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Exploration and Research on Project Teaching of Building Construction Technology

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Abstract

Construction technology is one of the important courses of construction engineering specialty, which is of great significance to cultivate students' practical ability and professional quality. This paper aims to explore the implementation method and effect of construction technology project teaching, in order to improve the teaching quality and the comprehensive quality of students.

Keywords

Construction Technology; Project Teaching; Teaching Reform.

1. Post Analysis of Construction Engineering Technology Specialty

Through the analysis of the employment positions of the graduates of construction engineering technology major, we determined the professional talent training plan, determined the curriculum system, and determined the teaching methods. Then, through the forms of expert interviews and symposiums, we made an in-depth analysis of the professional positions of construction enterprises and related enterprises to understand the needs of enterprises. Through the analysis, we found that the graduates of this major can be engaged in the following jobs: construction worker, quality inspector, materialman, documenter, budgeter, safety officer, etc., so we take the needs of enterprises as the guiding goal, lay a solid professional foundation for students, and enable students to become the talents required by enterprises.

2. Course Content and Current Situation of Building Construction Technology

2.1. Course Content

According to the talent training program for the major of construction engineering technology, the course "construction technology" is one of the core courses for the major of construction engineering technology, and the pre courses include architectural drawing and structure, concrete structure, steel structure, and building materials. Follow up courses: construction organization, project management, construction engineering measurement and pricing, construction engineering data management, construction engineering quality and safety management. The course content of "building construction technology" is a highly practical course with basic theories, basic knowledge and basic skills such as building construction method, construction theory and construction technology.

The course of building construction technology serves higher vocational students majoring in building engineering technology, and fully considers the characteristics and learning needs of students. In the teaching process, it will focus on making students familiar with the construction and installation sequence of general building engineering and the required facilities and equipment, master the basic theoretical knowledge of building construction, train students to learn the writing skills of construction scheme, understand the specification and inspection, and cultivate the practical ability of simulation training.

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2.2. Course Status

The traditional course of "building construction technology" mainly focuses on Teachers' classroom teaching of theoretical knowledge, and plays video clips of construction technology, construction methods and technology to assist students' understanding. Organize students to visit the construction site, and the teacher will answer the students' questions on the site. In the process of course teaching, the following problems often occur. Simply playing video clips to understand the construction technology and construction methods is too monotonous, and students can only understand the relevant skills through book comparison and imagination, and can not truly master the relevant skills. For different construction processes and methods, the teaching effect of visiting the construction site will be different. Due to the short duration of the site visit, due to the randomness of the construction stage on the site, it is impossible to fully understand all the construction technologies and processes, and the degree of cognition is limited. At the same time, the site visit is limited to the knowledge level, and students cannot apply theoretical knowledge to practice. Students' learning in class is passive and boring, and their understanding of construction technology is only superficial. The lack of practical skills, the disconnection between theory and practice, and the students' failure to master the knowledge of construction technology at the end of the course lead to their inability to work and poor ability to solve practical problems.

3. Project Teaching Design of Building Construction Technology

3.1. Basis of Project Teaching Design

Based on the on-site construction production practice, the course reconstructs the learning situation of building construction, establishes the project-based teaching module of building construction technology, and reforms the course teaching system. Change the traditional teaching method of teaching theoretical knowledge while practicing operation, and adopt the project-based teaching mode. Each learning task is based on the application of building construction technology and technology as the carrier, based on the professional activities of building construction, reconstructs the course content with the actual work tasks of building, and integrates the knowledge, skills and quality training of building into the actual construction site and construction process.

3.2. Course Teaching Design Process.

The whole teaching process of the course is designed to meet the requirements of project-based teaching, and is carried out in an orderly manner according to eight stages: teaching preparation, explaining tasks and methods, determining key points and asking questions, determining groups and working hours, students' processing information, students' displaying work results, discussion and evaluation, and ensuring the correctness of work results.

4. The Implementation of Project Teaching in the Course of Building Construction Technology

According to the characteristics of project-based teaching, "project as the main line, students as the main body, teachers as the leading role", combined with the characteristics of modern building construction and the curriculum standard of building construction technology, the course content is set as the following teaching projects: earthwork project, pile foundation project, masonry project, scaffold project, reinforced concrete structure project, prestressed concrete project, structural installation project, waterproof project, decoration project. Each teaching project contains several sub projects. Among them, earthwork includes: earthwork quantity, earthwork filling and compaction, earthwork foundation pit support, foundation pit

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dewatering and drainage; Pile foundation works include: concrete precast pile, concrete cast-in-place pile; Masonry works include: masonry mortar, stone masonry construction, brick masonry construction and block masonry; Scaffold works include: fastener type steel pipe scaffold, bowl type steel pipe scaffold and vertical facilities; Reinforced concrete structure engineering includes: formwork engineering, reinforcement engineering and concrete engineering; Structural installation works include: steel structure installation works, single storey plant installation works; Waterproofing works include: roof waterproofing works, underground waterproofing works and exterior wall waterproofing works; Decoration works include: ground decoration works, wall decoration works and ceiling decoration works.

During the implementation of the course, a total of nine learning projects were designed, each of which is not only relatively independent, but also a complete learning unit linked with each other. The course is mainly based on the application of the actual construction enterprise construction site as the project carrier. The typicality of project design should not only have the meaning of universal application, but also effectively promote the development of students' professional ability. Considering the needs of students' sustainable development after graduation, we have built a project-based curriculum system from easy to difficult, from basic to comprehensive, and gradually implemented teaching.

Taking the reinforced concrete structure project as an example, in the teaching of this project, combined with the training site, students are arranged to carry out four stages of training to simulate the construction of the main structure project. In the first stage, students are divided into several groups to read the structural construction drawings and calculate the cutting length of reinforcement. In the second stage, engineers with rich on-site construction experience at the construction site will be introduced to lead students to enter the construction operation layer, simulate the construction site through shift, fixed-point and rotation operation, and participate in the construction work of various process types such as scaffolder, formwork worker and rebar worker. In the third stage, the main works are completed, and the construction quality acceptance of formworks and reinforcement workers is carried out for the completed works. In the training project, students can systematically and quickly understand the theoretical knowledge and operation skills of construction technology of scaffolder, formwork worker, reinforcement worker and other types of work, and master the methods and skills of reading construction drawings. In the fourth stage, after the completion of the training, the students will be organized to reply and accept the training effect. Through the specific participation of the whole project, students can clearly and accurately answer the relevant construction process and working principle. At the same time, after completing the training, the students' understanding of map reading, mechanics, structure and other knowledge has also been greatly improved.

5. Concluding Remarks

The teaching reform practice of the course of building construction technology shows that the project teaching method not only stimulates students' interest in learning, strengthens their learning motivation, but also improves students' ability to solve practical problems, so as to comprehensively improve the teaching effect of the construction course.

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