The Practice and Application of Web Programing Based on CDIO

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Abstract

To fit in the Strong practical characteristics of web programming, The CDIO introduced into the teaching curriculum and adjusted according to actual situation, the formation of a more practical Web programming teaching methods. Using CDIO to organization of the classroom, so that students from the outset with the project development tasks into the study, heavy and difficult to explain the curriculum and process analysis, and gradually solutions. Through practice, "Project－Oriented and Work－Learn Integration" Teaching Mode will combine theory and practice to enhance the effectiveness of teaching the course.

Keywords

CDIO,web programming,education reform,the mode of talent cultivation.

1. Understanding of the teaching mode of CDIO Engineering

CDIO model to integrate the training objectives into the curriculum system, each of the points to be specific to the implementation of the curriculum and extra-curricular activities. CDIO provides students with a learning experience and context, so that students in learning the subject of knowledge at the same time, develop personal ability, interpersonal skills and product system design, design, implementation, operation ability. Obviously, CDIO teaching objectives and application oriented universities are consistent with the training objectives of students, namely, the combination of theory and practice, the combination of engineering technology and market demand, the combination of senior specialized personnel. Therefore, applying CDIO teaching model to the teaching of Web programming course is the most suitable for the present society[1]. Both in the teaching theory or in experiment teaching, we advocate "learning by doing", emphasis on students' active learning, establish a "take the student as the center, the teacher is the leading" the concept of, to guide the students to think and explore, for students to participate actively create conditions, give full play to the main role of students. Do middle school teachers in the course on the explanation of all functions, but the same knowledge of the function set aside part of the job as a student. This is conducive to the students in the project, in accordance with the need to learn[3].

2. Constructing a new system of Web program design course based on CDIO

2.1 Theory Course System

One target of higher network engineering, our software industry is facing a lot of programmers culture, cultivate a large number of qualified personnel needed for the development of China's software industry. With the rapid development of the software industry, Web application development has become a highlight of the software industry employment. How to improve the teaching quality, so that students master the theory and application of knowledge more Web development, it has become the target network engineering[4] Web Development Teaching Reform. In order to effectively complete the task of teaching Web development courses to improve the quality of teaching practical, compound talents, we propose for the Construction of Network Engineering Web Programming Course Group, from teaching course content group, the experimental content system and teaching mode three aspects of the system to carry out the teaching reform and practice.

Comprehensive teaching method and teaching method reform, the implementation of "project teaching method", make full use of multimedia teaching, the key aspects of teaching and curriculum

arrangement in "Web Design Laboratory" implement project case teaching. According to the requirements of the reform of engineering personnel training mode, in order to cultivate the applied talents in the field of Web application development, strengthen the students' mastery of the Web programming technology, and effectively cultivate students' practical ability[2].

2.2 Experiment Course System

In parallel with the theory of teaching content reform, we also practice the content of the reforms.

Web development course group of experimental teaching content reform should follow the following principles: one is to help the students to understand and master the theoretical knowledge; the second is to let students through practice and master can Application in industrial development in the programming tools and programming skills, training students the system programming thinking. Based on the above principles, we tried to decompose the course system into four levels: basic experiment, designing experiment, comprehensive experiment and professional innovation experiment.

In the teaching process, and give full play the main role leading role of teachers and students, to stimulate student interest. In addition to the traditional case teaching, the introduction of the entire project-driven teaching, task decomposition, a variety of interactive teaching methods inspired teaching. For different teaching activities, teaching according to different time periods, using different teaching methods.

1) Project-Oriented

Interest is the best teacher, in teaching activities, to the "teachers to change as the center to take the student as the center", "the teacher asked the students to learn" into "students volunteered to learn", the teacher should try to arouse students' interest in learning. Therefore, in the course of the initial use of project driven method, to carry out the actual project display, to stimulate students' interest in learning. For example, let the students experience the function of online shopping mall, but also allows students to speak, talk about their use online shopping mall, and mutual exchange, increase the interest and motivation to learn.

2) Task decomposition

For a real project, its complexity, is required by teachers of the project task decomposition, even multi-layer decomposition, reduce the difficulty of the project implementation, eliminate students' fear of difficulties. Such as online shopping mall project, user mode can be divided into mall Home Users Registration, classification browsing, product search, shopping cart, view orders sub-module, administrator mode can be divided into merchandise category management, product management, customer management, order management sub-module. For each sub-module, according to their degree of difficulty, and further broken down into several smaller tasks. Registration as a user, can be divided into user login and user registration.

3) The Interactive and Enlightening Teaching Mode

For each task, using an interactive heuristic teaching, guiding students to think. As a registered user to realize, first raised the issue, "we used the registration page is what is usually required to fill in what information? What is the registration process?." Students are encouraged to speak, discuss, discuss the results of the student, summed user registration function realization process, summarized the process of realizing the relevant knowledge, to guide students to learn the theory and methods to solve problems. As a registered user knowledge points function as shown in Table 1.

4) Case teaching

Engineering Students should be focusing on capacity development, focusing on the theory and practice. Thus, for each point of knowledge, first teachers, case presentations, and then imitated by the students to achieve the initial hands-on experience, stimulate students' desire to learn, so that students not only know what to do, but also know how to do. Thereby simultaneously through a variety of teaching methods to enhance the students' practical knowledge and skills.

Table 1 User Registration Process and Knowledge Point Analysis

functional module	Technological process	Knowledge point
User registe	Registration page design Script verification	The form, Wen Benyu, password field, radio buttons, check boxes, drop-down List, buttons, and other HTML markers Table, DIV and other page layout JavaScript script DOM model
	Registration information submission processing	Request, out hidden object JDBC database connection and operation

3. Achievements inspection and evaluation

Teachers summary is "Project－Oriented" an important part. Students will design a variety of problems, teachers want to review and point out the way to solve problems, to sum up the characteristics of each group, and guide them to learn other people's strengths to improve and enhance their own design, so that students Increased capacity in the various reviews of. Rating summary process both previously learned knowledge, make new knowledge and learning process, students also become a learning process, improve the process. Students complete a project must be timely communication, presentation and discussion of student learning for feedback and evaluation. This is an important stage for students to master knowledge and skills enhancement, but also can greatly develop students' sense of accomplishment.

4. Establishment of evaluation system based on CDIO

The traditional way is a paper assessment to determine student achievement, exam content focuses on the assessment of knowledge related to the course, ignoring the learning process evaluation. The teaching model based on CDIO is different from the traditional teaching mode, so the student evaluation system has also been reformed. Formative assessment and summative combination wherein the formative evaluation in all aspects of the teaching process, from the student's attendance, daily performance, operation, testing, and completion of quality project completion, the students all-round assessment, summative assessment in the end of the semester, in packets for project evaluation, to enable students to learn together, analyze and discuss the completion of the integration of the semester knowledge, the formation of project documentation, focusing on students' teamwork, knowledge integration, document editing ability assessment. And ultimately in the teaching process of all aspects of both concerned with the learning process, but also concerned about the learning outcomes. Wherein formative assessment and summative assessment of the percentage of each part as follows: attendance, daily performance of 10%; usually tested, job completion, 10%; 40% of the usual training results; summative assessment scores accounted for 40%. Specific curriculum used CDIO Evaluation System and the implementation of the principle shown in Table 2.

Table 2 Principles and implementation of the evaluation system based on CDIO

grade	Evaluation indicators (qualitative and quantitative binding)
Excellent(100-90)	A good grasp of Java Web technology, the basic knowledge and skills can be very flexible for project development.
good(89-80)	Can master the basic knowledge and skills of Web Java technology, can be more flexible for project development.
medium(79-70)	Java Web technology to master the basic knowledge and skills for the development of projects Shihai unskilled
qualified(69-60)	Basic grasp of Java Web technology, the basic knowledge and skill points. Very inexperienced when used in development projects
	Java Web technologies have not mastered the basic knowledge and skills can not be used for development projects.

5. Summary

Since 2013, the school web programming Teaching team relying on campus experiment and practice center, scientific research centers, practice base outside school, school-enterprise cooperation units to enhance engineering practice, the engineering consciousness, engineering ethics and engineering process to penetrate into daily teaching, to carry out engineering ethics oriented to the engineering process as the backbone of theoretical knowledge as the cornerstone of the practice as a fundamental database of relevant practice teaching. As can be seen from the implementation effect, web programming practice teaching reform based on CDIO the proposed effective weaken "teaching" in the practice of teaching, emphasis on "doing", highlight the "Innovation", the "man", "work" and "scholarship" three-one, can develop to meet the needs of industry, integrity, ability and quality of both outstanding engineering talent, similar to universities, engineering education reform similar courses have some inspiration.

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