

Thinking about the Construction of Green Building Innovation Training Center Based on the Integration of Industry and Education

Gao Shan, Wang Fangfang, Ma Ming

School of Architecture and Civil Engineering, Chengdu University, Chengdu, Sichuan, 610106, China

Abstract: *In response to the national macro strategy of green sustainable development, to achieve the goal of carbon peak by 2030 and carbon neutral by 2060, the country vigorously develops green buildings, and colleges and universities actively cultivate green building technical talents. Taking the construction of green building innovation training base in Chengdu University as an example, this paper focuses on the objectives and ideas, construction content and implementation path of the construction project of green building innovation training center, as well as the characteristics and highlights of the project, in order to provide a useful reference for the construction of green building training base in Colleges and universities.*

Keywords: *Green building, Integration of Production and Education, Training Center, Construction.*

1. Introduction

It is mentioned in the government work report of 2021 that we should promote green development and harmonious coexistence between man and nature; We will do a solid job in all aspects of carbon peaking and carbon neutralization, and work out an action plan for peaking carbon emissions by 2030. In order to achieve the goal of carbon peak by 2030 and carbon neutralization by 2060, it is necessary to vigorously develop green buildings to save resources, protect the environment and reduce pollution in the whole life cycle of buildings. However, at present, the building energy consumption in China has accounted for more than 40% of the total social energy consumption, and the energy waste of the construction industry is serious.

All provinces have issued the corresponding building energy efficiency standards. The demand for green building energy-saving talents by employers has increased sharply, which also puts forward higher requirements for the cultivation of engineering talents in Colleges and universities. It is of great strategic significance for promoting the rapid development of green building industry and the good operation of green building industry chain to build a green building training base with the integration of industry and education and to cultivate practical talents urgently needed by green building industry.

2. Project construction objectives

The construction of green building innovation training center based on the integration of industry and education can not only serve the practical teaching of green building specialty, but also expand to the collaborative innovation platform of industry and education. The center aims to cultivate high-quality technology application-oriented talents and make it an important place and carrier for implementing practical teaching activities, scientific research, innovative practice and social services. Carry out multiple activities such as teaching and training, science exhibition, social training and production practice of green building, and timely introduce foreign advanced green building information to industries, enterprises and universities. Therefore, in the construction of training base, we must embody the harmonious unity of human, building and environment, strengthen the concept of modern energy saving and environmental protection, and make full use of new technologies and materials. In terms of spatial layout, we should fully consider the needs of both fixed functions and expandable functions, and make a reasonable layout according to the functional needs of all kinds of teaching activities and social service activities.

The construction of green building innovation training base should achieve the following goals: (1) to build the green building training center into a teaching base for cultivating applied talents.(2)

Encourage teachers to lead students to form professional and technical teams to participate in technological innovation, technological exchange and technological transformation, and build the green building training center into a base for scientific research project development.(3) Strengthen the cooperation between schools and enterprises, keep up with the development trend of the industry, and introduce the new technology, new materials and new technology of the industry to the training center in time, so that the practical education can reflect the economic development and technological progress in time, and at the same time develop the social service functions of providing technical services, education and training, skill assessment and other aspects for the society. Build the green building training center into an industry technology training center. (4) Give full play to human, financial and material advantages. Through opening to the society, school enterprise cooperation, technical services and other ways, the base gradually has the characteristics of integration of production, learning and research, and the green building training center will be built into a multi-functional base combining teaching, scientific research and production.

3. Project construction content and implementation path

3.1 Establishment of green building training center

Green building training center as a green building teaching and training facilities, must be a certified high standard green building. As a platform for teaching demonstration of green building, we should establish a teaching resource library of green building with vivid and intuitive teaching demonstration system to carry out multi-dimensional and three-dimensional teaching from simple to deep, from small to large, from point to area. The project adopts a number of green building technology applications according to local conditions, such as solar photovoltaic power generation, fresh air full heat recovery, rapid renewable materials, ecological rainwater recovery and utilization system, high efficiency water saving appliances, intelligent lighting control system, natural ventilation system, sunlight induction lighting system, roof greening, garbage classification and recycling, etc, Make the building itself become the carrier of green building teaching.

3.2 Promote the reform of teaching content and the construction of experimental curriculum system

More minor courses or elective courses of green building, health building, building energy saving and other related knowledge will be offered to let more students understand the concept of green building and its importance to the construction industry, and master the simulation and analysis technology of green building. Through teaching practice, curriculum design, training week and graduation design, the experimental project or experimental instruction and teaching materials based on green building simulation analysis series software and green building planning and evaluation system are developed.

3.3 Build a strong teaching staff

On the basis of the existing teaching staff, through the introduction, exchange and training and local services, we should establish a teaching staff with reasonable age, knowledge structure and strong green building practice experience. Take the green building training center as the carrier, strengthen the communication and contact with universities, construction units, design units and operation units, actively seek the opportunity to use technology to serve practical engineering projects, and improve teachers' academic level and practical experience. Actively send teachers to participate in green building related training and learning, and keep abreast of the latest development trend and direction of the industry.

3.4 Building a collaborative innovation platform of industry and education

The green building training center is open to the public, strengthens school enterprise cooperation, keeps up with the development of the industry, and builds a collaborative innovation platform for production and teaching. Carry out multiple activities such as teaching and training, popular science exhibition, social training and technical service of green building, so that students can actively understand the new technologies of innovation or reform in the construction industry at home and abroad with specific engineering projects as clues and various experiments as carriers. Strengthen school enterprise cooperation, school local cooperation, better development and application of new

green building technology; increase the quality of project completion and implementation efficiency. Finally, it will form a comprehensive practice base of internal professional skills training and social external training and certification.

3.5 Strengthen the training of Applied Talents

Based on the joint training of many laboratories, students are recruited to participate in practical engineering projects by means of special seminars, skills training, PBL project-based teaching and training, so as to achieve the transformation from theory to practice, improve professional skills, obtain good employment opportunities and improve the quality of employment. Organize teachers and students to participate in the National College green building related skills competition. Through the practical training of the project, we can cultivate green building professionals with the concept of sustainable development and the ability of green building design, planning and evaluation.

4. Project construction Innovation

4.1 Innovation in construction process

The most important thing to build a green building innovation training base is to establish a green building training center. The foothold of green building is still design, and integrated design plays an important role in the process of green building construction. The project team is led by the designer to practice the integrated design method for the green building innovation center project. EPC (Engineering, procurement, construction) construction mode is adopted in this project, which makes the designer and the constructor bind as a whole, so that the integrated design can be realized. Integrated design is a kind of comprehensive design method that emphasizes the consideration from the overall perspective of architecture and the coordinated development of various specialties. It can achieve multiple goals at the same time. Traditional design is a kind of linear design mode. The design team is led by the owner to carry out scheme design and construction drawing. In this process, designers, engineers and construction contractors work independently and lack of deep communication and interaction. In the integrated design, under the EPC mode, since the contractor has been involved in the project at the early stage of the design, the professional knowledge and skills of the construction party can be reflected in the design documents in the aspects of construction methods, cost reduction, construction period shortening, and the feasibility of the design in the construction, so as to effectively optimize the design; Due to the binding interests of the designer and the construction party, the owner and the cooperators can coordinate and cooperate with each other to carry out the design, and connect completely different factors, scales and objectives.

4.2 Integration and innovation of industry and education

The construction of green building innovation training base based on the integration of production and education can serve the practical teaching of green building specialty, integrate the latest technology in the field of green building into the practice of construction engineering related specialty, cultivate students' professional technology application ability of using theoretical knowledge to solve practical problems, and cultivate green building application-oriented talents. At the same time, the green building innovation training base is also a scientific research project development base, industry technology training center and a multi-functional base combining teaching, scientific research and production, to cultivate research talents engaged in green building science and technology development and practical skilled talents urgently needed by the green building industry.

5. Conclusion

The construction of green building innovation training center based on the integration of industry and education can not only cooperate with the teaching practice of green building, but also integrate the latest technology in the field of green building into the practice of construction engineering related majors, so as to maximize the skills training of green building national standards, BIM based simulation technology and green building planning and evaluation system. On this basis, the collaborative innovation platform of industry and education will be built to carry out diversified activities such as teaching and training, science popularization exhibition, social training and production practice of green building. Through the project practice training, we can cultivate green

building professionals with the concept of sustainable development and the ability of green building design, planning and evaluation.

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