

Thoughts on University Architectural Technology Education Based on the Concept of Sustainable Development

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Abstract: With the deepening of the concept of sustainable development, the current social needs of the construction industry have changed, so the corresponding education should also be changed. At present, for the discipline of architectural technology, some traditional educational concepts and methods cannot meet the needs of society, so it is necessary to make targeted adjustments. Based on this, starting with the current situation of University Architectural Technology Education in China, this paper first analyses the existing problems in University Architectural Technology Education in China, and then discusses the improvement measures of University Architectural Technology Education Based on the concept of sustainable development, hoping to provide some reference for the improvement of University Architectural Technology Education in China.

1. Current Situation of Architectural Technology Education in Chinese Universities

The concept of sustainable development requires universities to infiltrate the technologies of ecology, environmental protection and sustainability into the education of construction technology. When China carries out the education of construction technology, it also actively calls for the effective integration of construction technology education and sustainable development in many famous universities. For example, Tsinghua University, Tongji University, Southeast University and Tianjin University have added knowledge points of sustainable development to the curriculum practice of architectural technology education. However, the current system of Architectural Technology Education in China has not kept pace with the times. Generally speaking, the current situation of University Architectural Technology Education in China is as follows:

(1) Course system. The arrangement of theoretical courses and practical courses is not reasonable enough, which often leads to the lack of practical courses. For example, in the teaching of building physics and other courses, the whole process revolves around the development of formulas and theories, which leads to the low enthusiasm of students to participate, and also affects the effect of theoretical teaching. In addition, the links between theoretical courses and practical design in China's architectural technology education are not in place, such as ancient architectural surveying and mapping, color practice and so on. These are important links to link theory and practice. However, there are some problems in the connection between design practice and theoretical learning in the current architectural technology education in Colleges and universities, lacking of experience and experience. For example, the theory course arranges the theory and principle study of green building, but the design practice is the integration of green building design, which leads to the lack of students' understanding of theoretical knowledge in practice and affects the learning effect.

(2) Theoretical knowledge. There are some deficiencies in the knowledge of architectural technology and architectural design technology in Chinese universities, so the study of students' theoretical knowledge is not systematic enough. For example, in the study of building ecology and building energy conservation, there are few related contents of water supply and drainage learning and HVAC learning, so there is one-sidedness in the study of theoretical knowledge. Moreover, before carrying out architectural design practice, teachers did not thoroughly explain the design principles and methods. Students are blindness in the design process, and it is difficult to

establish the concept of sustainable development of architectural design.

(3) Design practice. Architectural technology has a high demand for practical ability, which requires students to test their theoretical knowledge in design practice and accumulate design experience. However, in the current architectural technology education in Universities in China, there are only three design contents related to sustainable development. Students can not effectively recognize the system concept of sustainable development in short-term learning, which is prone to one-sided theoretical understanding. In addition, in the teaching of ecological buildings and green buildings, quantitative analysis is less, which is not conducive to students to grasp the relevant technology of sustainable development.

2. Problems in the Education of Architectural Technology in Chinese Universities

After decades of active exploration in architectural technology education in Universities of our country, the reform of teaching contents and methods has been made in Colleges and universities all over the country. But at present, there are still great differences in the teaching level of universities, and there are some deviations in the understanding of the concept of sustainable development. Therefore, there are still problems in the overall system of architectural technology education.

2.1 Imperfect Curriculum System

Influenced by the traditional educational thought, the architectural technology of universities in our country is often regarded as the second-level discipline under the discipline of architecture, which is obviously not paid enough attention, and the connection with the discipline of architectural design theory is not close enough. So it leads to the insufficient connection between theory and practice, and the improper arrangement of curriculum sequence. Essentially, the curriculum system of Architectural Technology in China is not perfect enough. Some courses overemphasize their independence, which leads to the formation of disciplinary barriers, seriously affecting students' knowledge structure of controlling architectural technology as a whole.

From the students' actual feedback, the common sense errors often occur in the structural arrangement of the students of Architectural Technology in our country when they go into architectural design, and the comprehensive consideration is not good enough. They do not know enough about environmental protection and building regulations. These problems reflect that the curriculum arrangement is not closely related to the actual situation. Some universities in our country have also found this problem and adjusted the curriculum content, but this is not the root of the problem, lack of systematic curriculum adjustment. The University of our country has long neglected the current situation of teaching, and the combination of sustainable development concept and architectural technology is obviously insufficient. It is necessary to continue the relationship between theoretical knowledge and practical design.

2.2 One-sidedness of Theoretical Knowledge

Architectural technology is a highly comprehensive subject, which requires comprehensive knowledge of civil engineering, materials, management and engineering, so its curriculum content is mostly scattered, and the subject span is large, while the curriculum system lacks induction and coherence, so it not only causes the repetition of curriculum content, but also the slice of subject knowledge. And so on. This makes it difficult for students to master in the process of learning, and scattered knowledge points can not be effectively applied in design practice.

Architectural technology requires students to have an overall framework of knowledge structure. If there is a one-sided problem in theoretical knowledge, it will lead to a misunderstanding of thinking. For the sustainable development building, on the one hand, it simply adds the ornament of Taineng and other equipment after the scheme, on the other hand, it ignores the constraints of various factors in the design process. Architectural design is influenced not only by environmental factors, but also by human factors. Different students have different software proficiency, and their thinking and design habits are also different. If there is one-sided problem in the mastery of theoretical knowledge,

it will be difficult to control the overall situation in the design process, which will affect the design benefits of sustainable development buildings.

2.3 Insufficient Implementation of Design Course

Architectural education in China has developed for a long time. From the perspective of graduates, the most prominent problem is that the students' technical knowledge is defective, and their understanding of the concept of green building is relatively backward. Many theoretical knowledge can not be applied in practical design. From this point of view, the fundamental reason is the insufficient implementation of the design curriculum.

Architectural technology requires students to test their mastery of theoretical knowledge through practice, while accumulating experience and integrating fragmentary knowledge points in design courses. However, from my current reality, in order to get high scores of design results, students often focus most of their energy on the final effect map. Architectural simulation software can not play the role of assistant decision-making in the early stage of design, and design courses tend to be formalized.

3. Improvement Measures of University Architectural Technology Education Based on the Concept of Sustainable Development

3.1 Adjustment of Curriculum System with Architectural Design as the Core

Architectural technology curriculum involves complex knowledge and relatively few academic hours. Therefore, when adjusting the curriculum system, architectural design can be taken as the core, and then the curriculum system adjustment can be carried out against this background. At present, some colleges and universities in our country put the concept of sustainable development into the framework of design practice, and then integrate the theoretical knowledge of building renewable materials, building energy saving and green building, so as to realize the adjustment of curriculum system.

In order to promote the rationalization of the curriculum system of architectural design, we can adopt a multi-disciplinary cross-cutting approach to summarize and re-orientate the teaching content, reduce the repetition of theoretical knowledge points, and at the same time update and improve the lack of content. In order to enhance the penetration of the concept of sustainable development, it is necessary to integrate the learning objectives and practical design contents, and optimize the system by using the principle of horizontal penetration. In addition, it is necessary to strengthen the infiltration between disciplines, combine architectural technology with architectural theory, architectural design, architectural history and other disciplines, establish a learning mechanism of block disciplines, and realize the optimization of curriculum system.

3.2 Constructing the Continuity of Theoretical Knowledge

Influenced by the concept of sustainable development, traditional architectural technology knowledge has been unable to meet the demand, resulting in the one-sided problem of theoretical knowledge. Therefore, on the basis of curriculum system adjustment, it is necessary to build the continuity of theoretical knowledge. Specific measures are as follows:

(1) Course content expansion. The concept of sustainable development has enriched the connotation of architectural technology. Therefore, when constructing theoretical knowledge, it is necessary to integrate ecological friendliness, energy sustainability, environmental friendliness and sustainable architectural design into it, and to comprehensively adjust the theoretical knowledge framework. Especially for the course content of architectural technology, we should keep pace with the times, constantly add new theoretical knowledge induction and summary, expand the connotation of the course.

(2) Renewal of teaching methods. The theoretical knowledge of architectural technology is complex, and the scattered knowledge points are strong. It is difficult to attract students' interest if the

duck-filling method is used in the teaching process, which will lead to the poor effect of classroom learning. In the current educational environment, it is necessary to change this way, change the identity of teachers and students, and develop a new situation of "reverse classroom" and "combination of production, teaching and research". In this way, on the one hand, we can respect the students' principal position and let them participate more actively in classroom learning. On the other hand, we can expand the way of learning and apply the network to our own theoretical knowledge learning, so as to effectively improve students' theoretical knowledge learning.

3.3 Comprehensive Application of Architectural Design Course and Sustainable Development Technology Course

In the traditional architectural technology education in China, the connection between design curriculum and construction technology is neglected, and students can not integrate theoretical knowledge in practice. Therefore, the education of sustainable development architecture lacks support, and there are some problems in improving students' comprehensive ability. Based on this, the comprehensive application of architectural design curriculum and sustainable development technology curriculum must be carried out to promote the improvement of curriculum design and permeate the relevant technology of sustainable development. Specifically, the comprehensive application of architectural design course and sustainable development technology course can start from the following aspects:

(1) Scheduling of technical courses and design courses. Architectural technology and architectural design courses should be carried out synchronously. There should be no lag between them. When students learn theoretical knowledge, they should arrange the corresponding design for inspection immediately. Of course, the content of the design course should also be closely related to theoretical knowledge, which can be designed by themes and knowledge points. Of course, we can also adopt a more appropriate way of integration to embody the knowledge points of Architectural Technology in the design curriculum, so that students can constantly find problems in practice, and then return to the knowledge points, so that students can solve technical problems with design as the core. These two methods can well combine the design course with the construction technology. When choosing, colleges and universities should analyze their own actual situation and make targeted choices.

(2) The adjustment of design teaching method. For the education of sustainable architectural technology, the interdisciplinary integration and thematic teaching are good methods. What we need to pay attention to is to avoid the disadvantages of traditional design teaching and reflect the uniqueness of design teaching. The application of interdisciplinary integration can enable students to control architectural technology as a whole, which is helpful to the comprehensiveness and systematicness of follow-up design. Thematic teaching is to enhance the pertinence of architectural design, which is conducive to students' mastery of architectural skills in a single field. At present, the teaching methods of architectural design are very diversified. Tsinghua University and Nanjing University in China have their own unique systems, which also provide reference for other universities in China. In view of the way of design teaching, our universities can also refer to the way of foreign countries, adopt cross-professional design and inter-school cooperation to improve their own system.

4. Conclusion

Architectural technology needs to closely meet the needs of our society, so the relevant education should also be combined with advanced concepts. Influenced by the concept of sustainable development, the connotation of architecture-related education in China has been greatly expanded. Therefore, curriculum content and teaching system need to be changed so as to keep pace with the times. From the current reality, the concept of sustainable development adds the concepts of green building, energy-saving building, renewable building materials and other related building technology, so the teaching of university building technology also needs to adjust the relevant curriculum development. From the current actual situation, there are some problems in our country's architectural

technology education, such as imperfect curriculum system, one-sided theoretical knowledge and insufficient implementation of curriculum design. This paper puts forward three measures, namely, adjusting the curriculum system with architectural design as the core, constructing the continuity of theoretical knowledge and the comprehensive application of architectural design curriculum and sustainable development technology curriculum, hoping to provide some reference for the improvement of Architectural Technology Education in China.

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