

# *Research on Project Teaching Method Reform and Practice Based on "Dynamic Website Development" Course*

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**Abstract:** This paper mainly introduces the project teaching mode based on work process in the course of "Dynamic Website Development and Application". Firstly, it expounds the standard of course positioning and the concept of project teaching method, including the integration and reconstruction of knowledge and skills with project as the carrier. It is task-driven to arouse students' thinking, inquiry and cooperative learning. Based on the real situation, teachers should help students to get intuitive feeling and experience, and stimulate students' interest in learning by participating in the design and development of practical projects. In the teaching process, the teaching tasks are constructed by progressive optimization situation, which conforms to the cognitive law of students from simple to deep. Through practice, the project teaching method can enhance students' learning initiative and problem-solving ability, and is effective in the teaching process.

## 1. Introduction

In order to meet the needs of the society for skilled talents and comprehensively implement the outline of the national medium and long-term education reform and development plan, the higher vocational colleges are based on the standard, reform the mechanism, constantly innovate, seek survival in the reform, seek development in the innovation, and strive to improve the teaching level. To improve teaching quality is fundamentally to carry out curriculum teaching reform, among which project-based teaching reform based on work process has become an inevitable choice in reform as it focuses on improving students' operational ability and adapting to actual work needs <sup>[1]</sup>. Dynamic website development is a comprehensive and operable course, and it is also one of the core courses of computer application majors in many vocational colleges. This course usually uses JSP, PHP, ASP and other development languages, and learners should have the basis of front-end design, database and language programming. At present, many teachers in vocational schools usually use project teaching method in their teaching process. Its guiding idea is to assign a relatively independent task to students to complete independently, and students are responsible for information collection, program design, implementation and final evaluation. Teachers only play the role of consultation, guidance and problem solving in the whole process.

## 2. Course positioning and standards

For most higher vocational colleges, the course "Dynamic Website Development and Application" mainly serves computer-related majors, and the main purpose of teaching is to enable students to have the ability to make dynamic websites through the study of this course. Take computer network technology major as an example, from the perspective of job analysis: After graduation, students in this major are mainly engaged in two aspects of work, hardware mainly for network management, LAN construction, network cabling and other work; In terms of software, I am mainly engaged in website management application, website design and development, website maintenance and upgrade [2]. The teaching team of this major has carried out a specific career analysis for these two employment directions, specifically in the aspect of software, and summarized 15 typical work tasks (including graphics and image production processing, WEB layout design, web database design application, business website development, etc.). It is classified into seven action areas (graphic image processing, web art, web programming, database management and maintenance, dynamic website development, etc.). After transforming into learning fields, six professional courses were finally determined (including "Multimedia Information Processing", "User Interface UI Design", "Programming Language", "Database Technology Application", "Dynamic Website Development and Application", "Comprehensive Dynamic Website Development"). These six courses are interconnected and support each other [3]. In the whole professional system, there are their own positioning and role:

Multimedia and UI design mainly let students learn how to design the beauty of the page, database application courses let students learn how to manage the background data. Taking these three courses as the precursor course, "Dynamic Website Development and Application" can realize the connection between the front page and the background database, and finally carry out the development of dynamic websites, combined with programming languages, and carry out the comprehensive development of websites more deeply. As can be seen from Figure 1, the course "Dynamic Website Development and Application" plays a role in the whole curriculum system and is a key professional skill course, so we put it in the fourth semester of the teaching process, with a planned class time of 96 hours.

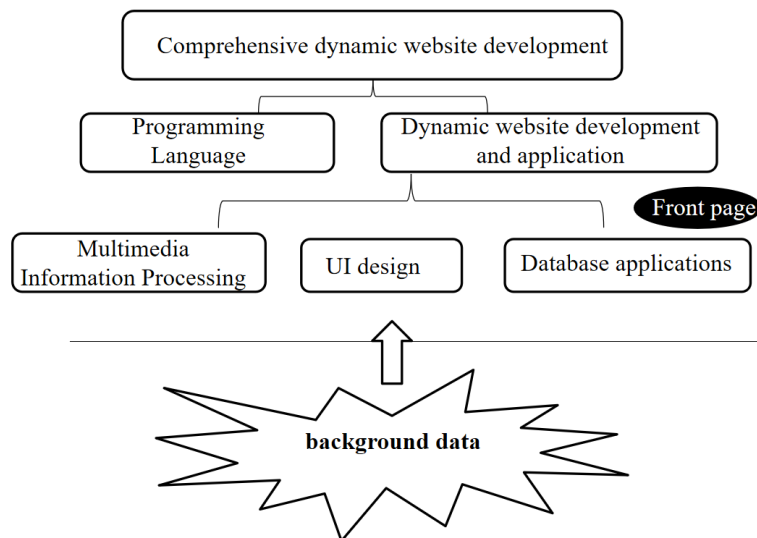


Figure 1: Positioning of curriculum in curriculum system

### **3. The concept of project teaching method**

#### **3.1 Integration and reconstruction of knowledge and skills should be realized with projects as the carrier**

When the traditional knowledge organization with teaching subject as the center and the knowledge transfer with giving and receiving as the means are widely questioned, people's exploration of effective knowledge organization and transfer has not stopped. The basic idea of project teaching is that while knowledge is still presented to the learner in an abstract way, despite its inherent systems and structures, for the learner these general principles of knowledge remain outside the psychological mechanisms of their learning and fail to establish an organic connection with concrete practical applications. Especially for vocational educators, in their teaching, they should not only impart concepts and basic principles, but also guide students to master technical knowledge and cultivate their practical ability, many of which belong to tacit knowledge and are not easy to use language to accurately express and explain [4]. Therefore, project teaching methods pay special attention to the teaching of such knowledge, emphasizing that tasks should be divided according to the positions of the project, knowledge and skills with practical functions should be analyzed and sorted out first, and integrated into the project according to the work logic of the project, so that learners can obtain relevant practical knowledge and skills through the training of the project. Most of the theoretical knowledge is only used as the background of the project implementation, requiring students to dig in their work according to their own needs, so as to discover knowledge, understand knowledge and apply knowledge, so as to realize the organic combination of theoretical knowledge and practical skills.

#### **3.2 It is task-driven to trigger students' thinking, inquiry and cooperative learning**

The project in project teaching is composed of one or more tasks that are different from the learning content of ordinary courses. These tasks are not designed out of thin air, but come from the real needs of enterprise work. They not only have to go through complex and changeable work processes, but also have special requirements for work results and quality standards, which makes the tasks in the project teaching method have their own characteristics, and there is a certain difficulty. Therefore, the purpose of project teaching is to enable participating students to go deep into the complex work system with the help of the project, find and think about problems in the process of completing tasks independently, propose solutions to problems in communication and exchange with collaborators, and finally complete the work together. In the process of completing the project, students can accumulate relevant theoretical knowledge and practical skills [5].

#### **3.3 Based on the real situation, help students get intuitive feeling and experience**

The projects in the teaching of vocational education projects should be derived from the actual task of the enterprise, or be designed and developed according to the actual task needs of the enterprise. However, no matter what form of project is applied, it cannot be separated from the actual working situation of the enterprise, which refers not only to the macro working environment, but also to the micro problem situation. We can even say that if the project can create a real and complex problem situation, the purpose of project teaching can be truly realized, because it can help students to form a clear cognition of the future working environment and have a deep understanding of the professional skills required. Therefore, project teaching emphasizes that teaching should be conducted as close to the real working situation as possible. Teachers should transform various problems existing in the actual working situation into problems that need to be solved in project

teaching, provide problem situations for students, guide them to think actively and take measures to solve problems, so that students can have an intuitive feeling and experience for their future careers.

#### 4. Selection and sequencing of project context

This course uses ASP technology to realize the concrete realization of the website. In the traditional teaching process, this course mainly includes: ASP basic knowledge, WEB page editing tools, ASP scripting language, ASP common built-in objects, Web database knowledge, ASP database programming, ASP common components and other parts of knowledge.

##### 4.1 Selection of project teaching context

In the past, teachers mainly explained knowledge, while students were passive in the teaching process, which was not conducive to improving students' enthusiasm in learning and initiative in practical practice, but also hindered students' creative play, and was not conducive to cultivating students' ability of independent thinking and problem solving. Therefore, teachers should consider the following issues: how to choose the appropriate presentation mode, effectively stimulate students' interest in learning, and prepare for the following learning; How to make students accurately understand the intention of the project through project analysis; How to clarify the task of the project, as well as the main content and purpose of learning; How to promote the cooperation between teachers, students and students through teaching organization; How to get rid of the traditional teacher role and guide students to carry out project training according to the expected goal of project teaching?

Therefore, we carry out a new course design for the course "Dynamic Website Development and Application", with the ultimate goal of building an actual dynamic website, and adopt project-driven teaching method to teach, so that students learn from doing, learn from doing, and consciously exercise students' practical ability.

First of all, the course content is broken down and divided into the production of a project, which is divided into four scenarios: the first scenario, the production of a single simple independent page; The second scenario is to form a logical association of just individual subpages to form a larger static website; The third scenario deepens the difficulty, connects the website to the background database, updates the data in real time, and forms a practical dynamic website; Finally, the first three scenarios are combined and refined to complete the development of a comprehensive website. These four situations, the content from simple to difficult, information correlation, is a progressive optimization of the situation construction, the situation from the simple to the deep in line with the cognitive law of students. The details are shown in Figure 2:

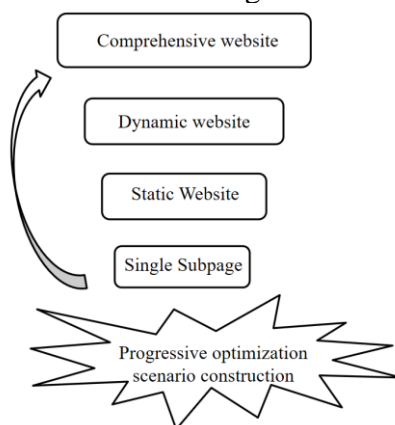


Figure 2: Selection of teaching situation

## 4.2 Sequencing of project teaching tasks

Sequence the scene into multiple teaching subtasks: This course takes the development of "skills competition publicity website" as an example to sequence the teaching subtasks. In the first scenario, students are taught how to make common web pages. Based on this situation, the researchers designs the homepage, navigation module, video page and notification page of the skills competition website. Next, the researchers connect the database and display the data in the database in real time on the page to achieve simple addition, deletion, change and check. Finally, the researchers combine these three situations to complete the construction of the final skills competition website. As shown in Figure 3.

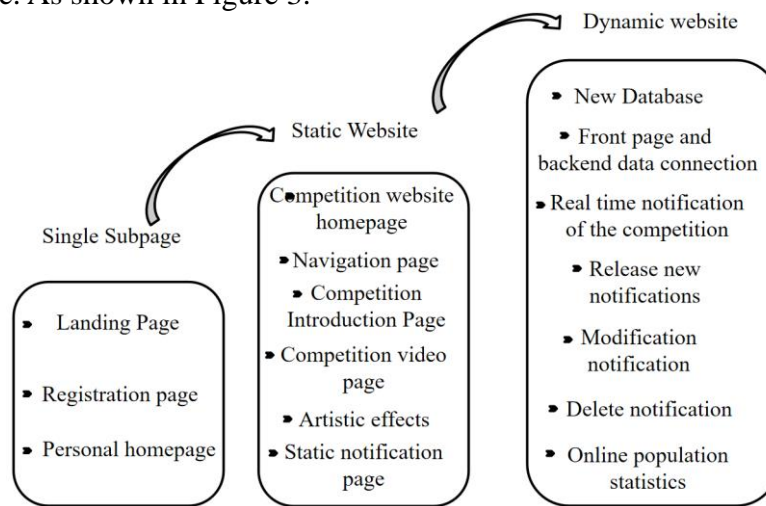


Figure 3: Sequencing of teaching tasks

## 5. Implementation of specific project teaching plans

After the selection of situations, teachers need to make preparations for all aspects of project teaching, such as determining the time arrangement reasonably according to the project teaching progress and specific implementation requirements, allocating relevant resources according to the project implementation content and implementation method, providing necessary material support for teaching according to the project development process, and making specific planning and arrangement for the entire project teaching process. To form a complete project teaching plan and prepare and design project assignments, so before the implementation of the teaching plan, the teaching feasibility analysis should be carried out:

### a. Analyze the students

The teaching object of this course is the second-year students majoring in computer network technology. They have learned UI design, database application and multimedia information processing courses in the precursor course so that students can learn how to manage background data. Take these three courses as the preceding courses.

### b. Analyze the teacher

The teachers who teach this course have knowledge of web page making, database design, software engineering, and experience in implementation and development.

### c. Analysis of teaching resources

The teaching process includes actual company development website cases as auxiliary teaching plans, complete code and development documents, development documents for each small task of this course, work pages and information pages for each task, etc.

### d. Analyze hardware devices

Campus training base -- high-configuration multimedia computer room, desktop computers, laptops, projectors.

The development environment of the computer room is the visual studio 2010 integrated development environment, the internet information Server version 7.0, and the database uses SQL (Structured Query Language) Server 2008. At the beginning of the project, students were still very vague about the appearance and function of the website to be developed. Through the guidance of teachers, the observation of excellent websites, and the communication and analysis among team members, they gradually understood the effect of the website to be developed. Students analyze the effect of the website, draw the functional modules of the website, clarify the development process, jointly collect appropriate data, process the data, design the homepage interface with photoshop, layout the website, design and make the master version. In the process, students consolidate and deepen their previous knowledge of photoshop and dreamweaver [4]. When designing the website, students encountered many difficulties, such as the property setting of specific controls, the writing and debugging of specific functional codes. In this process, teachers are not only the organizers of teaching, but also play the role of guidance and help, and students are no longer passively accepting the transmission of knowledge, but become the active constructor of knowledge.

### 5.1 Six-step teaching

The teaching process includes information, planning, decision making, implementation, inspection and evaluation. In fact, there are also website development processes in actual website development enterprises. This course introduces the actual development processes in the company into the classroom. Each teaching task is divided into six steps: demand analysis, outline design, detailed design, system coding, web page testing, and web page evaluation, forming the task implementation process of the basic work process (Figure 4).

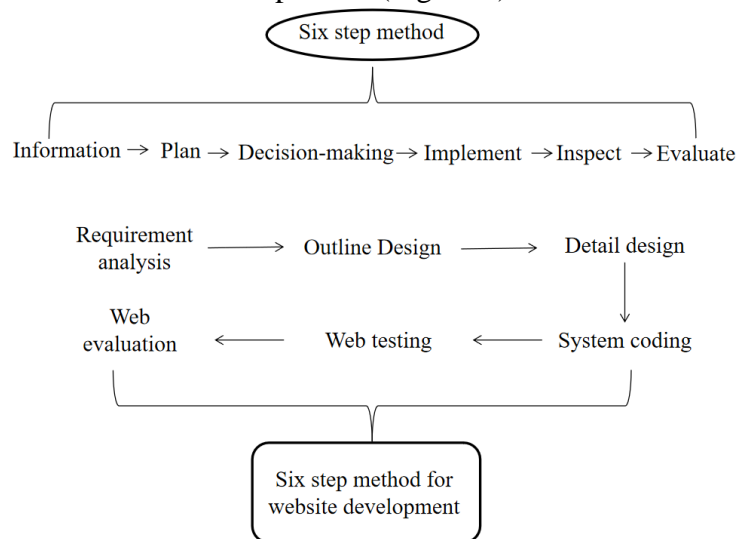


Figure 4: Basic workflow

The specific process is as follows: The project team leader (teacher) will issue the task requirement analysis, and then the team leader and team members (students in the group) will carry out the outline design together, determine the front page and background database, and then refine the detailed design. The team leader will give technical support to the new knowledge involved in the design, and the students will complete the system coding part, after which the website test will be conducted to check the operation effect. Finally, each group exchange works, and carry on the overall evaluation of the function of this web page.

## 5.2 Overall evaluation of the course

On the basis of the original course evaluation, this course combined with the process assessment, the completion of the four situations into the overall evaluation, professional ability 60%, team ability 20%, innovation and expression ability 10%. This pays more attention to the learning process and ability training, and comprehensively evaluates the students' website design ability and cultural literacy. Practice has proved that due to the strengthening of the usual practice of the assessment, improve the proportion of process assessment, pay attention to the cultivation of students' basic professional quality, a more comprehensive and true reflection of students' skill level.

## 6. Conclusion

Through the overall design and concrete implementation of this course, it is proved that selecting projects of moderate difficulty, creating project teaching situations, and allowing students to participate in and complete the projects can stimulate students' learning enthusiasm, stimulate students' learning interest, mobilize students' enthusiasm for learning, and truly enable students to experience a transformation from theory to practice. Then from practice to theory, the spiraling process of "concretizing knowledge" gives play to their main role in teaching activities, cultivates students' cooperation ability and professional skills, realizes the organic combination of theory and practice, and can produce better teaching results.

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