



Integration and Fusion: Exploration and Practice of Problem-Oriented Architecture Professional Talent Training Mode

Dejia Huang

Kunming University Of Science And Technology Oxbridge College, Kunming 650000, China

726691094@qq.com

Abstract. How to cultivate talents with core competitiveness under the situation of information reform and rapid promotion and application of AI technology is an urgent topic. The architecture major of Jinqiao College, Kunming University of Science and Technology has made a continuous exploration and practice of the applied talent training mode. The talent training program focuses on the idea of "consolidating the foundation, emphasizing the application, facing the society and adapting to the market", forming a teaching mode of "strong design, specialized technology, emphasizing the process and open", and regards the professional construction as a tree of life, and forming a life system of "strengthening the trunk, combing the meridians, repairing branches and leaves, and promoting growth". This paper takes the teaching practice of architectural education in application-oriented undergraduate colleges as the research object, explores the reform and practice of talent training mode, and aims to improve the quality of talent training for the local construction of border areas.

Keywords: Integration, Fusion, Problem oriented, Ppplication, Talent training, Architecture education.

1 Foreword

The new round of information reform, the transformation of livable cities and the development of engineering industry put forward urgent requirements for the practical application ability, innovation ability and the ability to solve complex problems. Yunnan Province is located in the southwest of China. As a strategic channel connecting Southeast Asian countries, the development of regions and cities urgently needs a large number of applied talents with solid professional skills and can effectively solve practical problems to serve the local economy. At present, thousands of architectural graduates from private colleges and universities in Yunnan province enter the actual engineering field every year, but there are problems such as lack of innovation consciousness and weak adaptability of the industry. How to cultivate talents with core competitiveness is an urgent topic to be considered. Jinqiao College of Kunming University of Science and Technology is the first independent university in Yunnan Prov-

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ince to apply for the major of architecture. The major of architecture was approved to recruit students in 2007. After more than 10 years, it has been continuously reformed in the teaching process, and carried out systematic and comprehensive exploration and practice of application-oriented talent training mode.

2 Situation Analysis

2.1 Cultivate Goals Emphasizing Skills, Neglecting Methods

Urban construction is a complex and systematic project. The development of architecture discipline should meet the requirements of new technology and new knowledge in the field of contemporary engineering, especially in the private colleges with the goal of cultivating application-oriented talents. However, in the conventional mode, the focus of teaching often focuses on the cultivation of professional skills, ignoring the cultivation of students' overall architectural view, critical thinking and innovation ability, leading to the lack of innovation ability in the society after graduation^[1].

2.2 Teaching Method Emphasizes Teaching, Neglecting Inspiration

The particularity of the teaching of architecture major is reflected in the fact that students must think about the design scheme according to the particularity of the actual project construction site. A student completes a set of solutions, and when solving many complex problems, the solutions show diversity. However, the traditional way of knowledge transmission mainly focuses on principle explanation and case analysis. After students acquire basic principle knowledge, they still cannot transfer it to their own plan in class. The traditional teaching method focuses on classroom teaching, emphasizing teaching and neglecting inspiration. Students feel that the content learned in class is abstract, bitter and difficult to digest and understand. They lack incentive measures in the teaching process. In this mode, students lack the ability of innovative critical thinking, and gradually lose the confidence and interest in modifying and improving the program.

2.3 Practice Education Emphasizes Imitation, Light Innovation

Teaching process is too much focus on knowledge and lack of practice, based on conventional production-learning-research background of university-enterprise cooperation in the face of the new engineering technology requirements, single way and duration is limited, limited in fifth grade design institute last semester business practice practice and senior final review stage, lack of substantial synergy with design units. Students in the fifth grade last semester a semester of professional practice, the breadth, depth and precision of knowledge did not meet the requirements of the junior professional architect, unity collaboration consciousness is not strong, talent quality and market matching weak, students in the face of comprehensive complex engineering practical problems, difficult to comprehensive analysis, lack of comprehensive

consideration of social, cultural, economic and technical factors and the requirements of the professional cooperation [2].

3 Reform and Exploration

The growth of the diversified demand for applied talents in urban construction makes the architectural education face new opportunities and challenges. Fit "new engineering" put forward cross and comprehensive, practical and innovative personnel training requirements, Kunming university of science and technology bridge architecture based on applied talents training goals, around the "solid foundation, application, social oriented, to adapt to the market" of education, formed the "strong design, specialized technology, process, open" teaching mode. The construction of the talent training program is regarded as a tree of life, forming a life system of "strengthening the trunk, combing the meridians, repairing the branches and leaves, and promoting the growth".

3.1 Clear Positioning

Applied undergraduate course college training program in accordance with the Ministry of Education of institutions of higher learning steering committee of the ordinary institutions of higher learning undergraduate course professional teaching quality standards and institutions of higher learning architecture discipline professional guidance committee of architecture of undergraduate guidance specification under the requirements, according to the students' learning, social demand, the talent training program target for training master basic knowledge of architectural design, basic methods and basic skills, has the core competitiveness of senior applied talents, for frontier areas, villages and towns schistosomiasis transportation construction class technical personnel. And combined with the Ministry of Education "gender once" requirements, to adapt to the national building education overall goal, strengthen applied talents training and new engineering talents training target fit, adhering to the "core, strong connection, short, grasp the implementation of" the train of implementation of teaching reform, to "excellent engineer education training plan construction project" as the platform, for the core professional foundation ability fine training exploration and practice [3].

3.2 Construction System

Curriculum system is the core of the practice of talent training plan guarantee, Kunming university of science and technology bridge architecture in the teaching of design ability as the core, one to grade five experience "enlightenment, introduction, deepening, improve, comprehensive" five stages, around the longitudinal design backbone course, the horizontal technology, history, urban and rural planning, art, computer aided design class five series course real-time intervention and support, design curriculum framework.

The curriculum system divides the design courses of grade 1 to grade 5 into three stages, with the cultivation of design thinking as the core. Through the construction of systematic course teaching objectives and coherent teaching content, students can gradually improve their design ability, professional quality and innovative thinking.

Basic training (grade 1 to grade 2) makes students master the basic design thinking and methods through the introduction and enlightenment, cognition and experience, expression and presentation.

Deepening the development (grade 3 to grade 4), problem-oriented, pay attention to analysis, planning and research speculation, the subject types cover urban and rural, site and context, culture and society, space and structure, so as to expand students' design vision.

Comprehensive improvement (grade 5) emphasizes the integration of theory and practice, and finally, the graduates should have the ability to independently deal with complex design problems (Table 1).

Table 1. Curriculum system of architecture major design course

program objective	Teaching grade	last semester	next term	train objective
Comprehensive improvement	fifth grade	Architect business practice practice	graduation project	The combination of production and learning achieve mastery through a comprehensive study of the subject comprehensive application
Deepen the expansion	senior class	Architectural Design 7 1. Urban design 2. High-rise complex buildings	Architectural Design 8 1. Big span space 2. Village planning	Cities and villages Venue and context Culture and society Space and structure
		Architectural Design 5 1, mountain architectural design 2, cultural architectural design	Architectural Design 6 1. Residential research and design 2. Residential area planning and design	Problem and orientation Analysis and planning Research and speculation
grounding	second grade	Architectural Design 3 1, the small bar pavilion design 2, small residential design	Architectural Design 4 1. Unit combination building setting 2. Design of small public buildings	Small architectural design Design thinking basic training Basic training of the design methods
		first	Preliminary	Preliminary archi-

program objective	Teaching grade	last semester	next term	train objective
	grade	architectural design: 1	tectural design: 2	enlightenment Cognition and experience Expression and presentation
		1. Ink line practice 2. Famous works 3. Scale cognition 4. Build up environmental cognition	1. Space composition 2. Build and do 3. Small architectural design	

3.3 Problem Oriented

The course teaching is problem-oriented, updating the teaching concept and the essence of cognitive design. Teaching is not only about teaching skills and drawing performance, but also about being problem-oriented, with the cultivation of design ability as the core, and guiding students to recognize the essence of "design" step by step. The essence of the teaching process is to cultivate students' ability to find, analyze and solve problems, and integrate the teaching content with problem orientation [4].

3.4 Curriculum Fusion

Professional core course according to the teaching content is divided into design, principle, history, technology, planning, performance class six types, to design the backbone course as the skeleton, the various types of course teaching sequence and teaching content of correlation construction, learned knowledge in the design backbone course in practice, make the curriculum and teaching content can support the training goal of each stage. The performance and principles courses are set in the first and second grade, the courses of history, technology, planning and principles are set in grade three and four, and the knowledge of interdisciplinary, history, planning and technology will continue to be strengthened in the fifth grade [5].

3.5 Practice Innovation

Deepen the mode of school-enterprise cooperation and joint construction, establish "professional scholarship", subsidize the students with excellent performance and promote excellent practice; for those with excellent work, they can directly sign employment contracts with cooperative units to expand employment channels. Teachers on and outside the school jointly check the quality of practice, achieve the "whole process" guidance, and combine the teaching content of main design courses with engineering practice, and implement engineers into the classroom to realize complementary resources.

In response to rural revitalization to strengthen practice. According to the national rural revitalization policy, on the one hand, we assign tasks in the design courses based on beautiful countryside, community construction, traditional rural architecture and rural housing, leading students to participate in related discipline competitions. At the same time, we focus on the theme of rural revitalization in the national college students' innovation and entrepreneurship projects, and carry out the design based on the real questions. On the other hand, organize students to participate in social practice activities such as the countryside, students into the village, field survey, accumulate the cognition of rural living environment, and broaden the channels for subsequent employment [6].

4 Conclusion

As one of the earliest local institutions in Yunnan Province to offer an architecture major, Kunming University of Science and Technology Jin Qiao College has been running for over a decade. The talent training program has undergone multiple revisions, and a distinctive teaching system has been established, achieving a "four-wheel drive" of "design—theory—technology—application." This forms a "one main body, two wings" framework, integrating core professional courses with practical training courses and deeply connecting the two. In the teaching process, the main design courses are strengthened, with theory providing horizontal support for design, ensuring the achievement of teaching goals. The curriculum incorporates the characteristics of border regions and local culture into teaching. In terms of quality monitoring, the principle of "quality first, method second" is followed, with strict control over every aspect of course objectives, content, key points, methods, organization, and evaluation. Comprehensive guidance is provided throughout the process, including in the review of task books, topic selection, examination paper review, and discussion of key points.

Based on leveraging regional characteristics and exploring local cultural roots, the specialty construction integrates skills and hands-on operations, capitalizes on regional resource advantages, focuses on student conditions, adheres to standardized education, clarifies educational positioning and goals, and perfects a systematic curriculum. It adopts the approach of "bringing in and going out," inviting engineers into classrooms and organizing off-campus exchanges for teachers, thus linking practical courses with cooperative teaching by enterprises. A diversified course evaluation system is used to establish a specialty teaching system aimed at cultivating applied technical talents. Through over a decade of continuous reform, the core foundational abilities of students in professional design have been enhanced. This effectively fills the gap of architectural technical talents in local areas as well as in towns, villages, and groups. It also improves students' practical and innovative capabilities, increases the match between talent quality and social demand, and cultivates truly competitive and outstanding engineering and technical personnel for the construction industry.

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