

Application of Project Teaching of Building Materials Course in Vocational Colleges

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Abstract: This paper deeply discusses the innovative application of project-based teaching method in the course of building materials in vocational colleges, aiming to improve the quality and effect of course teaching through a teaching mode that is closer to reality and pays attention to the cultivation of students' practical ability and comprehensive quality. Starting from the theoretical basis of project-based teaching method and combining with the characteristics of building materials courses in vocational colleges, this paper expounds the design principles, implementation steps, allocation of teaching resources and evaluation of teaching effects of teaching projects in detail. It also focuses on analyzing the effectiveness of project-based teaching method in the "nooks and crannies" that are difficult to reach in traditional teaching mode, that is, the in-depth exploration of course content, the satisfaction of students' individual needs, and the deepening of school-enterprise cooperation. Through case analysis and practice reflection, this paper provides a valuable reference for the teaching reform of building materials course in vocational colleges.

Keywords: Vocational colleges; Building materials course; Project-based teaching; Teaching mode reform; School-enterprise cooperation

Introduction:

With the deepening of vocational education reform, the traditional teacher-lecture-based teaching model has been unable to meet the industry's demand for highly skilled personnel. As an important basic course for architecture majors, the teaching quality of building materials is directly related to the competitiveness of students' future career development. Therefore, the teaching mode has become an important topic in the teaching reform of building materials course in vocational colleges. With its characteristics of emphasizing practice, emphasizing process and encouraging innovation, project-based teaching method has gradually attracted the attention and favor of vocational education circles. This paper aims to provide a detailed exposition of project-based teaching method in the curriculum reform of building materials in vocational colleges.

1. Theoretical basis of project-based teaching method

Project-based Learning (PBL) is a project-centered teaching method that guides students to complete a series of Project tasks related to professional knowledge, so as to achieve learning goals. It emphasizes that under the guidance of teachers, students combine theoretical knowledge with practical problems through independent inquiry, cooperative learning and practical operation, and cultivate the ability to solve practical problems, the ability of teamwork and innovative thinking. Project-based teaching focuses not only on learning results, but also on learning process, encouraging students to find problems, analyze problems and try to find solutions to problems in the process of completing tasks.

Compared with the traditional teaching method, the project-based teaching method has obvious advantages. First of all, it can stimulate students' interest in learning and improve their enthusiasm for learning. By participating in practical project tasks, students can intuitively feel the meaning and value of learning, so as to cherish the learning opportunity more and study hard. Secondly, project-based teaching method can cultivate students' practical ability and innovative ability. In the project tasks, students need to apply the theoretical knowledge they have learned to practical problems, which can not only consolidate the knowledge they have learned, but also exercise their practical ability and innovative thinking. Finally, the project-based teaching method can also cultivate students' teamwork spirit and communication skills. In the project task, students need to work with team members to complete the task together,

which can not only cultivate students' teamwork spirit, but also improve students' communication skills.

2. Analysis of the characteristics of building materials courses in vocational colleges

The course of building materials in vocational colleges has equal emphasis on theory and practice. The traditional teaching mode often focuses on the imparting of theoretical knowledge, but neglects the cultivation of students' practical ability. At the same time, due to the extensive and in-depth content of the course, the traditional teaching mode is difficult to take into account the individual needs and learning interests of all students. Therefore, the introduction of project-based teaching method in the course of building materials in vocational colleges is helpful to break the limitation of traditional teaching mode and improve the teaching quality and effect.

3. Application practice of project-based teaching in building materials courses

3.1 Principles of teaching project design

Teaching projects should be clear about specific learning objectives, ensure that students can obtain relevant theoretical knowledge and practical skills, should be as close to the actual work scene as possible, so that students can learn and practice in a simulated real environment, should cover multiple knowledge points and skill points, and promote students to comprehensively apply the knowledge to solve problems, with a certain difficulty gradient. Meet the learning needs of students at different levels, easy to implement and operate, tasks.

3.2 Teaching project implementation steps

The teacher introduced the project background, objectives, requirements and expected results, and stimulated students' interest and motivation to participate in the project. Students were grouped according to the project needs and their own interests, and assigned roles and tasks within the group. Data collection and program design: Students collect relevant materials using library, Internet and other resources, and formulate project implementation plans. Under the guidance of teachers, students carry out practical operations, problem solving, achievement display and evaluation according to the implementation plans.

3.3 Allocation of teaching resources

In order to ensure the smooth implementation of project-based teaching, vocational colleges need to allocate teaching resources reasonably. Including: strengthening teacher training, improving teachers' project guidance ability and practical teaching ability, improving the construction of experimental training room, providing sufficient experimental training equipment and materials, school-enterprise cooperation resources: Deepen school-enterprise cooperation, introduce real projects and technical support from enterprises, improve the authenticity and practicability of teaching projects, teaching effect evaluation Teaching effect evaluation should pay attention to the combination of process evaluation and result evaluation. Specific assessment contents include: assessment of students' mastery of relevant theoretical knowledge through tests and assignments; assessment of students' improvement of practical ability through presentation of project results and assessment of practical operation; teamwork ability: assessment of students' teamwork ability, innovation of project plan and problem-solving through group mutual assessment and teacher observation.

4. Exploration of project-based teaching in "nooks and cranny"

In the traditional teaching mode, the teaching of building materials in vocational colleges is often limited to the teaching of textbook content, and teachers explain the types, properties, uses and other basic knowledge of building materials step by step according to the established teaching plan. Although this teaching method can ensure that students master certain theoretical knowledge, it often ignores the depth and breadth of the course content, resulting in the lack of initiative and exploration spirit of students in the learning process.

The project-based teaching principle provides a new opportunity for the in-depth exploration of the course content. By designing challenging, innovative and practical project tasks, the project-based approach encourages students to explore and learn deeper knowledge about building materials beyond the framework of the textbook. The following takes the research and development project of new building materials as an example to discuss the application of project-based teaching in the depth mining of course content.

4.1 Introduction of research and development projects of new building materials

In the context of project-based teaching, teachers can design a project on the research and development of new building materials according to the characteristics of building materials courses and industry needs. This project can be a simulated or real enterprise research and development task, designed to give students in-depth knowledge of the research and development process of new building materials, performance characteristics, market applications and other aspects.

4.2 In-depth exploration during project implementation

In the process of project implementation, students need to first understand the basic properties of new building materials, such as strength, durability, fire resistance, environmental protection, etc. Through literature review, experimental testing and other means, students can deeply understand the testing methods and evaluation standards of these performance indicators, so as to master more comprehensive and in-depth professional knowledge. On the basis of understanding the properties of new building materials, students also need to conduct in-depth analysis of their advantages and disadvantages. This requires students to have not only solid professional knowledge, but also critical thinking and problem solving skills. By analyzing the advantages and disadvantages of new building materials, students can more clearly understand their applicability and limitations in different application scenarios. The research and development of new building materials is inseparable from advanced production technology. In the process of project implementation, students need to understand and master the production process of new building materials, including the selection of raw materials, the operation of processing equipment, and the setting of production parameters. Through practical operations and simulation experiments, students can gain insight into the impact of production processes on material properties, laying the foundation for future innovative research and development. The ultimate goal of research and development of new building materials is for market application. In the process of project implementation, students need to pay attention to market dynamics and changes in demand, and understand the market positioning, competitive advantages and potential markets of new building materials. Through means such as market research and case analysis, students can gain a deeper understanding of market needs and industry dynamics, and prepare for future career development. Through the implementation of the new building materials research and development project, students can not only master more comprehensive and in-depth professional knowledge, but also improve practical ability and innovation ability. At the end of the project, the teacher should organize the students to present the results and reflect on the discussion. Students can share their own research results and lessons learned, as well as draw valuable suggestions and opinions from the feedback of other students and teachers. This reflection process helps students to better summarize experience, identify problems and make continuous improvement.

Conclusion

The application of project-based teaching method in the course of building materials in vocational colleges not only helps to deepen and expand the content of the course, but also stimulates students' learning interest and exploration spirit, and improves their practical ability and innovation ability. In the future teaching practice, we should continue to explore and improve the application model and method of project-based teaching method in the course of building materials.

References:

- [1] Xu Li. Teaching Reform and Practice of project-based courses in Higher vocational colleges -- Taking Architectural Design Technology Major as an example [J]. Science and Technology Economic Market, 2017(09):155-156.
- [2] Chen Wei, XU Yidong. Project-driven Teaching Reform of Building Materials Curriculum [J]. Higher Architectural Education, 2015, 24(03):103-105.
- [3] Zhu Zigang. Research on the application of Project Teaching Method in the teaching of Architecture [J]. Curriculum Education Research, 2016(01):255-256.

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