Results-oriented "Java Web Application Development" course teaching reform

Xinli Yang,Yupeng Pu
Lanzhou Technology and Business College, Lanzhou 730000, China

Abstract: According to the characteristics of "Java Web Application Development" course and the problems encountered in daily teaching, this paper adopts the OBE teaching concept, "student-centered, output-oriented", combined with the principle of "application as the main line, skill as the core", reasonably plans the course teaching content, designs the teaching activities, and further promotes the students' ability output. It has certain practical significance to realize the goal of training compound skill talents.

Key words: Java Web Application Development; Teaching reform; OBE

Introduction

"Java Web Application Development" course is a professional course for computer-related majors. The basic goal of this course is to take basic knowledge as the carrier and ability improvement as the guidance to comprehensively improve students' employment competitiveness and career ability. . For the study of this course, students are required to have certain knowledge of Java, database, software engineering and so on, so the course teaching has the characteristics of strong comprehensive practice and high difficulty in getting started. The teaching effect of this course and the degree of students' understanding and mastering will have a profound impact on the quality of graduation design and employment.

The traditional teaching method usually explains the knowledge point , helps the students understand through the example program, and carries on the corresponding operation practice[2-3]. This process lacks the presentation of the analysis process and the application of knowledge points to practice, the output direction is unclear, and the continuous improvement of teaching cannot be carried out. Therefore, it is very necessary to introduce output-based Education (OBE) into daily teaching. Output-oriented education (OBE) is a final results-oriented engineering education model, and the related teaching activities are designed[4-5] specifically. This paper is based on the results-oriented classroom teaching model, and according to the actual business development process of the company, in order to clarify the development task and complete the goal, and promote the students' ability output.

1. Analysis of current situation

With the development of information technology, educational informationization has become the only way for the development of education in China. Many colleges and universities in computer science and technology, software engineering and other majors has made "Java Web programming" course as the central course of this major, focusing on cultivating students' practical ability. In the course of teaching, there are mainly four problems in the following aspects.

(1) In the case of the reduction of class hours, it will lead to problems such as the importance and difficulty of the course is not prominent, and students' classroom practice time is insufficient. (2) The traditional "injection" teaching, resulting in low enthusiasm of students, knowledge can not be well applied in. practice. (3) In the traditional programming teaching, the lack of sorting out the business logic leads to the disconnection of the actual development process of enterprises. (4) The course output orientation and the course goal are not clear. In view of the above problems, we can rely on the rain classroom platform to arrange part of the knowledge to the platform for after-class learning, in order to deal with the problem of insufficient class hours. In the teaching process into the actual business development process, and on the basis of results-oriented to solve the problem of unclear curriculum objectives.

2. Identify learning objectives and outcomes

The talent training program under the OBE mode pays attention to the graduation requirements with students' ability as the core, and determines the curriculum system, course teaching and assessment according to the graduation requirements. In this paper, the curriculum objective (Table 1) corresponds to the graduation requirements and teaching content supported by the curriculum, and the teaching objective is determined in reverse (Table 2).

Table 1 Java Web Programming Course Objectives

Course objectives	Concrete content
Knowledge objectives	Learning basic web programming knowledge such as HTML,CSS,JavaScript,request,response,session,JDBC,etc.
Capability objectives	Be able to use relevant knowledge to develop web projects,and cultivate students'ability to analyze and solve practical problems.
emotion goals	Enable students to understand the latest design and development models and other concepts.

Table 2 Correspondence between graduation requirements,teaching content,and course objectives

Graduation requirements	Teaching content	Course objectives
engineering quality	Be able to develop Java web projects	1
Analyze and solve problems	During the programming process,if encountering problems,analyze the reasons and seek solutions	1, 2,
team spirit communication skills	Working in groups of 4-5 people to complete experiments and course design.	3
Professional competence	Standardize students'daily behavior and cultivate behavioral habits	1-3

3. Classroom teaching scheme design

(1) Teaching design ideas

Take the final goal (final learning outcome or peak outcome) as the starting point, reverse course design and teaching activities. The starting point for teaching is not what the teacher wants to teach, but what is needed to achieve the peak outcome. According to the corresponding relationship in Table 2, this paper reversely constructs the teaching contents of practice cases that match the course objectives and graduation requirements. The teaching ideas are designed in three levels: knowledge, thinking and ability, as shown in Figure 1.

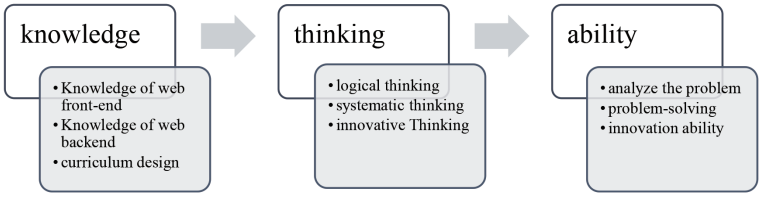

Figure 1 Design of teaching ideas based on OBE

(2) Teaching design

This paper builds a student-centered community of teachers and students, output-oriented, and carries out continuous improvement to optimize the curriculum system and improve the teaching design. The Cookie knowledge of session control technology in the teaching material "Java Web Programming" is selected to design related teaching cases based on OBE, as shown in Figure 2.

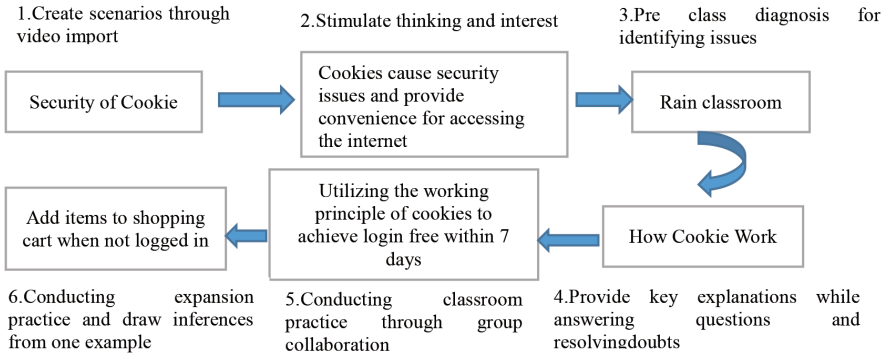

Figure 2 Design of Teaching Cases

4. Method of teaching effect analysis

(1) Teaching effect evaluation

This course mainly through quantitative and qualitative evaluation methods, multi-channel focus on learning effectiveness and efficiency. Quantitative evaluation is carried out in multiple dimensions, including class attendance (30% attendance + 30% rain classroom learning + 40% process examination), accounting for 30%; The completion of the experiment report accounted for 30% and the final exam accounted for 40%. The qualitative evaluation method is that students complete the course design (30% attendance + 30% project presentation defense + 40% course design report), which mainly examines the practical application of knowledge points.

(2) Analysis of teaching effect

The Java Web teaching reform based on OBE will be carried out in Class 1 of Computer Science and Technology 2020 and Class 1 of Computer Science and Technology 2021, with 59 and 61 students respectively. 2021 Computer Science and Technology Class 1 is an

experimental class, carrying out comparative practical teaching. According to the calculation, the proportion of students' scores before and after the teaching reform is obtained, as shown in Figure 3.

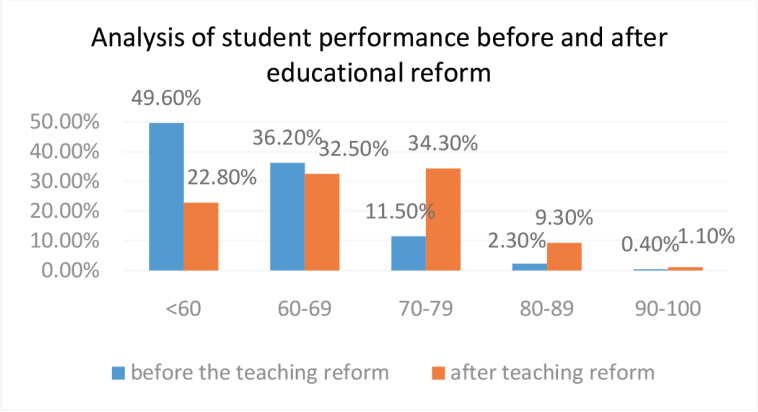

Figure 3 Analysis of student performance before and after educational reform

5. Epilogue

As a professional course for computer-related majors, Java Web enables students to understand and use Java language, improve the practical application ability of discovery, analysis and problem solving, and have basic Java Web development ability, which can complete the development needs of small and medium-sized enterprise projects. In order to achieve the course objectives, the idea of software engineering is used in class, the actual business development process is taught, the classroom teaching is designed to be oriented by OBE, and the practical cases that students are interested in are designed. Set up the final assessment tasks suitable for different levels of learning foundation and learning needs, but the examination of students' practical ability is still lacking. In the future teaching, the way of computer examination can be adopted to improve students' practical ability.

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Fund Project: Gansu Province Higher Education Teaching Achievement Cultivation Project in 2021, "Reform of Computer Professional Talent Training Model with Industry Demand as the target and Students' Innovation ability as the orientation" Document No. : Gan Jiao Gao Han (2021) No. 16