The Teaching Design of Steel Structure Course Based on the Training Goal of Applied Technology Talents

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ABSTRACT

With the national promotion of the assembly architecture, the number of talents in the steel structure industry is far from meeting the needs of the industry development, and the development of building industrialization has also become more and more demanding for the quality of talents. Although undergraduate colleges in applied technology offer courses in steel structure, students often feel helpless about actual steel structure engineering designs after graduation. The difficulty of ensuring the quality and effectiveness of classroom teaching is one of the reasons for this situation. This article reforms the classroom teaching of steel structure from four aspects: classroom goal orientation, teaching content and teaching method, so as to improve the quality of teaching and personnel training.¹

KEYWORDS

Applied technology type, steel structure, classroom teaching design, talent cultivation objectives.

INTRODUCTION

With the deepening of education reform, the country pays more attention to the cultivation of talents and improves the teaching quality. As the country vigorously promotes the assembly building, the quality requirements of talents for steel

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structure industry are also getting higher and higher. With the implementation of subject professional evaluation and professional certification, Training objective, teaching course and quality evaluation are the main evaluation indexes of undergraduate.

Classroom teaching is the basic form of education, which is an important part of talent cultivation. It is closely related to teachers and students, and most of the students' study time is spent in class. The traditional classroom teaching lacks scientific and reasonable design, and the teacher is centered on teaching. Most of the time is the individual drama of teachers, although there is interaction, but lack of inspiring high-level interaction; the classroom is often arbitrary, lack of continuity, teaching effect is difficult to guarantee. Therefore, it is imperative to design classroom teaching. The following is a discussion of classroom teaching design from four aspects: goal orientation, teaching content, teaching method and means, and extending classroom.

COURSE GOAL ORIENTATION

With the country's efforts to develop prefabricated buildings and the transformation of the construction industry, prefabricated buildings account for more than 30% of new buildings. But there are fewer than 100,000 prefabricated construction technicians in our country, which can’t meet the needs of the transformation and development of the construction industry. Enterprises are in urgent need of steel structure talents, so that it requires that employees not only have solid professional knowledge, but also have strong ability to solve practical engineering problems, teamwork and interpersonal skills. Therefore, in formulating the target of talents training, we should pay more attention to the cultivation of students' ability and the comprehensive quality of the humanities, science and engineering, on the basis of the knowledge structure that students need. According to the target of talent training, the course target of steel structure is set up, and the specific target decomposition is shown in figure 1. The training objective of steel structure course is to make students pay attention to the cultivation of learning ability, practical ability and humanistic and scientific comprehensive quality through the course content, teaching method and the design of extended classroom, on the basis of mastering the design principles and design methods of steel structure.

THE TEACHING CONTENT

Teaching content is the main component of classroom teaching design, In addition to the traditional key and difficult point of teaching content design, at the request of the new application technology talents training target, teaching content design is not only to accurately determine the key and difficult point, combining
with the talents cultivation target, make the students meet the requirements of the graduate professional knowledge. Moreover, we should focus on the integration of knowledge and the construction of professional knowledge system from point to line and surface, and then simplify the professional knowledge system to make it more scientific and practical. To promote the consolidation of basic knowledge and the pertinence of application technology, so as to improve the application ability of students' engineering science and professional knowledge and the ability to solve practical problems in civil engineering. In this way, students can have a clear goal in the course of their study, more aware of their weak links, and improve their subjective initiative.

Taking the course of steel structure as an example, in the content organization, it is expounded from three aspects, point, line and surface. In the design aspect of the point, we should simplify and optimize the content of the course, distinguish the priorities, first grasp the focus of the course, expand the knowledge content on the basis of the key content, explain the difficulty points, and avoid putting the cart before the cart.²

In the design aspect of the line, it is connected with other courses to form a scientific professional knowledge system, such as advanced mathematics, material mechanics, structural mechanics, basic engineering, and composite structure, etc.

In the design aspect of the surface, it is necessary to train students to think and solve problems from the subject level. In addition, in the course of steel structure teaching, while emphasizing the knowledge and knowledge system, we also introduce the development status and industry demand of the construction industry to students. The prefabricated steel structure is the future development direction of the national construction industry and is currently being vigorously promoted. This
course knowledge is the necessary knowledge for the development of the industry. In this way, students can truly understand and identify their profession, increase their sense of social responsibility, change from passive learning to motivated learning, and establish a good attitude towards learning.

THE TEACHING METHOD

The single teaching method not only makes the classroom boring, the students do not think, love to skip class, watch the mobile phone to neglect the study, also cannot achieve the expected teaching effect. Teachers should adopt appropriate teaching methods, and all kinds of teaching methods should be integrated with each other. Teaching and learning can achieve harmony and unity, so that students are more interested in learning and learning more effectively. Therefore, in the class teaching of steel structure, different methods are used to mobilize students' interest in learning. For example, video is used to play the construction process of concrete structure and prefabricated steel structure. By contrast, students are directly aware that the prefabricated buildings are green, environmentally friendly, low-carbon and energy-saving buildings, which are in line with the development direction of China's construction industry, so as to stimulate students' sense of responsibility and become active, so as to better study the course.

In the course of explaining the knowledge points to students, a variety of teaching methods such as teaching method, heuristic teaching method and case teaching method are used. For example, in the teaching of steel structure stability, first adopts the case of gymnasium in the city of Hartford collapse, let the students analyze the reason; think about why the structure is broken? Then, according to the questions raised, the teaching of the stable performance of steel structure is conducted, after the teaching, let the students complete the design of the stability of the pressure bar. On this basis, the return to the case, let the students analyze the cause of the accident, Write analysis reports in groups. Ultimately, the teacher is auxiliary and the student is the main is well implemented.

CONCLUSIONS

Through the classroom teaching of science of steel structure design, not only improve the students' autonomous learning ability, can also be systematic professional knowledge, so as to cultivate students' ability to use knowledge to solve practical problems and should have the engineering consciousness. After graduation, students can enter the job as soon as possible, and become a qualified structural engineer.
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