

# Research on Optimization of Architecture Professional Practice Teaching System under the Background of New Engineering Policy

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**Abstract.** Under the background of the new engineering policy, the teaching goal of architecture is to make students become an innovative engineer after graduation, which is also an urgent need for China to build a strong industrialized country. Their professional knowledge is richer, their overall quality is higher, and their ability to solve practical problems is stronger. Therefore, educators must overcome the shortcomings of current architecture teaching, and emphasize the content and process arrangement of practice links in the ability requirements.

## 1. Introduction

“Learning by doing” is a famous educational theory principle proposed by American educator John Dewey. Dewey, together with Peirce and James, are important representative of American pragmatism philosophy. His two most important educational ideas are continuity and practical middle school (in the first half of the twentieth century, Chinese education, the ideological community has a major impact). Dewey opposes traditional indoctrination and mechanical training, emphasizing the educational ideas learned from practice. He believes that “doing high school” means “learning from activities” and “learning from experience”. “From doing middle school is better than listening to middle school. A better method.” In Dewey's view, “from doing middle school” fully embodies the combination of learning and doing, that is, the combination of knowledge and action. The localization of Dewey's educational theory in China is the “life education theory” composed of the famous educator Tao Xingzhi's “life is education”, “society is the school”, and “teaching is united”. Although their theory is in terms of general education, it is equally applicable in higher education, especially in the cultivation of architects who emphasize the practical engineering application ability. It is also of great theoretical value.

## 2. The introduction of the “new engineering” policy of the Ministry of Education and the importance of the reform of the practical teaching system of architecture

On February 18, 2017, the Ministry of Education held a seminar on the development strategy of higher engineering education at Fudan University. The participating universities held a heated discussion on the training of engineering talents in the new era, and jointly discussed the connotation characteristics of new engineering, the construction and development of new engineering. Path Selection. The Fudan Consensus and the subsequent Tianda Action and Beijing Guide constitute the “Trilogy” of the new engineering construction, which played the main theme of talent cultivation and opened up a new path for engineering education reform. The mission is to be responsible, and the hard work is brilliant. China will carry out in-depth systematic research and practice of new engineering, from theoretical innovation, policy improvement, and implementation and implementation in practice, step by step to turn the blueprint for building a strong country of engineering education into reality, establish a Chinese model, formulate Chinese standards, Form a Chinese brand, build a world engineering innovation center and talent highland, and make positive contributions to the realization of the “two hundred years” struggle goal and the Chinese nation's great rejuvenation of the Chinese dream!

On the other hand, with the rapid development of the construction industry, architecture has become an important enrollment specialty for local universities. The architecture profession is more suitable for the target orientation of application engineers because of its strong practicality and applicability. The architectural application-oriented excellence engineer should be a specialist who masters both the architectural design knowledge of the system and the practical problems in the actual design and management activities.

From the above two perspectives, the further optimization of the practical teaching system of architecture not only provides reference value for modern higher engineering education, but also has a certain value for serving local economic construction and even achieving the "13th Five-Year Plan" strategic goal. significance.

### **3. Suggestions for reform of the teaching practice mode of architecture in the context of "new engineering"**

#### **3.1 On-campus practice teaching**

Only in the practice of teaching and implementing the concept of engineering culture education, adhering to the principle of "integration of arts and sciences, and infiltration of science and engineering" can reform the shortcomings of practical teaching, neglecting ability training and "technology-only" education.

First, in the arrangement of class hours, the proportion of practical teaching should be increased. The concentrated practice teaching link of architecture should be guaranteed to be around 50-60 weeks, with enough time to ensure practical teaching. Secondly, in the teaching content, tracking frontier economic and technological development, in order to timely enrich the content of new technology and new technology, especially in the professional class to increase the content of relevant engineering background and instill the concept of "big building", "system building." Furthermore, the curriculum structure of interdisciplinary, professional depth optimization, and curriculum module combination is constructed on the curriculum system. Fourth, in terms of teaching methods, according to the requirements of the new engineering disciplines, focus on the transfer of factual knowledge to the procedural knowledge of "how to do", reduce verification, demonstration, comparative experiments and operations, and increase design. Experimental content; strengthen the comprehensive training of the training engineering center, create an engineering environment and atmosphere, and focus on cultivating students' practical ability and innovative spirit. At the same time, students are encouraged to participate in the research projects hosted by the teachers, and the experimental and engineering training programs for students' self-selected topics are appropriately added in the syllabus.

Teachers must optimize the combination of various teaching conditions in teaching, and adopt certain methods and techniques to give full play to the effectiveness of the practical teaching mode. Using multimedia and network information technology in teaching methods, using the modern educational technology of simulation, simulation, such as sound, image, animation, video, etc., the engineering site is moved to the classroom, making complex process technology visible and visible, making comprehensive engineering The process can be presented clearly and completely to the students. In terms of teaching methods, we highlight diversity and flexibility, and change "full house irrigation" to "interactive participation", from "dependent learning" to "independent creative learning". Combine the research projects of teachers, the actual engineering production tasks and the graduation design of students, and really improve the quality and effect of teaching, and create the necessary conditions for students to establish a "diversified and active" learning mode.

In addition, "doing high school" and "learning based on the whole process of engineering projects" are not on paper, and require various resources and material basic conditions to guarantee implementation. Sometimes it is inevitable that education efficiency, educational effectiveness and education costs will conflict. In order to achieve the goal of "mastering a profound technical basic knowledge", only the teaching design based on interdisciplinary, civil engineering, and system

architecture, and the integration of limited resources for effective teaching practice can truly improve the quality of education and innovation. The purpose of the practical effectiveness.

### **3.2 Off-campus practice teaching**

Learn the advanced technology and advanced corporate culture of the enterprise, carry out in-depth engineering practice activities, combine graduation with the actual production design, participate in enterprise technology innovation and engineering development, and cultivate students' professionalism and professional ethics. Through industry guidance, school-enterprise cooperation, jointly develop training objectives, jointly build the curriculum system and teaching content of the major, jointly implement the training process, and jointly evaluate the quality of training.

Through the establishment of a stable in-school and internship base, students will create a good engineering practice environment for students' art sketching, curriculum design, internship, production internship, graduation design, design competition at all levels, and scientific research practice. The whole process of designing and operating the project is placed in the real practical engineering environment, focusing on repeated training of professional behavior. Relying on the real engineering environment (external teaching practice base) to achieve the organic combination of theory and practice, teaching and training, learning and work. Let students learn engineering in the engineering environment, teachers teach engineering in the engineering environment, and cultivate students' practical ability and engineering quality.

In-school teaching and practice bases, students can carry out actual engineering design, construction and management, so that students can master professional skills in the real construction process, and let students carry out engineering technical problems under the guidance of teachers and engineering technicians. Introduce the operation concept of the enterprise (design, construction, management), introduce the corporate culture, manage the practical teaching links with the management mode of the enterprise, let the students develop good quality in the enterprise environment, master the management knowledge, and initially form the enterprise management experience. Through the cross-cutting of professional education with the core of ability and actual engineering projects, the integration of production, education and research is truly realized.

On the other hand, it is necessary to use the Sino-foreign cooperative education project to learn from the training experience of foreign engineers, especially the experience of practical teaching, to enrich the content of practical teaching, and to use the student exchange program to send students abroad for internships or short-term practical activities. Make full use of various platforms to train students to adapt to different engineering environments, to obtain systematic and professional engineering knowledge.

## **4. Conclusion**

The construction of "new engineering" is fundamentally different from the training model of subject knowledge. Everything is based on the cultivation of ability, and it is completely a subversive reform of the drawbacks of the traditional education model. However, diversity is the essence of the world. Although the new engineering construction has a relatively complete basic outline and standards, it is unrealistic to demand a common and targeted training mode operation method. No educational theory can be interpreted. Out all the methods.

From theory to specific teaching practice, it is necessary to integrate this educational model and concept into a specific engineering professional education (such as architecture), integrate efficient, concise, integrated operation methods and implementation methods, and need social enterprises. The wisdom, hard work and practice of professionalism in all aspects of school administrators, teachers and students.

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