

# *The Feasibility of Opening the Major of Ancient Building Engineering Technology in Dongguan under the Background of Rural Revitalization*

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**Keywords:** Rural Revitalization, Ancient Architectural Engineering Technology, Dongguan

**Abstract:** The rural revitalization strategy is a major decision and deployment made by China on the issue of "Agriculture, Farmers and Rural Areas", and is a major historical task for building modern socialist country in an all-round way. The implementation of the rural revitalization requires a large number of high-quality and high-skilled talents, which is consistent with the goal of talent training in colleges. Meanwhile, there is a large number of ancient buildings with high historical, artistic, scientific and social value in the countryside, these valuable ancient buildings are the crystallization of the wisdom of construction craftsmen. With the continuous enhancement of people's awareness of cultural relic protection, the ancient construction industry has also entered into a golden period of development. However, the shortage of talents is one of the most important factors restricting the development. This article uses survey method and data study, researches the feasibility of opening the major of Ancient Building Engineering Technology in Dongguan, and proposes that under the background of promoting rural revitalization nationwide, vocational education in Dongguan should also make a difference, points out that establishing the major of Ancient Building Engineering Technology will make important contribution for not only the rural revitalization but also the development of training talents in the field of ancient architectural technology.

## **1. Introduction**

With the continuous economic growth in China and the continuous enhancement of national self-confidence, China has been paying more attention to the protection of ancient buildings. The industries of ancient buildings repair and antique buildings design and construction have become fast-growing branches of the construction industry in recent years. At the same time, China has proposed that the rural revitalization is one of the most important tasks needed to be realized in recent years, because the realization of it will make great contribution to building a moderately prosperous society and modern socialist country in all respects.

With the background above, "Dongguan Rural Construction Plan (2018-2035)" points out that during the process of promoting the rural revitalization in Dongguan, it is necessary to follow five

general requirements: prosperous industry, livable ecology, civilized rural customs, effective governance and affluent life, so as to achieve the overall goal: constructing high-quality integrating demonstration zone of urban and rural areas and bay area urban charm Habitat.

The impact of the rural revitalization strategy on vocational education is mainly reflected in the transformation of the supply side of vocational education, which is to say, vocational education should provide corresponding talent support according to the needs of rural revitalization goals <sup>[1]</sup>.

Under the influence of the rural revitalization strategy, both of the industrialization development and specialized division of labor in the ancient building industry are becoming more and more obvious, and the demand for professional and technical personnel, such as professional ancient building designers and ancient building constructors, is increasing rapidly year by year <sup>[2]</sup>.

Vocational colleges, as the main force for cultivating professional and skilled talents, can train students to adapt to urban and rural life through major construction and scientific courses setting, and help students to find suitable jobs and career developments in both urban and rural areas. Which means that when the major construction is scientifically appropriate, the vocational colleges can not only cultivate talents for agriculture and rural areas, but also provide more career possibilities for students.

## **2. Analysis of Professional Construction Background in Dongguan**

Dongguan is a famous historical and cultural city in Guangdong Province, it has a history of urban development more than 1600 years and has a large number of historical and cultural resources. With the rapid economic growth and the continuous development of society, the historical and cultural protection work in Dongguan has been gradually raised to a new level in recent years. In 2012, Dongguan established the "Dongguan Historical and Cultural City Construction Leading Group", and began to comprehensively promote the application to be one of the national historical and cultural cities. According to public information, Dongguan has announced 135 cultural relics protection units at all levels, 734 immovable cultural relics, and 2 batches of 278 historical buildings. All these three kinds are protected by relevant laws and regulations, however, in fact, except for more than 100 cultural relics protection units and individual cultural relics and historical buildings that cannot be moved, the rest of the architectural heritage, especially those old buildings which are not included in the protection list but with certain heritage value, the state of conservation is not optimistic. In recent years, China has issued a series of "Guiding Opinions on Effectively Strengthening the Protection of Traditional Chinese Villages" and "Tentative Provisions on Warning and Exit of Traditional Chinese Villages". It is enough to see that China attaches great importance to ancient buildings. However, in terms of training talents for ancient buildings, there doesn't have enough schools offering training to talents about ancient buildings, there is a big gap that needs to be filled.

## **3. Conception of Talent Training Program**

At present, only a few schools in China that offer majors in ancient architecture. There are 7 undergraduate colleges offering the major of historical building conservation engineering with a 4-year schooling system and the enrollment scale is basically 30 to 40 students per year, meanwhile there are 16 vocational and technical colleges offering the major of ancient building engineering technology, with a 3-year schooling system, and the enrollment scale is basically 30 to 60 students per year.

According to the investigations of many leading enterprises in the industry of ancient building, in order to determine the training goals of professional talents in this field it is urgent to realize that the talents with high-skills and high-quality are in great shortage. How to carry out the major of

Ancient Building Engineering Technology in vocational colleges in Dongguan is a question worthy discussion.

### **3.1. The Goals of Talent Training**

As a branch of the architectural design, the major of Ancient Building Engineering Technology is mainly recruited by ordinary high school graduates and secondary vocational counterparts. And the major aims to train students into talents with a certain scientific and cultural level, good humanistic quality, professional ethics and innovation consciousness, craftsmanship spirit of excellence, and sustainable development ability, high-quality technical and skilled personnel who are able to master the professional knowledge and technical skills of ancient architectural engineering technology and engage in the construction, maintenance, restoration and project management of ancient buildings and antique buildings. Shiyuan Shan, a well-known expert in the ancient construction industry, once pointed out that ancient architectural engineering technology is an important part of Chinese traditional architectural culture, and it is very important to learn and master ancient architectural engineering technology because only by mastering engineering technology can ancient architectural cultural relics be effectively protected<sup>[3]</sup>.

### **3.2. Analysis of Graduates' Professional Ability**

At present, among the vocational colleges in China that offer the major of ancient architectural engineering technology, different colleges have different emphases, and each college has different curriculum contents and teaching contents. In general, the professional basic courses in these colleges include ancient architectural drawing and map recognition, shingle and stone work, antique architectural design, ancient building construction management and organization, cultural heritage protection and repair, etc<sup>[4]</sup>, and the training directions generally include protection and repair, construction management and budget, antique architectural designs have also been proposed. From the perspective of the employment direction of students after graduation, the graduates mainly work as designers of cultural relics protection projects, antique architectural designers, ancient architectural landscape designers, ancient building constructors, and ancient building supervisors. Therefore, the corresponding work scope should be considered as the core when colleges are setting teaching objectives of this major<sup>[5]</sup>.

#### **3.2.1. Basic Professional Ability**

The graduates from the major of ancient architectural engineering technology should have following basic professional abilities: first, the ability to survey and map the ancient buildings, the ability to complete the construction drawings of ancient buildings and design antique buildings independently; second, the ability to master a certain knowledge of ancient building repair design, the ability to repair engineering, woodworking and painting structures in ancient buildings; third, the ability to identify ancient buildings, and the ability to lead and quality inspection for ancient building projects; besides, the ability to control the budget of small ancient building projects, and be able to prepare corresponding bidding and contracts independently; last, the ability to organize and manage ancient construction projects.

#### **3.2.2. Learning Ability**

In terms of learning ability of graduates from the major of ancient architectural engineering technology, it includes not only the ability of learning in school and self-learning, but also the ability of problem-finding and problem-solving.

### 3.2.3. Social Skills

During the process of education, it is necessary for the teachers to cultivate students' strong sense of responsibility, great enthusiasm for the ancient construction industry, high ideological and moral quality and professional ethics level, and the ability to teamwork.

### 3.2.4. Technical Ability

The technical ability of the graduates from the major of ancient architectural engineering technology includes followings<sup>[6]</sup>:

First, the ability to produce and repair wooden components. To obtain this ability, students need to have the knowledge of production methods and installation techniques of wooden components of ancient buildings in different periods, which requires the courses to contain ancient building wooden construction technology, ancient building identification and repair, ancient building construction and management, etc.;

Second, the ability of painting and color painting. Students should pay more attention to learning decoration paintings of buildings from different ages, realize that painting and color painting were used to protect the wooden structure and showed the grades and functions of the building. In order to cultivate students with this ability, the courses should include ancient building painting techniques, brick and wood structures, ancient building decoration, and ancient building identification;

Third, the ability to produce and repair the tile and stone components. In this part, it is important to focus on learning the maintenance technology of roofs, walls and floors of ancient buildings, the related courses should include ancient building tile and stone structure, brick and wood structure, ancient building construction and management, ancient building identification and repairs;

What's more, since Dongguan is located in the Lingnan area, in the process of cultivating students' technical ability, it is more practical to focus on studying relevant practices of ancient buildings in Lingnan area, using cooperative case study methods and task teaching methods.

## 3.3. Curriculum System Construction

### 3.3.1. Public Courses

According to the Chinese policies, the following courses are included in the compulsory basic public courses: Ideological and Political Theory, Chinese Traditional Culture, Sports, Military Theory and Military Training, Career Development and Employment Guidance for college students, and Mental Health Education.

Meanwhile, the following courses are included in the compulsory or elective courses: History, Labor Education, College Chinese, Information Technology, Advanced Mathematics, Public Foreign Languages, Innovation and Entrepreneurship Education, Health Education, Aesthetic Education, and Professional Quality.

### 3.3.2. Professional Courses

Professional-related courses can cultivate students' basic vocational skills. For example, the Fine Arts can improve students' professional aesthetic ability; the Architectural Drawing and Map Recognition, Perspective, Construction Materials, etc., can improve students' architectural drawing ability; the expressive drawing techniques can improve students' architectural expression ability; the courses of software such as AutoCAD and BIM can improve students' computer drawing ability.

In addition, courses such as Architectural Structure, Chinese Architectural History, Introduction

to Architectural Structure, and Ancient Architectural Structure can be set up to improve students' comprehensive professional ability. In the process of cultivating students' basic vocational ability, there are four methods can be used: the teaching method, the case-study method, the discussion method and the on-site investigation method [7].

### **3.4. Construction of Practical Teaching Field**

The major of ancient architectural engineering technology is a highly practical discipline. Through hands-on practice, students can get close contact with jobs and improve their operational skills and adaptability.

To establish a perfect practice teaching system, there are three steps needed to be done. First of all, it is important to build a relatively complete on-campus training base which should include ancient building structure exhibition showroom, wood component production studio, stone craft training base and painting studio, etc., and set up different training programs according to different job requirements. Second, the colleges need to establish a stable off-campus practice base as the optimization of the curriculum system of ancient architectural engineering technology is a dynamic process. The curriculum system of ancient architectural engineering technology based on close school-enterprise cooperation can be gradually optimized, and in the future can truly meet the needs of enterprises and adapt to the development of students, reflect the characteristics of the school's majors. Finally, setting up related studios can be very helpful to establish a perfect practice teaching system. In the studios the teachers of ancient architectural engineering technology can lead students to participate in the development and research of actual projects, improve teachers' professional knowledge in the process of research while improve the professional ability of students at the same time.

### **3.5. Related Certifications**

Students majoring in ancient building engineering technology can carry out vocational qualification certification such as the qualification certification of wood component production and repair personnel, paint and color painting personnel, tile and stone component production and repair personnel. For students, not only can they obtain academic certificates through professional study, but they can also flexibly choose one or several professional qualification certifications based on their own interests and specialties. For teachers, it is necessary to integrate vocational skills requirements into the teaching process and formulate a strict management system [8].

## **4. The Difficulties Will Be Encountered in Establishing the Major**

### **4.1. The Major Is Still In the Initial Stage**

The major of ancient architectural engineering technology has been established for only a short period of time and is still in the development stage, so for now there don't have enough domestic researches. With the increase of people's attention on ancient architecture, the demand of skilled talents related to this field cultivated by higher vocational colleges is also increasing impressively. How to develop a curriculum system in the ancient architectural engineering technology major that can reflect the social characteristics of Dongguan is a major problem faced by the higher vocational colleges in Dongguan. As the major of ancient architectural engineering technology is highly practical, its talent training requires not only so-called perceptual thinking, but also practical ability. In order to cultivate innovative talents in the targeted manner it is necessary to carry out diversified and open practical education.

## 4.2. Lack of Teachers

The major of ancient architectural engineering technology is not just as simple as sawing wood or building walls with mud, it needs profound cultural accumulation. Just focusing on the inheritance of skills instead of cultural inheritance is not right as the cultural inheritance is more difficult than pure skill inheritance<sup>[9]</sup>.

In the past, ancient construction techniques were passed down by families or masters and apprentices. These masters have good skills, however theoretically, they may not be fully capable of teaching. Nowadays, young and middle-aged professional talents are in short supply, dual-professional teachers with the background of both theory and practice are even more difficult to find. Compared with the talent training goals and school-running characteristics of other types of education, higher vocational teachers need to have obvious dual-qualification characteristics, not only high theoretical teaching quality, but also strong practical teaching quality<sup>[10]</sup>. At present, the full-time teachers of ancient building are generally lack of teaching and practical experience. Based on this, it is possible to absorb enterprise engineering and technical personnel and high-skilled talents to serve as full-time or part-time teachers at vocational colleges, and jointly build a "double-qualified" quality teaching team with a combination of full-time and part-time teachers and enterprises in the field, and establish a stable part-time teacher resource pool, what's more, full-time teachers can also practice in the enterprise system to improve their practical experience. At the same time, craft masters with superb skills should be invited to the school to give lectures on ancient buildings in Lingnan area and serve as part-time teachers.

## 5. Conclusion

In the process of implementing the rural revitalization strategy, local colleges are not only an indispensable supporting force, but also an integral part of it. As people pay more attention to the protection of cultural relics and historical sites, large-scale repair works have been carried out all over the country, which has brought a larger talent gap. In order to effectively become the 'power' and "component" of rural revitalization, local colleges must effectively establish connections between the construction of major and rural revitalization, therefore can effectively and sustainably cultivate suitable talents.

At the same time, in the teaching process of ancient building engineering technology, it is important for teachers to determine the professional training objectives, improve the theoretical teaching system and practical teaching system, guide students to enrich their theoretical knowledge and improve their practical skills through practicing projects. In order to cultivate more and better professionals for the protection and restoration of ancient buildings, the teachers should also provide students with more practical opportunities and focus on the cultivation of students' professional ability.

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