure and integration relationship are shown in Figure 1.
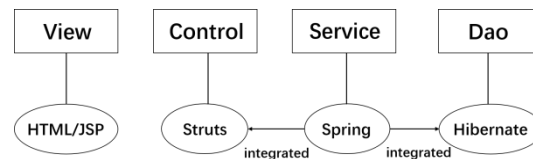


**Fig. 1.** SSH framework structure and integration diagram

### 2.3 Development process

According to the introduction of the above-mentioned related technical contents, the configuration and deployment of the development process of the information system of undergraduate vocational education talent training mode are completed. The bottom development tool of this platform is eclipse, and the operating system is based on Windows 10.0. The version of Java Development Kit (JDK) is selected as 1.8.0_91, and Tomcat8.0 is selected as the web server to improve the operation ability of the server. Choose MySQL5.8 as the data storage tool. Create a new project, import the downloaded jar package, create and configure db.properties file, hibernate.cfg.xml and applicationContext.xml in turn, and configure sessionfactory and spring to declare transactions in applicationcontext.xml., In web.xml, configure the spring monitoring and struts core filter, create the package structure com.jsx.pojo, com.jsx.dao, com.jsx.service, com.jsx.action, and create the User entity and the corresponding User.hbm.xml mapping file in the pojo layer. In the dao layer, UserDao interface and its corresponding interface implementation class UserDaoImpl are created, the implementation class adds set injection about session factory, in the service layer, UserService interface and its corresponding interface implementation class UserServiceImpl implementation class add set injection about UserDao, In the action layer, create UserAction, configure UserAction in struts.xml, create applicationContext-bean.xml and configure beans,

and write jsp file index.jsp. After all deployments are completed, conduct simulation tests. [5] After the test is correct, all system files will be packaged and released, and deployed in Tomcat8.0 server. After the IP address is set, it can be used by all platform users.

Through 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 information system of undergraduate vocational education talent training mode is clarified.

## 3 Function realization

### 3.1 Teacher side

**Student management.** The "student management" is divided into two sections: "student files" and "student evaluation". The table 1 shows the structure of the student information database of this system. [6] Through the establishment of student management information system, we can have a better grasp of students' situation, better urge students to study and practice, and give graduation guidance to students.

**Table 1.** Student information database structure table (part)

| Number | Data item name | field name |
|--------|----------------|------------|
| 1 | Student Name | Xsxm |
| 2 | Name of institution | Yxmc |
| 3 | Major | Zy |
| 4 | Qualification | Xl |
| 5 | Origin | Syd |

In the "student evaluation", teachers can evaluate the students in their own class, and teachers can freely set evaluation scales and weights, so as to form a comprehensive evaluation of students, and avoid the theory of achievement only. [7] For example, the evaluation scale set by a teacher in our school is six items: daily work, final grade, campus activities, social practice, cooperative spirit and personal ability. Figure 2 shows the evaluation results of a classmate Li in this teacher's class.
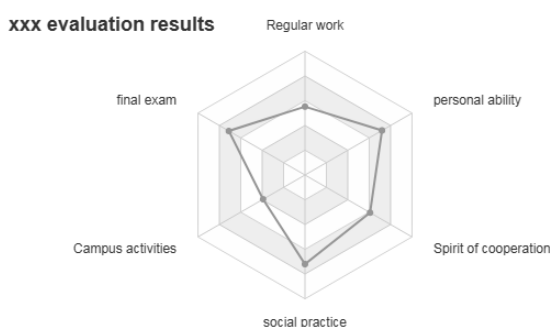


**Fig. 2.** Evaluation result of a classmate

**Teaching management.** In the teaching management, there are two sections: resource management and cooperation and mutual assistance. In the "resource management", teachers

can upload, edit, modify and delete their selected online course resources, or upload their own courseware, micro-course videos, and other resources, including electronic textbooks, books, newspapers, application software, website navigation, etc. In the "cooperation and mutual assistance", teachers can complete online seminars, ranging from the design of teaching activities in a certain class to the arrangement of discipline structure in the whole institution, and can conduct online seminars through this system. The teachers can share the teaching resources, pool ideas and work together to complete the teaching courseware. [8]

**Project management.** In the "project management", teachers can publish school-enterprise cooperation projects, which can be collection of works, order acceptance, job placement, registration, training and practice, etc. The teacher can edit the details of the project, review the registration qualifications submitted by the students, and approve the students who meet the requirements. [9] In the process of the project, students will be instructed to answer questions, and their performance will be evaluated and recorded.

### 3.2 Student side

**Course center.** In the "course center", students can see all online courses uploaded by teachers and their learning progress, and they can set up their own favorites, and watch them online or offline after downloading them.

**Resource Center.** The "Resource Center" has other electronic textbooks and related books, periodicals, newspapers, audio, video, courseware PPT, application software and other forms of learning resources available for download. At the same time, students can upload their own designs, works, papers, articles, etc., and jointly create a resource think tank to promote the exchange and development of teaching and scientific research in higher vocational colleges.

**Training base.** The "training base" has information on campus competitions, training activities, social practices, enterprise internships and other activities, such as participation requirements, time, place, reward, registration contact information, etc. Students can choose to join the practice activities. After the practice is completed, students can submit competition awards, practice reports, practice certificates, etc. to improve their comprehensive scores. The students' comprehensive evaluation system adopts the fuzzy comprehensive evaluation model. [10] The students' comprehensive evaluation system adopts the fuzzy comprehensive evaluation model, as shown in Matrix 1.

Set u = { $u_1, u_2, u_3, u_4, u_5$ }

$U_1$ = grade of homework performance at ordinary times, $U_2$ = average grade at the end of the term, $U_3$ = grade of practical activities, $U_4$ = grade of class contribution, $U_5$ = grade of moral quality.

Weight vector A=[0.1, 0.4, 0.3, 0.1, 0.1]

Determine the comment set (score) V={E, G, A, C, P} excellent, good, medium, common, poor.

Then calculate the fuzzy evaluation matrix to get:

$$R = [r_1, r_2, r_3, r_4, r_5] = \begin{bmatrix} 0.3 & 0.2 & 0.15 & 0.15 & 0.15 \\ 0.1 & 0.3 & 0.25 & 0.25 & 0.1 \\ 0.25 & 0.15 & 0.15 & 0.15 & 0.3 \\ 0.1 & 0.1 & 0.2 & 0.3 & 0.3 \\ 0.3 & 0.1 & 0.25 & 0.15 & 0.2 \end{bmatrix} \quad (1)$$

Finally, the weighted average fuzzy synthesis is used to get the comprehensive evaluation: S=77.3413.

## 4 Conclusion

The information system of talent training mode of undergraduate vocational education can play a very good supporting role in the education and teaching work of higher vocational colleges. It will collect all excellent educational ideas, instructional design and teaching resources, make the talent training mode both streamlined and flexible, and provide students with more opportunities for offline practice. To enable college students to master professional knowledge and improve their practical ability, so as to better connect with practical enterprises. In the future exploration and research, we will continue to deepen the research and reform of the information system of undergraduate vocational education talent training mode, so that the "online+offline" talent training mode will give a greater impetus to the development of vocational education and export more applied talents to all walks of life in China.

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