

# Research and Discussion On the Cultivation of Master's Degree in Civil Engineering Under the Background of "One Belt and One Road"

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**Abstract:** The implementation of the national "One Belt, One Road" strategy has provided new ideas and new directions for the cultivation of masters in civil engineering in China. This paper expounds the importance of the cultivation of masters in civil engineering under the "One Belt and One Road" initiative, and then proposes the challenges faced by the cultivation of masters in civil engineering under the "One Belt and One Road" initiative. The problems include unclear training objectives, unreasonable curriculum settings, and the inability of undergraduate and master education resources to meet the needs of society. Finally, the training measures for masters of civil engineering under the background of the "Belt and Road Initiative" are put forward: taking the international market as the guide, establishing a scientific training mechanism, and integrating teacher resources. , deepen the curriculum reform, strengthen exchanges with universities in countries along the "Belt and Road", establish and improve the evaluation system for master's degree in civil engineering, help Chinese enterprises to participate in international construction projects, and realize the great feat of "Belt and Road".

**Keywords:** One Belt One Road, Civil Engineering, Master's Training.

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## 1. Introduction

Under the current trend of economic globalization, the world economy has formed a whole, and China has strengthened its pace of communication with the world to drive the development of the world economy. In 2013, General Secretary Xi Jinping proposed the great strategy of "One Belt, One Road", and the "One Belt One Road" initiative has been participated and recognized by the countries along the route, making China's contribution to building a community with a shared future for mankind. China needs to implement the "One Belt, One Road" strategy, and must build infrastructure projects along the route to ensure smooth roads. However, China is faced with talents who are familiar with international construction projects. International talent for international affairs and international competition[1]. Therefore, in the context of the "Belt and Road", the research and discussion on the master's training in civil engineering meets the needs of the country's foreign talent needs, and it is also the needs of China's economic development and social progress in the new era.

## 2. The Importance of Cultivating Masters of Civil Engineering under the Background of "One Belt and One Road"

### 2.1. The Cultivation of Master of Civil Engineering Promotes the Progress of Social and Economic Development

As an important industry that promotes social development, the construction industry is becoming more and more important in social development, but the development of society has also put forward higher quality requirements for personnel engaged in construction. The state has increased the

establishment of master's degree programs in various colleges and universities, which is also to meet the needs of the rapid development of China's construction industry, and also to promote the further development of the construction industry, so as to better cultivate high-quality master's degrees in civil engineering and provide the construction industry. high-quality talent.

### 2.2. The cultivation of master's degree in civil engineering can deepen the construction of "Belt and Road"

The implementation of the "One Belt, One Road" will definitely drive many construction companies to go abroad, participate in the construction of the "One Belt One Road", and invest a lot of investment funds in the construction to accelerate the pace of internationalization of Chinese enterprises. However, to go abroad for foreign investment and construction, it is necessary to be proficient in foreign introductions, understand the engineering construction standards of the country, and communicate with foreign governments, so that more and more enterprises need a large number of civil engineering masters to participate in it. The demand for talents is becoming more and more urgent. As the countries along the "Belt and Road" need to improve the construction of infrastructure, promote the process of urban-rural integration in backward countries, and improve people's quality of life, it is more urgent to participate in the construction of civil engineering.

### 2.3. The training of master of civil engineering can improve the level of engineering members

At present, with the rapid development of China's construction industry, although the main body of construction is still mainly migrant workers, China's construction industry is gradually transforming to high-quality development,

optimizing the industrial structure, and transferring excess construction production to the "Belt and Road" construction countries. Therefore, under the background of "One Belt and One Road", higher requirements are put forward for the knowledge level and self-quality of engineering and construction personnel. This requires that when Chinese universities and colleges train masters of civil engineering, they should take advantage of the "One Belt and One Road" development opportunities to cultivate A full range of high-quality civil engineering masters, and at the same time cultivate qualified talents for the "Belt and Road" construction.

### **3. Problems Faced by The Cultivation of Civil Engineering Masters Under the Background of "One Belt and One Road"**

#### **3.1. Cultivation goals are not clear, and practical engineering practice ability is weak**

Each training college must first clarify what kind of person it wants to cultivate, and cultivate students' multidisciplinary knowledge and practical ability in combination with the college's own situation, and make it clear whether the master of engineering cultivated is a special-purpose talent or a general-purpose talent, and for civil engineering. , Under the background of different directions, the requirements for talents are different. For example, the mastery of professional knowledge in the direction of roads and bridges and the direction of earthquake prevention and disaster reduction is bound to be different. Therefore, the unclear positioning of the training target has caused the professional training of the master of civil engineering. hinder. As a highly practical profession, civil engineering requires strong practical ability, and practical ability is also one of the necessary courses for training a master of civil engineering. The close connection to ensure that the professional knowledge learned can be applied to practical positions is Guarantee the premise of training high-quality masters. However, at present, many colleges and universities focus on cultivating the theoretical research level of master's degree, the top-level design is not in place, the orientation of running a school is not clear, and the goal of running a school is unclear [2]. The practical guidance of the engineering site, the engineering research of the actual project is still in the theoretical research, and it is difficult to solve the practical problems faced by the engineering. In addition, after arriving at the construction site, many masters of civil engineering feel the harsh conditions of the project and are unwilling to stay at the construction site to continue to cultivate their engineering practice ability, resulting in many masters of civil engineering not having strong practical ability, and lack of systematic training for short-term practice. Therefore, it cannot form its own practical theoretical system. Fundamentally speaking, the actual practical ability cannot meet the requirements of a civil engineering management master training program for practical ability.

#### **3.2. Poor self-learning ability and unreasonable curriculum**

The enrollment of civil engineering postgraduates over the years generally only selects the candidates based on their academic qualifications, grades, and interview performance,

and cannot examine the candidates' autonomous learning ability. There are many civil engineering candidates who are not strong in their independent learning ability and cannot fully cultivate their own autonomy in the postgraduate education stage. Learning ability makes it difficult for many graduate students to take courses. In the curriculum setting of the master of civil engineering, the current curriculum setting of colleges and universities cannot meet the international needs [3]. Colleges and universities have not well combined the frontier of engineering and the school's own situation to offer targeted courses, and still use some traditional courses to educate graduate students.so that graduate students and teachers do not have a good understanding of the latest development of engineering technology through the carrier of the course, and cannot form a good interaction and connection, which greatly affects the quality of master's training.

#### **3.3. Undergraduate education resources cannot meet the needs of society**

In order to greatly improve the quality of the master's degree, it is necessary to start from the source. In the undergraduate civil engineering teaching, it is necessary to base on the needs of the society, and carry out all-round revision through the training plan, curriculum setting and students' practical ability. and requirements, and then guide and educate teachers according to the training configuration of each stage to form an all-round and multi-level civil engineering talent training system. However, the current undergraduate training programs of many universities in China are still a simple superposition of the main courses of civil engineering and related courses, lacking the practical problems of modern engineering and the construction of corresponding teaching teams, which also makes civil engineering undergraduates have not yet established substantial theoretical knowledge at the undergraduate stage. The foundation will affect the continuing education in the postgraduate study. At the postgraduate level, in the face of students who lack systematic theoretical knowledge, teachers can only teach themselves following the education model at the undergraduate level, and it is difficult to mobilize the enthusiasm of postgraduates in class, and it is difficult for teachers and students to form a good interaction in the classroom. It is also difficult for teachers to understand the knowledge level of students. In the final stage of preparing for the postgraduate exam, students cancel professional-related social practice activities and neglect the study of other basic courses that are not related to exam preparation subjects. When re-learning basic courses at the postgraduate stage, they have to spend more The time to study the basic courses leads to insufficient knowledge of the civil engineering courses for students, which cannot meet the needs of today's society for a master's degree in civil engineering

## **4. Cultivation Measures for Masters of Civil Engineering under the background of "One Belt, One Road"**

### **4.1. Guided by the international market, establish a scientific cultivation mechanism**

Under the background of the "One Belt, One Road" strategy, more and more international infrastructure projects are undertaken by Chinese enterprises, and Chinese enterprises and civil engineering talents can further go abroad and embrace the world. However, colleges and universities need to be oriented by the international market, speed up the professional adjustment of regional colleges and universities, add the development of civil engineering combined with the current practical application[4], pay close attention to the requirements of foreign "Belt and Road" infrastructure construction for civil engineering talents, set Curriculum education in line with international standards, continuous optimization of training programs, to ensure the cultivation of high-quality master of engineering. In the face of the new opportunities brought by the "One Belt, One Road" strategic background, colleges and universities need to base on the construction and cultivation of high-level talents as a starting point, constantly reform and innovate the cultivation mechanism, carry out joint cooperation between colleges and universities across regions, and cooperate with other colleges and universities in engineering, law, Jointly cooperate in management to meet the needs of professional civil engineering talents in different countries and regions under the background of the "One Belt, One Road" strategy, so that talents who go out through civil engineering not only have rich knowledge of civil engineering management, but also have excellent communication skills, negotiation, and legal skills. At the same time, colleges and universities need to establish a scientific cultivation mechanism based on the disciplinary characteristics and professional characteristics of civil engineering with the help of the "One Belt, One Road" strategic background, so that Chinese masters of civil engineering can be in line with international standards and participate in international construction.

### **4.2. Integrate teacher resources and deepen curriculum reform**

In the process of cultivating masters of civil engineering in colleges and universities, the teaching staff is an extremely critical part. Teachers, as the trainers of international talents in the process of the "Belt and Road" construction, are the hope for the future development of colleges and universities[5]. In the context of "One Belt, One Road", higher requirements have been put forward for teachers' education level, education methods, and college teachers. Colleges and universities can hire foreign teachers or talents who have overseas study experience and participated in international projects to participate in the cultivation of master's degrees in their own schools, and accelerate the formation of an international talent training faculty[6]. Utilize the imported foreign talents, integrate educational resources, build a platform for engineering masters and international exchanges, create a strong learning atmosphere, appropriately increase the enrollment scale of international students, facilitate exchanges between engineering masters and

international students, and invite internationally renowned students. Experts give lectures, disseminate the latest developments in engineering, and mobilize the enthusiasm of students. Colleges and universities can strengthen the requirements for existing teachers, requiring teachers to pay close attention to new technologies, new methods and new problems in the construction of international projects, and give lectures to master students, so as to make up for the lack of practical ability of teachers who cannot be in the front line, causing problems. The thinking and discussion of master students, and at the same time, colleges and universities need to deepen curriculum reform, carry out different teaching courses for master students at different stages, and add some courses related to international frontiers, so that master students can always understand the frontier progress of international construction projects. Later, civil engineering graduate students participated in international construction projects and laid a theoretical foundation of knowledge.

### **4.3. Strengthen exchanges with universities in countries along the "Belt and Road"**

With the continuous recommendation of China's "Belt and Road" infrastructure projects, the exchanges between China and the countries along the route have become more and more close, and more extensive exchanges have been obtained in terms of economy, culture, technology and other aspects. Domestic institutions of higher learning should take advantage of the opportunities brought by the "One Belt, One Road" strategy to strengthen exchanges with universities in countries along the route, send international students to each other's universities to study, strengthen inter-school cooperation, complement each other's advantages, and share resources [7], to carry out a new model of joint training of master students. With the deepening of China's reform and opening up and the improvement of the education level of domestic colleges and universities, colleges and universities can appropriately encourage study abroad along the "Belt and Road"[8]. Development of infrastructure technology and experience back to their own countries to participate in the construction, which also provides a new opportunity for the construction of the "Belt and Road" cooperation and exchange platform. In cooperation, exchange and learning, not only the level of professional knowledge is improved, but also the vision is broadened, but also the recognition and dissemination of the cultures of various countries. These international students will be important partners in the construction of the "Belt and Road" infrastructure in the future.

### **4.4. Establish and perfect the training evaluation system for master's degree in civil engineering**

For the training evaluation of the master of civil engineering, it needs to be classified according to different disciplines and different directions, and cannot be generalized. For example, many colleges and universities regard the publication of high-quality papers as a condition for the graduation of engineering masters, without considering the difficulty of publishing journal papers in different directions. The academic engineering masters mainly focus on theoretical research and do not require high practical ability, while professional The master of engineering focuses on practice, and does research to solve practical engineering problems, and does not have high requirements for writing

academic papers. If the two masters of engineering in different directions are measured by whether they publish high-quality papers, it is undoubtedly a practice-oriented professional master. kind of pressure. Therefore, it is necessary to establish and improve the training evaluation system for masters of civil engineering. For academic masters who focus on theoretical research, publication of a thesis can be one of the graduation conditions, while for professional masters, professional certificates can be used instead of writing academic papers or Participating in architectural design competitions to win provincial awards, such as obtaining second-level constructors or participating in architectural design competitions and winning the provincial third-class award or above, can be regarded as one of the graduation conditions, so as to better establish and improve the evaluation system for master's training in civil engineering, and break the only academic Thesis on fixed thinking. At present, China's participation in the construction of international projects is mainly due to the lack of professional masters who can really solve the practical problems of engineering projects. Therefore, improving the evaluation system can better help professional engineering masters invest in solving engineering projects and improve Chinese enterprises. The core competitiveness in the world helps the implementation of China's "One Belt, One Road" strategy.

## 5. Summary

In the long run, China's infrastructure capacity has reached the world's leading level. Therefore, it is the future development trend of Chinese enterprises to go abroad to build construction, and the demand for international engineering talents will gradually increase. Therefore, colleges and universities use the "One Belt and One Road" strategy to cultivate talents for international engineering, and it is also to further deepen the cultivation programs for masters of civil engineering in various colleges and

universities, and constantly innovate, and strive to cultivate masters of civil engineering that can be in line with international standards, and further promote the "One Belt And One Road" infrastructure project. Develop.

## References

- [1] The Central Committee of the Communist Party of China and the State Council issued the "Outline of the National Medium and Long-term Education Reform and Development Plan (2010-2020)". People's Daily. 2010-07-30(001).
- [2] Wu Baoming. Research on the Internationalization of Higher Vocational Colleges under the "Belt and Road" Initiative. *Education and Vocation*. 2020,(22):56-60.
- [3] Liu Baocun, Xiao Jun. The Practical Exploration and Reform Path of Talent Cultivation in China's International Organizations Under "the Belt and Road" Initiative. *Journal of Higher Education Management*. 2018,12(05):1-7.
- [4] Jin Leilei. The talent dilemma under the background of "One Belt and One Road" and the natural situation of higher education path turning. *China Adult Education*. 2017,(15):26-28.
- [5] Ding Xin. The International Development of Teachers in Higher Vocational Colleges under the Background of "One Belt and One Road". *Education and Vocation*. 2020,(11):74-79.
- [6] Zheng Yali , Wei Ji , Zhang Haiyan et al. Research on the Problems and Paths of the Cultivation of Compound International Talents of Higher Vocational Colleges. *China Higher Education Research*. 2021,(12):92-96.
- [7] Chen Xiangfen. Research on the Training Mode of Collaborative Innovative Talents in Higher Vocational Colleges under the Background of "One Belt and One Road". *Chinese Vocational and Technical Education*. 2016, (04):42-45.
- [8] Liu Guobin, Sun Yajun. Research on the Countermeasure for Personnel Training of Higher Vocational Colleges to Boost the "One Belt and One Road" Strategy. *Vocational and Technical Education*. 2016,37(17):20-23.