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Research on the Reform of Prefabricated Architecture Teaching Courses for Engineering Majors

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Abstract

In recent years, with the vigorous promotion of information technology in the construction industry, the implementation of construction industrialization has continued to advance, and the development of prefabricated buildings has become the direction of industrialization of the construction industry. The teaching of prefabricated construction courses in engineering colleges and universities plays a key role in cultivating technical and technical talents required by the times. This article combines the teaching experience of the prefabricated building major of the Fuzhou University of Foreign Languages and Trade, under the background of the transformation and upgrading of the construction industry, researches on the background and significance of the prefabricated building curriculum reform, the talent training model and the curriculum system setting, and the prefabricated building teaching reform. Provide ideas for the reform of prefabricated construction courses.

Keywords

Prefabricated Building; Talent Training; Curriculum Reform.

1. The Reform Background of Prefabricated Construction Teaching Courses for Engineering Majors

In recent decades, the vigorous development of China's construction industry has greatly promoted the growth of the national economy. As a pillar industry for the development of the national economy, under the country's strategic deployment of vigorously promoting urbanization, the construction industry has developed soundly and steadily, and continues to show an upward trend. However, in the face of China's current increase in land transfer costs, rising labor and labor prices, and people's gradual increase in awareness of energy conservation and environmental protection requirements, the construction industry is facing increasing pressure from international competition. At the same time, the country has also accelerated the adjustment of the construction industry structure and advocated the concept of green building energy conservation in the construction industry. In this context, in order to improve core competitiveness, a new industry model—prefabricated prefabricated buildings has emerged, and the application of prefabricated buildings has attracted much attention. Prefabricated building is the innovation of the construction industry's production mode and an effective way to transform the development mode. It is in line with the national sustainable development concept and the objective needs of China's current social and economic development. It will definitely become a turning point for the construction industry [1].

The method of assembly building is to produce prefabricated components including beams, slabs, columns and external walls in the factory, and then transport them to the site for installation and completion of construction after being maintained and qualified. Compared with traditional cast-in-place reinforced concrete and masonry buildings, prefabricated buildings have the following obvious advantages in the design, production, transportation, and construction links: greatly shortening the construction period and greatly improving

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construction efficiency; conducive to building products The integration of production and the realization of scale effects; it is conducive to energy saving, land saving, water saving, money saving and environmental protection; it can reduce the disturbance of construction noise and the emission of harmful gases; it can greatly reduce the waste of materials in construction And construction waste; it is conducive to the promotion and implementation of green and low-carbon new technologies.

In the 2017 government work report rarely directly proposed "promote the reform and development of the construction industry": adhere to standardized design, factory production, assembly construction, integrated decoration, information management, intelligent application, promote innovation in construction methods, and vigorously develop assembly The development of modern wood-structured buildings is advocated in places where conditions permit, and the proportion of prefabricated buildings in newly-built buildings is continuously increased. Strive to use about 10 years to make prefabricated buildings account for 30% of the newly built building area. Promote the popularization of intelligent applications in new buildings and the renovation of existing buildings, improve the operation and maintenance mechanism of intelligent systems, and achieve building comfort, safety, energy saving and high efficiency [2].

At present, the industrialization of prefabricated prefabricated buildings in China is still in its infancy, and a large number of professional and technical personnel who can design, construct, understand management, and know accounting are needed. In order to quickly adapt to and match the country’s pace of industrial reforms and talent needs, and provide a powerful and scientific talent training system and mechanism, colleges and universities should deepen the reform of innovation and entrepreneurship education, establish a mechanism that combines production, education and research, and accelerate the training of talents, guide and standardize Development of prefabricated buildings. The training of prefabricated talents requires the reform of the existing prefabricated training courses for talents. Through the reform of the curriculum and teaching mode, students have the ability to engage in the planning, design and construction, research and development and management of modern construction projects in the construction industry.

2. The Significance of the Reform of Prefabricated Construction Teaching Courses for Engineering Majors

Prefabricated buildings have fundamentally changed the past construction methods from design, production to construction and assembly. Therefore, cultivating a new type of talent team is the top priority of the development of the industry. At present, the prefabricated industry is in the initial stage of rapid development, with strong policy orientation, insufficient maturity in various fields, prominent contradictions, backward informatization, and strong demand for prefabricated construction talents. Under the situation of insufficient informatization in the industry, seek breakthroughs in the cultivation of talents in colleges and universities, truly enhance their core competitiveness, and strive to boost the innovation and development of the assembly industry on the basis of future experience.

On the one hand, the prefabricated building curriculum reform keeps up with the latest trends in the development of the industry and meets the society's demand for prefabricated building talents; on the other hand, it adheres to the talent training model that combines theory and practice to help the school's application-oriented university construction. Innovative prefabricated talent training model solves prefabricated professionals, so that people can meet the needs of the employer directly to the employer. Therefore, the reform of prefabricated construction courses has the following significance:

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First of all, innovate the teaching reform of prefabricated architecture, and insist on cultivating talents who combine theory and practice. According to the curriculum characteristics of prefabricated buildings, students' cognitive rules, and the principle of combining "virtual and real", the teaching conditions are improved, including the construction of prefabricated building training rooms to meet students' in-class training and special ability training And comprehensive training needs. The prefabricated building virtual simulation system, that is, the virtual simulation system of the component "production, transportation, construction" process; through the virtual reality and perfect talent training program, it provides powerful conditions for assisting the training of prefabricated talents.

Secondly, keep up with the latest developments in the industry and train outstanding talents with the market as the guidance. Building industrialized production is an emerging technology that the country and the industry vigorously promote. Innovate the prefabricated building curriculum reform, implement prefabricated personnel training and teaching, build a complete teaching curriculum system, and cultivate good knowledge of drawings, design, precise construction, understanding of management, and accounting Professional and technical personnel.

Finally, respond to the call for application-oriented undergraduate construction and meet the needs of discipline construction. Prefabricated building teaching follows the cognitive law of students, through the combination of "virtual and actual", and the integration of theory and training, gradually forming a gradual process of gradual improvement from special ability and comprehensive ability to post ability. The prefabricated building curriculum reform can not only provide students with good teaching conditions, but also greatly improve the level of scientific research and subject construction, improve the level of school running, and provide a strong guarantee for cultivating high-level talents in prefabricated architecture.

3. Principles of Teaching Curriculum Reform of Prefabricated Construction for Engineering Majors

3.1. Combination of Practicality and Theory

With the continuous and in-depth development of the industrialization of the construction industry, the current prefabricated construction course teaching can no longer fully meet the actual needs of the construction industry at this stage. Innovative prefabricated construction course teaching is imperative, so this article proposes a prefabricated professional course system Major reforms. However, the basis and final measurement standard of curriculum reform should depend on whether its implementation is really conducive to accelerating the promotion of modern industry and national social and economic development, and whether it meets the employment standards of the construction industry. Therefore, the teaching reform of the prefabricated curriculum system should be based on reality, go deep into related industries, enterprises and technical positions, and master relevant information about professional technology development and first-hand market demand.

At the same time, it also pays attention to enhancing the typicality and extensiveness of research subjects and the scientific standardization of research procedures, using objective and rational scientific attitudes and scientific theoretical methods to in-depth research on the correct development strategy direction and the content of specific technological innovation activities, and re-accurate. Define a new type of prefabricated building. Pay attention to the education and training objectives and professional training teaching mode of relevant professional and technical personnel in the national prefabricated construction industrial environmental engineering, adjust inappropriate professional teaching content, supplement important professional knowledge and promote sustainable development theoretical content

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combined with teaching practicality And theoretical science, formulate a complete prefabricated building professional education training plan [3].

3.2. Combination of Tradition and Innovation

The structural reform curriculum of the innovative curriculum system should strictly follow the basic principles of curriculum sustainable development and seeking truth from facts, and cannot completely ignore the reality that the traditional building structure will still exist for a long time in the future. Therefore, it is necessary to combine the traditional teaching concepts of architectural courses with the latest prefabricated building courses and comprehensively analyze them as the guiding direction of course practice. Curriculum reform and innovation can not completely negate the important role of the main teaching content of the traditional architecture curriculum system in the teaching process, but it is also necessary to pay attention to the necessity of integrating the innovative prefabricated building curriculum reform into the current teaching. Therefore, the innovation of prefabricated curriculum reform cannot be accomplished overnight, but it cannot be overwhelming. Curriculum reform should look forward to the future. It is a gradual and orderly innovation process that combines current practical applications.

4. Reform Measures of Prefabricated Construction Teaching Courses for Engineering Majors

4.1. Talent Cultivation and Innovation

Reasonably plan a market-oriented prefabricated talent training model and formulate a market-oriented prefabricated talent training program. Reform and innovate our school's existing talent training program for prefabricated buildings, and form a unique training model suitable for our school's prefabricated building major. In addition, the curriculum ideological and political education and innovation and entrepreneurship education are integrated into the curriculum assembly-type architectural curriculum system, the curriculum ideological and political education, and innovation and innovation education are incorporated into the talent training specifications and curriculum standards, and new classroom teaching models such as curriculum ideological and political education and innovation and entrepreneurship education are implemented. According to the academic year, the curriculum training objectives are divided into three stages: basic ability training, core ability training, and expansion ability training. The corresponding courses are divided into professional basic courses + professional core courses + professional development courses to improve students' professional skills. Carry out building information modeling, prefabricated building components and production of "1+X" certificate system pilots, to give students who have obtained grade certificates, credit recognition and replacement of corresponding courses, and promote the integration of course certificates [4].

4.2. Teaching Model Reform

Reform the teaching model, vigorously promote school-enterprise cooperation, and implement a school-enterprise teacher mixed teaching model of "one lesson with two teachers". Make full use of the teaching advantages of full-time teachers and the practical experience of part-time teachers in enterprises to form a "dual-teacher dual-ability" teaching team. Promote the mutual exchanges between school teachers and enterprise teachers, and innovate the curriculum system that integrates production and education on the basis of clarifying the employment of enterprises. In the construction of the curriculum system, fully introduce the national and industry standards of prefabricated construction, and integrate the standards into specific courses to ensure the standardization and adaptability of the knowledge taught. Secondly, enterprise teachers and school teachers jointly compiled practical textbooks suitable for the

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current situation of the students of the school, incorporating the latest technologies in the design, production and construction of prefabricated components of the enterprise at this stage. Basic practical teaching content [5].

4.3. Practical Teaching Application

The prefabricated building advocates the concept of "standardized design, factory production, assembly construction, integrated decoration, and information management." The principle of "virtual and actual" combination is to improve teaching conditions, including the construction of prefabricated building training rooms to meet the needs of students' in-class training, special ability training and comprehensive training. The prefabricated building virtual simulation system, that is, the virtual simulation system of the component "production, transportation, construction" process; through the virtual reality and perfect talent training program, it provides powerful conditions for assisting the training of prefabricated talents. In addition, in the teaching process of prefabricated construction courses, combined with BIM and other related technologies for simulation teaching, students can master the latest and most cutting-edge technologies such as BIM informatization modeling and informatization applications.

5. Conclusion

With the continuous promulgation of urban environmental protection policies related to energy conservation, emission reduction, and sustainable development in urban engineering construction in China, prefabricated buildings have gradually become the development trend of urban building materials industrialization. The prefabricated building construction system realizes the process standardization of the enterprise prefabricated building component construction design, production factoryization, transportation process logistics and construction and installation process professionalization, which improves the efficiency of prefabricated building construction and production and reduces the waste in construction . Therefore, the construction of prefabricated buildings has broad development prospects. Talent training is a systematic project, which should be fully investigated, strengthened design, detailed argumentation, guided by professional teaching standards, supported by practical teaching conditions, and cultivate compound technical skills talents. This article explores the talent training model of prefabricated buildings and provides reform ideas for the teaching of prefabricated buildings.

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