

Practice Exploration of Curriculum Reform Based on Systematization of Working Process

Linping Nie

School of Computer Science, Guangdong University of Science and Technology, Dongguan 523079, Guangdong, China

Abstract: The author follows the basic path of the course reform of work process systematization, and makes a practical exploration of the course reform of "front-end development technology". Through deconstructing the teaching materials of the subject system, reconstructing the learning situation, overcoming key difficulties, and greatly improving the teaching effect, students' professional ability has been significantly improved.

Keywords: Curriculum reform, Front-end development, The working process of the.

1. Introduction

Computer major is a good social demand at present, a wide range of social demand has brought a good source of students. As a professional teacher, we should keep up with the pace of The Times and have the courage to explore and practice in curriculum reform, so as to promote the rapid improvement of the professional ability, method ability and social ability of the students in our major.

2. Problems in Teaching Materials of Subject System

The curriculum of computer majors in colleges and universities is similar, and there are many professional courses. The problem lies in the restriction of the system of curriculum materials and subjects, which makes teachers' teaching unable to get rid of the traditional linear teaching mode of teaching materials, lecturing and teacher-centered. Although each year the textbook also pays attention to the learning characteristics of students and carries on the update, for example, in the practice case, the task practical operation and so on, increases the content, adjusts the order. But on the whole, it still cannot meet the needs of classroom teaching. The author takes the course textbook of "Front-end Development Technology" as an example. The "Css+ DIV Front-end Technical tutorial" compiled by the chapter cognitive structure has nine chapters, the first to the seventh chapters are arranged respectively for declarative and procedural knowledge, and the eighth and ninth chapters are comprehensive cases. Although comprehensive cases are procedural knowledge, declarative knowledge and procedural knowledge are not unified in teaching time and space, and students forget the back of the front, which makes it difficult to advance the teaching goal. Therefore, it is difficult for students to master their professional skills by serializing the knowledge structure of the teaching materials according to the discipline system. In this regard, the author has made a careful analysis of the textbook structure of this course and realized the requirements of curriculum reform systematized according to the working process. It is necessary to adjust the static knowledge structure of teaching materials. According to the teaching objectives, the basic declarative theoretical knowledge and procedural operation skills of this course should be unified. The teaching objectives must be achieved

in the same teaching period. Make the teaching process "complete the teaching of declarative, procedural and strategic knowledge once and for all" so as to achieve the teaching goal of "integrating cognitive ability, operational ability, method and strategic ability".(1)

3. The Basic Path of Systematic Course Reform in Working Process

Following the course reform path of systematic working process, professional teachers should clarify the relationship between teaching materials and courses. Teaching materials are static records in the form of results, and once the text is formed, it will lag behind the course. The curriculum of vocational education is dynamic, is the actual reflection of the current occupation, is the working process of advancing with The Times. Therefore, the textbook can only be used as a reference for the course. What professional teachers should do is to analyze the work tasks of the course, summarize the typical characteristics of the work links, make it form a typical working process, and implement coupling with the universal working process. This working process-oriented vocational education curriculum concept is "the most advanced curriculum concept in the world".(2)

3.1. Grasp the Connotation of Work Process Systematization and Reconstruct the Curriculum

The so-called systematization of working process refers to the formation of a certain logical relationship between the discrete working links and tasks of the real working process through the methods of induction and generalization, highlighting the typical characteristics of the main working links.(3) Take the "Front-end Development Techniques" course, for example, to design and build a web page, Its real working links are: layout and design of the overall planning of the website, HTML basic structure page production, page head production, navigation bar production, text list, picture list, column production, main content production, background application, interaction, testing and so on. To highlight its typical characteristics through induction in these links, in order to form a typical working process, on this basis, the author further summed up the typical working steps. Step 1: Build the project; Step two: design and cut diagram; Step three: Structure and layout; Step 4: debugging; Step five:

Generate HTML pages; Step 6: Add interactive effects. Thus, the logical relationship between work links and work tasks has been formed, that is, the typical working process has been formed. The next step is the design of the learning situation. During the design, the knowledge points of the course materials should be decomposed into each learning situation, and the deconstruction of the teaching materials should be carried out. The design of the learning situation is the reconstruction of the course. In this way, students can unify knowledge (declarative) and operation (procedural) in time and space in practical operation, effectively avoid the separation of knowledge and practice in subject system

textbooks, and greatly improve the learning effect.

3.2. Overcome the Key Points and Difficulties in The Design of Learning Situations

The curriculum reform of work process systematization must have three or more learning situations. In each learning situation, students should complete the established learning objectives, obtain learning outcomes, and acquire method skills. The author's learning situation design of "front-end Development technology" course through "deconstruction" and "reconstruction" is as follows:

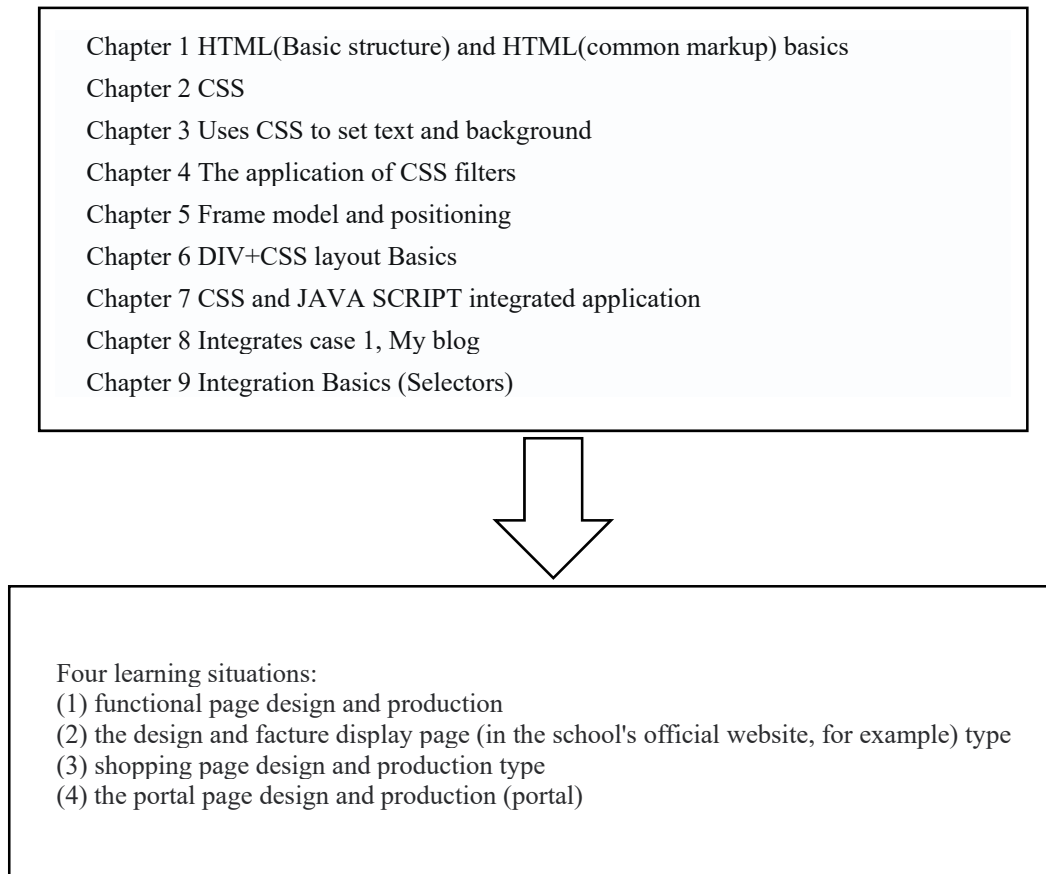


Figure 1. Cheng learning situation design

The design of the four learning situations here reflects the teaching requirements of gradual progress from simple to complex knowledge and skills. The first learning situation requires students to master the following knowledge and skills: Familiar with HTML markup language, master the common control text style, basic structure of web page understanding and web page layout ideas, In this stage, students learn to make simple functional pages through "hand-to-hand" demonstration teaching, such as Baidu home page, Google search, Vipshop and Guokui navigation bar. In the second learning situation, students are required to master the operation skills of document flow, block-level and line-level label application, box model, web page layout and so on, and use these knowledge to layout the static page of the college's official website and the homepage of the enrollment network, so as to further improve their practical ability. The third learning situation requires students to master the comprehensive application of shadow spirit technology, positioning technology and style, and use these knowledge

and skills to make the current small e-commerce platform home page, such as "Vipshop", "Xiaomi" and other official website home page static page; At this stage, the teachers basically "let go", and the students complete the extension project under the guidance of the teachers, and are very skilled in the layout of similar websites. The fourth learning situation requires students to master: overall page layout, application skills of public styles, application of javascript technology, browser compatibility solution, and be able to produce static pages with certain interaction on the home page of mainstream large portals and e-commerce legal networks, and independently complete the development of large pages. At this stage, the teachers completely "let go", and the students' ability to work independently is basically formed. The students can master the application skills of the style and solve compatibility problems, and have the post ability. After reconstructing the learning situation, the course of "front-end development technology" has not reduced the appropriate theoretical knowledge, but changed its structure. By strengthening the procedural operation process of students to

master the procedural operation code, knowledge and skills to form a fusion, and then obtain the procedural transfer. Students complete "the same process of the work process, experience three different content of the work process comparison, can achieve the comparison, transfer, and internalization of the educational teaching objectives". Therefore, the design of learning context is a key point of curriculum reform.

The difficulty of curriculum reform is the choice of reference frame in learning situation. Frame of reference is "a standard for dividing different learning situations in a learning field", "its main selection scope is the object, content, means, organization, product, environment and its characteristics of the work", and the frame of reference in different learning situations should follow the principle of identity, that is, the same category of things. In other words, "the range of things having the same essence, such as time, space, quantity, quality, relation, type". (4)In the author's "Front-end Development Technology" course, "page type" is selected as the carrier among the four learning situations. These four learning situations are divided into "criteria for different learning situations", namely "functional page", "display page (taking the college official website as an example)", "mall page" and "portal page". Its "front-end development technology" this working process has "the object, the content, the means, the organization, the product, the environment and its characteristic", conforms to the curriculum reform basic requirements.

The second difficulty is the induction and generalization of typical working process steps. Each real working process has

dozens of links, a few dozen, When the real working process is designed for teaching, the typical treatment should be carried out. Typical working steps are extracted, summarized and summarized in numerous working steps, so that it has "typical working process" and "coupling" with "universal working process". Because "only the universal work process and the typical work process two kinds of systematic work process coupling can produce the maximum work performance". The universal working process refers to "information, planning, decision-making, implementation, inspection, evaluation", It is a general concept abstracted from all "processes of work" with implicit psychological regularities, If the law of psychological behavior of the universal work process and the law of behavior of the typical work process are coupled for a long time, "the logical structure of the real work process can be taken into account, and the conscious and conscious psychological participation process of the work subject in each link and the whole process can be taken into account. Therefore, it can integrate the process of acquiring vocational knowledge and the process of acquiring vocational skills. This is the teaching intention of the creation of more than three learning situations, which refers to the self-transfer, near-transfer and far-transfer of students' vocational skills (the learning steps of each learning situation are the same, and the different learning contents promote the formation of students' transfer ability). The author's "front-end Development Technology" course has summarized and summarized the typical working process, refined the typical working steps and realized the coupling with the universal working steps.

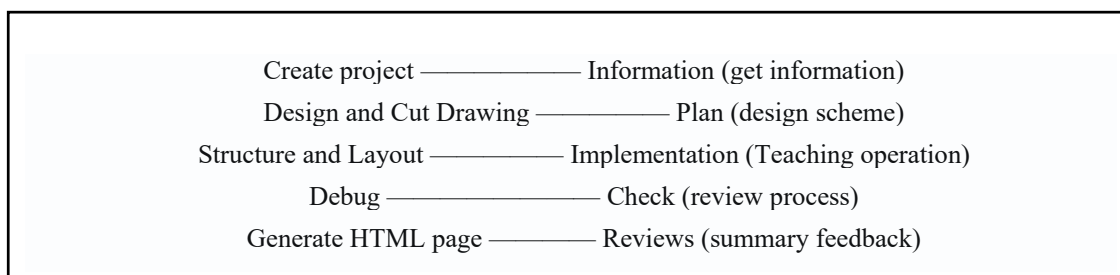


Figure 2. The dual of typicality and universality

The third difficulty is the specific implementation of learning sub-scenarios or work tasks, work projects, and the specific allocation of class hours after learning context design. The design of more than three learning situations is the overall framework of the course. Professional teachers also need to carry out specific refinement of the learning situation teaching, and decompose the total class hours into each specific learning situation. In general, according to the difficulty of the learning situation, the matching of knowledge and skills, combined with the teaching experience of teachers to refine the class hours. Of course, there is a process of gradual accumulation of experience after curriculum reform, and there is also a process of adjustment, which cannot be achieved overnight. The design of learning situation has the characteristics of integration and openness, which is mainly due to the unification of professional knowledge and professional skills in time and space, avoiding the disconnection between theory and practice, and the constant changes in teachers' choice of learning content will further promote students' interest in learning, and the teaching effect will continue to improve. The author's "front-end Development technology" course has refined the learning

situation under the guidance of the above theories, and at the same time, it is constantly adjusted in the teaching practice.

4. The Practical Effect After the Reform of The Systematic Course of The Working Process

4.1. To Better Achieve the Established Teaching Objectives

The author's "front-end development technology" course has experienced a systematic course reform in the working process, and the teaching effect is very different from before. Each student can complete different stages of teaching tasks. At the end of the examination, the students with good grades accounted for the majority. Here is a comparison. Before the curriculum reform, the author once taught a class with more than 50 students, and the total class hours were 144. Although the class hours were more than double than now, most of the students could not achieve the set learning objectives, and the teaching effect was poor, and the students' skills were poor. The systematic course reform of the working process can

achieve the set teaching objectives well, and teachers and students can learn from each other and progress together.

4.2. Students' Interest in Learning Is Constantly Enhanced, And the Structure of Learning Motivation Is Stable

The design of more than three learning situations can fully pay attention to the "three dimensions of individual learning" : It is the knowledge and skill structure at the content level, the ability structure at the action level, and the motivation structure at the interest level. The design of the three learning situations has the learning validity of continuous progressive transfer of professional knowledge and professional skills. Every time the completion of a learning situation of the learning task students will have a sense of accomplishment, so it greatly stimulated the interest in learning, make full use of spare time to complete the teacher assigned homework. This shows that the teaching method based on the systematic learning situation design in the working process can effectively promote students to achieve "independent access to information, independent formulation of plans, independent implementation of plans, and independent evaluation of plans" in the learning of specialized courses, so as to establish a relatively stable structure of learning motivation.(5)

4.3. Students' Ability of Action Reflection Is Strengthened

For the final exam of this course, I asked students to both present and evaluate their work in class. In class, students gave feedback according to the teacher's requirements, and students also evaluated each other. Finally, the teacher also expressed his own opinions, which changed the past teacher's single evaluation on students and implemented the transformation from single evaluation to diversified evaluation. The students' "cognitive" ability of their

professional skills is enhanced in this kind of diverse evaluation.

The design of more than three learning situations has realized the transformation of teaching paradigm from "teaching" to "learning".Because of the integration and unity of knowledge and operation process, students naturally achieve the "unity of knowledge and action" in each learning situation, and obtain corresponding learning results in each learning situation. Through functional and display web design and production, students acquire general program knowledge and skills. Through the process of shopping mall web design and production, students have consolidated the general program knowledge and skills, and then expanded the program operation skills. Finally, in the teaching process of portal web design and production, students' reflective ability has been significantly strengthened, the ability of procedural coding "unmasking" has been continuously strengthened, and the ability of front-end development has been generally improved.

References

- [1] Jiang Dayuan. Essentials of Vocational Education (M) Beijing Normal University Press, 2017.
- [2] Wu Xiaochuan. Six Main Problems to be Solved in Establishing and Improving the Modern Vocational Education System with Chinese Characteristics (J) China Vocational Education Technology 2017 (15).
- [3] Wu Quanquan. Connotation and Characteristics of Curriculum Development Paradigm of work process Systematization (J) China Vocational Education Technology 2017 (15).
- [4] He Jiayang. Limitations and Optimization Suggestions of Work Process-oriented Talent Training Model [J]. Higher Education Forum,2019(1):60-64.
- [5] Jiang Dayuan. The Key to Curriculum Development: Structural Issues [J]. World Education Information,2018(11)53-54.