Research and Exploration on the Bilingual Course Construction of Java Web Application Development Based on AI

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Abstract: The bilingual course "Java Web Application Development" is the core course of computer application technology major and is a vocational ability course that combines theory and practice. By studying this course, students can understand the overall approach to JSP development and be able to independently complete JSP website development work. The project teaching mode aims to cultivate quasi professionals with comprehensive professional abilities, gradually meeting the needs of OBE talent cultivation mode. This article analyzes the main problems in the teaching of Java Web Development, actively explores the ideas for curriculum teaching reform, and proposes a blended teaching mode of "online offline experimental" that conforms to the characteristics of the profession.

Keywords: Bilingual Course Construction, Java Web, Application Development, AI

1. INTRODUCTION

The course "Java Web Application Development" is a core course in the professional learning field of computer application technology, which combines theory and practice as a vocational ability course. By studying this course, students can have a comprehensive and clear understanding of the development of JSP websites, understand the overall approach of JSP development, and independently develop JSP websites to meet the real needs of enterprise positions. The project-driven teaching model is a student-centered and project-based teaching model that simulates the development process of enterprise products in school laboratories. It is a teaching model that incorporates the characteristics of exploratory teaching, task driven teaching, and case teaching. For students, "project driven" is a learning method that is suitable for learning various practical and operational knowledge and skills, which is conducive to students' clear learning goals.

For teachers, "project driven" is a teaching method based on constructivist theory, suitable for cultivating students' ability to learn independently, analyze problems, and solve problems. The occurrence of this phenomenon indicates that the relevant teaching has fallen into a predicament, and our teachers have an important responsibility for this, especially those who are teaching on the front line of the course. Therefore, curriculum teachers urgently need to carry out teaching reform, explore new teaching methods and means, and improve teaching effectiveness.

In this regard, relevant teaching workers have carried out certain teaching reform explorations. With the development of social economy and the increasing demand for production, new and old technologies in the engineering field are frequently updated and iterated, and traditional outdated technologies should gradually be replaced by advanced scientific technologies. However, the update of textbooks on the "Java Web framework" in higher education institutions in China is slow. For example, currently spring 5 is already used in the industry, but there is a shortage of textbooks on Spring 5 on the market, let alone selecting suitable and excellent textbooks to carry out teaching activities. To reflect the practicality, timeliness, and universality of teaching content, in the context of the "double first class" construction, it is necessary to restructure teaching content in a timely manner, delete outdated technologies, add cutting-edge technologies, and make it a regular link for sustainable updating and improvement in curriculum construction.

Compared with traditional teaching methods, project-based teaching mode mainly manifests in changing the traditional three centers: from teacher centered to student centered; Transforming from a textbook centric approach to a project centric approach; Shift from classroom centered to practical experience centered. Using project-based teaching, teachers carry out teaching activities based on the characteristics of students. Under the guidance of teachers, students actively learn and acquire new knowledge and skills by utilizing existing knowledge and skills, which stimulates their interest in learning and fully mobilizes their internal motivation. Project driven, practice while speaking, teach by doing, and learn by doing. Teachers organize teaching content and project implementation according to project processes and system functional modules; The teacher conducts on-site development and leads students to complete the functional implementation of demonstration modules. Students independently complete other functional modules through mutual discussions, online reference materials, and discussions with teachers, ultimately completing the project.

2. THE PROPOSED METHODOLOGY

2.1 Analysis of the Problems in Bilingual Teaching of Java Web Application Development

Teaching is' one size fits all 'without considering students' knowledge foundation and ability differences. Although the concept of hierarchical teaching is widely known, few teachers have put it into practice. The reason for this is that on the one hand, teachers have limited time and energy, and on the other hand, they do not have enough determination. The "one size fits all" approach to teaching results in students with weak foundations being unable to keep up with their learning pace and giving up early, while students with strong abilities

are not able to fully improve their skills. With the popularization of computers and the development of technology, teaching methods are becoming increasingly diverse. However, at present, the teaching methods of university teachers still use PPT explanations as the main method, supplemented by blackboard writing, experiments, etc. The teaching method of this course is also the same: each course includes two class hours, one for PPT explanation and the other for experimental operations.

However, each course has a tight schedule and a large amount of information, making it difficult for some students to digest the content of PPT explanations in a timely manner, which seriously hinders the progress of the experiment, let alone the development of students' personalities. To improve the compatibility between teaching effectiveness and market demand, it is necessary to adopt diversified and more reasonable teaching methods in the context of the "double first class" construction, so that every student can benefit from it.

Focusing closely on the achievement of professional competence goals, we will organize experienced frontline teachers and professionals with rich experience in enterprise web project development to discuss together, shifting from "based on logical clues of knowledge" to "based on workflow of professional activities". We will deconstruct the course content to meet the specific work tasks in the web application development process and their knowledge and skills needs, with a focus on completing a complete news release system project based on cultivating students' professional abilities and integrating PPT explanations into project implementation, students can complete corresponding modules on their own according to the teacher's explanations and project implementation process.

Other functional modules (such as adding, querying, deleting, etc.) are independently completed by students. Students can consult materials, discuss with other classmates, or seek teacher advice. Students' initiative, enthusiasm, and creativity in learning are fully utilized, and they are systematically trained in engineering. Their comprehensive application, practical hands-on ability, and engineering thinking ability are improved. Implement iterative teaching to promote the progressive improvement of students' knowledge and skills during the iterative process. A prominent feature of JavaWeb is that the same project can be implemented through various technical means, such as using basic JSP + JavaBean + Servlet, and various framework technologies.

Therefore, for the same project, utilizing the core knowledge modules that gradually progress along the course main line, the project is iteratively completed, achieving a spiral increase in students' knowledge and abilities. In the process of repeated iterations, the gradual increase in the difficulty of knowledge modules is in line with students' learning characteristics. At the same time, the comparison between the previous and subsequent iterations effectively increases students' understanding and absorption of knowledge, promoting the steady improvement of students' knowledge and skills.

In the context of the "Double First Class" construction, as a teacher of this course, first of all, we need to change our teaching concepts, stimulate students' interests, and encourage them to participate more actively in teaching; We also need to move from the campus to the software industry, increase engineering practical experience, improve professional abilities, and ensure that teaching content matches market demand through job placement and social service. Secondly, in situations where the overall teaching staff is not sufficient,

the MOOC platform can be used to introduce excellent courses taught by teachers with high professional titles or senior engineers. While enhancing the professional abilities of teachers, students can establish personalized knowledge systems based on their personal interests and needs to improve their learning quality. Finally, enterprise engineers are introduced through the school enterprise cooperation platform to make up for the shortage of engineering experience of teachers in schools. It is more suitable to adopt group collaborative learning in project teaching. Before grouping, establish norms for grouping principles, the allocation of team members, the division of work, and the number of members.

2.2 The Bilingual Course Construction of Java Web Application Development Based on AI

The basis for grouping is students' academic performance, knowledge structure, learning ability, personality traits, gender matching, etc. In the course design phase, the implementation technology of the course project will be upgraded from MVC3 layer architecture technology to framework technology. Firstly, by still practicing while speaking, the teacher led the students to redesign the project login module from MVC3 layer architecture technology to Struts framework technology implementation. The students redesigned the project based on the teacher's explanation and applied Struts technology to the entire project.

Secondly, in terms of project topic selection, the original student project module may be expanded by adding course management and score management modules to the original functions. Or develop new projects such as book management systems, flower sales websites, high-speed train booking systems, etc. Students can independently complete the design and development of the system according to the software development lifecycle. Implement adaptive hierarchical teaching and teach students according to their aptitude. In the teaching process, it is necessary to consider the differences in students' knowledge and abilities to ensure that excellent students learn more, while also ensuring that students with weak foundations have a sense of gain, that is, to make all students feel a sense of gain.

To this end, adaptive hierarchical teaching is implemented, which sets a broad range of teaching objectives, where all students start learning from the same starting point and ultimately reach different goals within the target range. For different students, there may be differences in learning content and progress within the same time and space, reflecting the concept of individualized teaching. To ensure that students can fully understand and master the knowledge to be used before the experimental operation, the teaching videos in this platform are divided into two categories: one is used for students' autonomous learning before class, and this type of video mainly explains basic theoretical knowledge. The characteristics of these knowledge are easy to understand but need to be memorized.

One type of video is used for students to consolidate and deepen their understanding of knowledge after class. This type of video mainly explains difficult points and experimental operations, and it is easy to be left behind if not operated for a long time. Firstly, let students understand the main functions of the project software, understand the main task modules that the project needs to complete, and guide them into the "learning context". Secondly, students apply the knowledge they have learned to gradually complete tasks at

each stage. Third, imitate the source code of the project, discuss, and learn in groups. Each group, under the leadership of the team leader, studies and determines the implementation method of the project, and jointly complete the system analysis, structural design, code writing, program debugging and other work of the project. Fourthly, gradually integrate the tasks completed by each group at each learning stage into a complete news management system. Fifth, the teacher summarizes the solutions to various problems encountered in the process of student development, and Reinforcement learning effect.

3. CONCLUSION

This article proposes four countermeasures and suggestions for the problems in the teaching of the bilingual course "Java Web Application Development", namely reforming teaching design, implementing "dual project" leading teaching, iterative teaching, and adaptive layered teaching. The implementation of these teaching reforms is closely linked, not isolated. The application of project teaching mode in the teaching of the course "Java Web Application Development" can effectively achieve the teaching objectives, improve teaching efficiency, achieve the integration of theoretical knowledge transmission and practical skill cultivation, greatly improve students' professional abilities, and independently complete the work of JSP website development.

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