

Exploration and Practice of Training Internationalized Talents in Safety Engineering Against the Background of “The Belt and Road”*

Hongjie Zhang

College of Resource and Environmental Engineering
Wuhan University of Science and Technology
Wuhan, China

Wenpeng Zhang

College of Resource and Environmental Engineering
Wuhan University of Science and Technology
Wuhan, China

Xuyang Qin

College of Resource and Environmental Engineering
Wuhan University of Science and Technology
Wuhan, China

Lei Tian

College of Resource and Environmental Engineering
Wuhan University of Science and Technology
Wuhan, China

Futang Xing

College of Resource and Environmental Engineering
Wuhan University of Science and Technology
Wuhan, China

Abstract—“The Belt and Road” strategy puts forward new requirements and challenges for safety engineering talents. As the guarantee of enterprise’s safety production, the reform and development of its international talent training are in urgent need. This paper analyzes the ability demand of internationalized safety engineering talents, and constructs an internationalized safety engineering talent training system from the aspects of training objectives, curriculum system, training approaches, teaching methods and faculty construction, so as to provide reference for the internationalized safety engineering talent training against the background of “The Belt and Road”.

Keywords—*The Belt and Road; safety engineering; internationalization talents; personnel training*

I. INTRODUCTION

During his visits to central and Southeast Asian countries in September and October 2013, Chinese President Xi puts forward the major initiatives of jointly building “The Silk Road Economic Belt” and “The 21st Century Maritime Silk Road” [1]. “The Belt and Road” strategy aims to strengthen communication and consultation with countries along the belt and road, and promote a number of key cooperation

projects with mature conditions in such fields as infrastructure connectivity, industrial investment, resource development, economic and trade cooperation, financial cooperation, cultural and people-to-people exchanges, ecological protection and maritime cooperation [2]. Among them, infrastructure connectivity is the priority area of “The Belt and Road” construction. For example, we should better align the planning for infrastructure development with the system of technical standards and gradually form an infrastructure network linking Asia’s various sub-regions and Asia, Europe and Africa. We should strengthen cooperation on energy infrastructure connectivity and jointly safeguard the safety of oil and gas pipelines and other transport routes. We will promote the construction of cross-border power generation and transmission channels and actively carry out cooperation in upgrading and upgrading regional power grids [3].

As the successful implementation of the “The Belt and Road” initiative is based on the connectivity along the belt and road and the sustainable development of the economy and society, talents are needed in particular [4]. Safety science and engineering professionals play an important role in infrastructure construction, industrial transformation and upgrading, and technological innovation along the “The Belt and Road” route [5].

Therefore, based on the background and characteristics of “The Belt and Road”, professional and technical personnel to carry out the safety science and engineering ability demand analysis, strengthening the safety science and engineering technology research and practice of talent

*Fund project: This research was financially supported by the provincial teaching research project in Hubei “Study on the construction of the new model in the cultivation of safety science and engineering professionals under new engineering education (2017243)”, and “Excellent Project on University Student affairs, Hubei, P.R. China (2017XGJPB3017)”, and “Teaching Research Project of Wuhan University of Science and Technology (2018X061, Yjg201804).

training system, training in accordance with the requirements of the strategy of "The Belt and Road" way of thinking, creative ability and cross-border integration ability of safety science and engineering professional and technical personnel has important theoretical and realistic significance.

II. CAPACITY ANALYSIS OF INTERNATIONAL TALENTS OF SAFETY ENGINEERING

Technology is the primary productive force, and international talents are the huge driving force of "The Belt and Road" strategy. With the globalization of economy and culture, international talents have become the backbone leading economic development. To promote the development of "The Belt and Road" strategy, a large number of enterprises need to carry out overseas infrastructure construction. Good working environment, perfect safety management system, harmonious international communication and first-class safety performance will directly affect the smooth implementation of the project construction. Therefore, there is an increasing demand for international talents who have international vision, understand international rules, and can participate in international affairs and international competition. Its quality requirements mainly include the following aspects:

A. Broad International Vision and Independent Innovation Consciousness

International vision includes a thorough understanding of international safety accidents, safety policies, cutting-edge trends and development trends in the field of safety engineering and safety; externally, on my understanding of the national culture, customs, religious beliefs and ways of thinking of countries along the "The Belt and Road". Has the time attention to the economic development and the national policy. At the same time, in today's rapidly changing world, international talents also need to have the awareness of independent innovation and the ability to respond flexibly. Independent innovation should be available at any time. Innovation is the source of development [6].

B. Excellent Professional Knowledge and Skills and Excellent Language Skills

Excellent professional skills and excellent language ability are the most basic requirements for talent quality of infrastructure construction enterprises. Many safety science and engineering graduates entering the overseas market, who are engaged in safety management and safety technology services, need excellent professional knowledge and skills, and the communication with overseas local employees is inseparable from excellent language skills [7].

C. The Capacity of Facing Difficulties Independently and Good Cross-cultural Communication

In the process of implementing global business development, multinational enterprises often integrate internationalization and localization organically. When facing difficulties and setbacks, they should actively negotiate and communicate with local employees and

colleagues through their good cross-cultural communication skills to correctly understand and support them, so as to overcome difficulties, solve problems and open up the working situation [8].

III. INTERNATIONAL TALENT TRAINING SYSTEM FOR SAFETY ENGINEERING AGAINST THE BACKGROUND OF "THE BELT AND ROAD"

A. Adjusting and Improving the International Talent Training Program

According to the development trend of safety science and engineering disciplines and international curriculum model, combined with the practice of the construction of enterprise development and security management experience, to face the world and the future as the traction, study and put forward safety engineering international talent training scheme and the corresponding course system, course standard, teaching content, experimental class open safety engineering professional English teaching. With school-enterprise cooperation and demand orientation, it constructs an international talent training mode of safety engineering.

B. Focusing on Building an International Talent Training Curriculum Systems

In the process of constructing the curriculum system of international safety science and engineering technical personnel training, the professional certification of engineering education should be combined with the professional certification standards. At present, the professional certification of engineering education is often mentioned in previous studies, and the international professional certification standards are seldom mentioned in previous studies. Based on the forefront of international engineering education reform and development, this paper studies the new trends and strategies of engineering education in developed countries, and puts forward the quality standards of safety science and engineering technology personnel training with the goal of facing the future and leading the world. At the same time, in order to cultivate students with an international perspective, it is necessary to understand the international trend of the safety science and engineering major, in line with the international professional certification standards. Through the NEBOSH International General Certificate (NEBOSH IGC), Certified Safety Professional (CSP) and Certified Industrial Hygienist (CIH) and the China certified safety engineers, certified safety evaluation division professional qualification certification standards such as comparative analysis, changes to the training plan, refine 3~5 professional courses, training students' international vision, promote professionalism, expand employment.

C. Diversified Training Approaches to Train Engineering and Technical Personnel

The internationalization of training approaches refers to cultivating talents through diversified training approaches including joint training, exchange training, exchange visit, academic cooperation, industry-university-research

cooperation, etc., changing the traditional single training mode. At present, there are two ways to achieve internationalization: one is to cooperate with foreign institutions of higher learning; the other is to cooperate with international vocational certification institutions. Cooperation in running schools with foreign universities can realize the internationalization training of safety science and engineering technical personnel with the help of high-quality resources of foreign universities, and at the same time increase the depth and diversity of the Chinese and foreign cooperation in running schools, such as establishing overseas universities, education bases and education cooperation projects in countries along the "the Belt and Road". The cooperation with international vocational certification institutions can enable students to acquire the vocational certificates of international vocational certification institutions while mastering knowledge, which is highly targeted and has a good effect on the cultivation of students.

D. Constructing a Four-in-one International Teaching Method System

Starting from the four aspects of classroom teaching, practical teaching, bilingual teaching and assessment methods, and this paper constructs a four-in-one international teaching method system [9]. International factors should be included in each category, such as the use of international resources in classroom teaching, the joint implementation of practical teaching with foreign-funded enterprises, the introduction of international teachers for bilingual teaching, and the inclusion of international assessment indicators in the assessment system.

In line with the principle of "selecting teaching content, highlighting course characteristics, and supplementing cutting-edge issues", students are allowed to focus on learning contents with different teaching ideas and characteristics under the limited teaching hours, and to appreciate different teaching methods, teaching styles and core ideas of different schools at home and abroad. Focus on cultivating the innovation ability of college students: improve the innovation and entrepreneurship education curriculum system, set up the innovation and entrepreneurship curriculum module, strengthen the innovation and entrepreneurship practice, and comprehensively enhance the innovation spirit and entrepreneurship ability of students.

E. Carefully Building a Qualified International Talent Training Faculty

A high level of teachers is the key to cultivate international talents of high quality and safety engineering [10]. Teachers with international knowledge and experience can directly promote the internationalization of teaching and research. Therefore, colleges and universities should adopt the method of "bringing in" and "going out" [11]. Well-known scholars should be recruited to teach in world-renowned universities, which is a powerful measure to improve the level of school running, enhance the popularity and internationalization degree of the school. Teachers with different cultural backgrounds can form the collision of

different cultures, which is conducive to the innovation of knowledge. Colleges and universities should also take various forms to increase the number of teachers' overseas visits and further education. They should send teachers abroad in a planned way for further education, visits and lectures, carry out cooperative research, learn and absorb a large amount of new knowledge, understand and contact the latest academic trends and experimental equipment, and thus acquire international experience.

IV. CONCLUSION

With the implementation of "the Belt and Road" strategy, the huge infrastructure construction in the countries along the belt and road is an unprecedented opportunity for Chinese enterprises. As a base for cultivating international talents of safety engineering, colleges and universities should not only provide the resource pool of talents for the national "the Belt and Road" strategy, but also keep up with the national policies, keep the mission in mind, never forget the original intention, and take corresponding measures in time, so as to provide internationalized professional talents of safety engineering for the country.

The cultivation of international talents of safety engineering needs to study and judge the ability requirements of international talents of safety engineering, and construct the "The Belt and Road" international talent cultivation system of safety engineering from the aspects of training objectives, curriculum system, training approaches, teaching methods and faculty construction. The system discussed in this paper can not only cultivate the international security engineering talents in accordance with the "The Belt and Road" strategy, but also provide new ideas and methods for the cultivation of international security engineering talents.

ACKNOWLEDGMENT

This research was financially supported by the provincial teaching research project in Hubei "Study on the construction of the new model in the cultivation of safety science and engineering professionals under new engineering education (2017243)", and "Excellent Project on University Student affairs, Hubei, P.R. China (2017XGJPB3017)", and "Teaching Research Project of Wuhan University of Science and Technology (2018X061, Yjg201804)".

REFERENCES

- [1] Shen Pengyi. Research on the International Talent Cultivation of China's Universities and Colleges under the "One Belt and One Road" Initiative. Vocational and technical education, vol. 38, pp. 32-36, 2017.
- [2] Chen Haiyan. The Implementation of Belt and Road Initiative and the Cultivation of Modern International Talents. China Higher Education Research, vol. 6, pp. 52-58, 2017.
- [3] Chen Chaoqun. Research on Approaches to Internationalization of Higher Vocational Education under Background of "Double First-rate" Construction — The Case of Hunan Province. Vocational and technical education, vol. 39, pp. 6-9, 2018.
- [4] Song Fafu. Objectives and Approaches for Internationalized Talents Training from Perspective of "The Belt and Road Initiative".

- Heilongjiang Researches on Higher Education, vol. 12, pp. 53-59, 2018.
- [5] Zhang Hongjie, Xiang Xiaodong, Chen Wangsheng. "Safety Engineering Teaching Methods Reform and Innovation Talents Training," Journal of Safety Science and Technology, vol. 7, pp. 172-17, 2011.
 - [6] Zhao Xin. On the "one belt and one road" initiative and the internationalization strategy of science and Engineering Universities[J]. Educational Review, vol. 7, pp. 57-60, 2018.
 - [7] Dang Jian. A Preliminary Approach to the Internationalization of Higher Education in the New Era. China Adult Education, vol. 15, pp. 79-81, 2018.
 - [8] He Jian, Lu Zhanhui, Luo Gefei, Song Xiaohua. Research on the training mechanism of engineering professional degree postgraduates under the "one belt and one road" initiative. Academic Degrees Graduate Education, vol. 6, pp. 42-47, 2018.
 - [9] Ma Nina, Jiang Baisheng. High-end Talent Team Construction Mechanism under Internationalized Background. Heilongjiang Researches on Higher Education, vol. 9, pp. 110-113, 2018.
 - [10] Xu Zhaoheng, Wang Qi, Zhu Junwen. "Rationality" behind Passion: Why Do Junior Faculty Members Participate in Internationalization at a Research University in P.R. China? Fudan Education Forum, vol. 6, pp. 83-90, 2018.
 - [11] Li B, Tu Y. Motivations for faculty engagement in internationalization: A survey in China. Higher Education, vol. 71, pp. 81-96, 2016.