Research and Application of Web Front-End Development Micro-Speciality Curriculum System in Higher Vocational Colleges

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Abstract: With the rapid development of Internet technology, the market demand for Web front-end development talents is increasing, and more and more vocational colleges have begun to set up Web front-end development as a separate micro- speciality course. In order to cultivate web front-end talents in line with social needs, higher vocational colleges need to build a mature curriculum system according to the teaching objectives. Combined with the professional group curriculum system of "sharing the bottom, separating the middle and selecting each other from the top", this paper establishes the web front-end development micro-speciality course system, consisting of public basic module, public expansion module, speciality group basic module, professional skills module and professional development module.

Keywords: Web front-end development, Micro-speciality, Curriculum system

1. Introduction

With the rapid development of the Internet, the talent gap in the software industry is getting bigger and bigger. Web front-end development talents have also become a job that has seen rapid growth in demand in recent years. As a convenient and easy-to-use tool and platform, the website is becoming more and more closely integrated with people's lives, requiring a large number of web front-end developers to invest in the Internet industry. With the increasing demands on the interaction and performance of web applications, as well as the rapid development of related web front-end technologies such as HTML 5 and CSS 3, the difficulty of web front-end development technologies has become more and more professional [1]. Simple web page production can no longer meet the market's requirements for web front-end development talents. More and more vocational colleges have begun to set up web front-end development micro speciality as a separate professional direction. Thererore, how to explore the construction and reform of the micro-speciality curriculum system for web front-end development is a key issue in cultivating relevant technical talents in higher vocational colleges [2].

2. Current Situation of Web Front-End Development Talent Demand

After the Internet enters the era of inventory on the consumer side, the Internet will receive more and more attention. The era of the industrial Internet must be the era of channelization. Skills channels built with cloud computing, big data, Internet of Things, artificial intelligence, blockchain and other skills will comprehensively lower the threshold for skills empowering industries. So grasping these skills is still very important for practitioners in the IT profession, which of course also includes Web front-end developers [3]. In fact, in the era of channelization, traditional professional companies will release a large number of web front-end development talent needs, and the added value of related positions is relatively high.

A web front-end developer needs to be proficient in using Photoshop for design draft cutting, proficient in HTML5, CSS3, JavaScript, JQuery, Bootstrap and other front-end technologies; familiar with Vue, Bootstrap, React framework or AngularJS framework; familiar with the process and principles of browser rendering of web pages, and be able to handle major browser compatibility and mobile page compatibility issues; have a good sense of code style, interface design and program

architecture. In addition, front-end engineers also need to have strong analysis and problem-solving skills, good expression and communication skills, and a good team spirit.

However, there is still a big gap between the current computer graduates trained in higher vocational colleges and the actual Web front-end development positions. These gaps are mainly manifested in the fact that the teaching content of colleges and universities is not linked to the market, classroom knowledge cannot keep up with demand, and students' practical ability is poor. Higher vocational college education focuses on theories, foundations and principles, with long cycles and slow results, and pays more attention to the long-term development of students and the improvement of comprehensive quality. However, it is undeniable that a large part of the students are only to cope with the exam, and their practical ability is relatively weak. Generally, it is difficult to enter the working state in a short time after entering the job.

In general, the talent training of Web front-end development in higher vocational colleges should not only maintain their original strengths, but also learn the strengths of the talent training model of IT training institutions, and introduce the micro-speciality curriculum model [4]. It is not only guided by the learning of vocational technical skills, but also pays due attention to the learning of professional basic knowledge, and strives for students to strike a balance between the current application of technology and the professional foundation for long-term development.

3. Overall Framework and Objectives of Web Front-End Development Micro-Speciality Curriculum

First of all, Web front-end development micro-speciality curriculum system should clarify the talent training objectives, that is, the professional achievements expected to be achieved by students within 3-5 years after graduation. Then, according to the training objectives to determine the requirements for students' graduation ability, that is, the knowledge, skills, quality and ability requirements students should maste when they graduate. Then, each graduation ability requirement is decomposed into several index points, and the curriculum support matrix corresponding to the graduation requirement index points is established to form the professional core curriculum system. Through the curriculum matrix, the index points of graduation ability requirements are decomposed into specific courses, according to which the curriculum objectives are determined, and then the curriculum standards are formulated according to the curriculum objectives, and the teaching is implemented according to the curriculum standards. Finally, the school evaluates the students' learning achievements according to the graduation requirements, so as to improve the curriculum system circularly. The overall framework of Web front-end development micro-speciality curriculum system is shown in Figure 1.
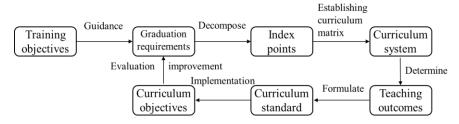

Fig.1 Framework of Web Front-End Development Micro-Speciality Curriculum

3.1 Training Objectives

The training objectives need to be established on the basis of extensive research and comprehensive consideration of the school running objectives, the social needs of the government, the industry and the employment needs of enterprises. The Web front-end development micro-speciality requires students to master the basic knowledge and skills of the major, face the application field of Web front-end development, be able to engage in Web front-end development, full stack development, UI design and other work, and adapt to the needs of industrial transformation and upgrading and enterprise technological innovation [5]. The objectives of Web front-end development micro-speciality curriculum is shown in Table 1.

Table 1 Objectives of Web Front-End Development Micro-Speciality Curriculum

Serial number	Objectives
A	Good humanistic quality, professional ethics, innovative consciousness and team spirit
B	Basic knowledge of computer, Internet and programming
C	Basic computer, Internet art design ability
D	Responsive website front end architecture and implementation capability
E	Have the basic ability and skills of software engineering, database application and software testing

3.2 Graduation Ability Requirements

According to the training objectives to determine the graduation ability of students, that is, students should get the learning results when they graduate. After the graduation ability requirements are determined, they are properly decomposed according to the principle of easy implementation and evaluability, and a number of logical index points are generated, which are in line with the law of students' ability formation. For students of Web front-end development micro-speciality, the graduation ability requirement is shown in Table 2.

Table 2 Graduation Ability Requirement of Web Front-End Development Micro-Speciality Curriculum

Serial number	Objectives	Corresponding training objectives
1	Can complete the normal UI interface design	A,C
2	Can skillfully use HTML, CSS, JS to write responsive web pages	A,B,D
3	Can skillfully use the mainstream front-end development framework to build a website	A,B,D,E
4	Can use conventional algorithm design for programming, and can carry out database application	A,B,E
5	Have good physical and mental quality, professional ethics, professional quality and innovation and entrepreneurship consciousness	A

4. Construction of Micro-Specialty Curriculum System

Combined with the actual situation of specialty group construction, the curriculum system is divided into public basic module, public development module, specialty group basic module, professional skills module and professional development module, and the web front-end development micro-speciality curriculum system is constructed as shown in Figure 2.
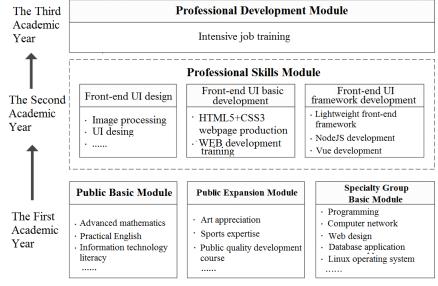

Fig.2 Micro-Specialty Curriculum System

In the first academic year, students study the public basic module, public development module and speciality group basic module; in the second academic year, students study the professional skills module course [6]; in the third academic year, students can choose to learn professional development module courses according to their interest and employment intention.

4.1 Public Basic Module

According to the relevant documents of the party and the state, as well as the quality requirements of professional groups, public courses such as "College Students' mental health education", "career planning and quality education", "Ideological and moral cultivation and legal basis" are offered.

4.2 Public Expansion Module

The public expansion module offers elective courses of art appreciation and public quality development.

4.3 Specialty Group Basic Module

Set up the specialty group basic module, to include big data technology and application, computer application technology, software technology, web front-end development direction, software technology, artificial intelligence technology service direction and cloud computing technology and application course. According to the basic abilities shared by the typical tasks of the specialty group, combined into professional basic modules. The courses include programming foundation, computer network foundation, web design foundation, database foundation and application and Linux operating system.

4.4 Professional Skills Module

According to the professional ability of Web front-end development, three professional core curriculum modules are constructed, which are web front-end UI design module, web front-end development foundation module and web front-end framework development module. Each module consists of 3-4 integrated courses of theory and practice and module comprehensive training courses.

4.5 Professional Development Module

The professional development module belongs to the high-level part of the curriculum system, which realizes the mutual selection of courses among different majors and cultivates students' professional development ability. This module is composed of 3 intensive training courses, each of which provides a certain number of courses for students to choose.

5. Conclusion

This paper is based on the result-oriented education concept, combined with the professional group curriculum system of "sharing the bottom, separating the middle and selecting each other from the top", to establish the web front-end development micro-speciality course system. Before constructing the curriculum system, it is necessary to clarify the goals and graduation requirements for the training of web front-end development talents. The course system consists of public basic module, public expansion module, speciality group basic module, professional skills module and professional development module. With the rapid development of Internet technology, the technology of Web front-end development is constantly updated, so the curriculum system should be adjusted in a timely manner in accordance with technological development, social needs, and evaluation feedback of students' learning achievements.

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