

"GOING GLOBAL" LEADING ENTERPRISES + RAILWAY CHARACTERISTICS: PRACTICE OF INTERNATIONAL RAILWAY TALENT CULTIVATION

XingFeng Liu*, FaWu He

Guangzhou Railway Polytechnic, Guangzhou 510430, Guangdong, China.

*Corresponding Author: XingFeng Liu

Abstract: This study investigates Guangzhou Railway Polytechnic's innovative "Leading Enterprises Going Global + Railway Characteristics" model for international railway talent cultivation. Anchored in China's Belt and Road Initiative, this strategic model addresses the escalating demand for localized railway professionals across partner countries. Through systematic collaborations with domestic and international universities alongside prominent railway enterprises, the institution has established a comprehensive international talent cultivation platform that synergizes educational resources, industrial expertise, and cross-cultural competencies. The polytechnic has pioneered diversified pathways encompassing curriculum internationalization, dual-qualification certification frameworks, and immersive work-integrated learning initiatives. These innovations foster profound industry-education integration, ensuring training outcomes rigorously align with both international standards and specific regional specifications. Leveraging strategic partnerships with Chinese railway enterprises expanding overseas, the program immerses students in authentic workplace environments, systematically exposing them to advanced Chinese railway technologies and established management methodologies.

Keywords: Vocational education; "Chinese + vocational skills"; Rail transit industry development; High-speed rail "going global"

1 INTRODUCTION

With the advancement of the "Belt and Road" Initiative and the expansion of China's high-speed rail technology into the international market, the demand for international railway talents is increasing [1]. Vocational education, as an important way to cultivate technical and skilled talents, plays a significant role in international production capacity cooperation [2]. Guangzhou Railway Polytechnic (hereinafter referred to as "GRP") relies on its industry advantages and regional industrial agglomeration. By building an international platform, diversifying talent cultivation pathways, and innovating industry-education integration mechanisms, the college aims to build a high-level international institution and provide a Chinese vocational education solution for the "going global" strategy of high-speed rails [3].

2 MAIN PRACTICES AND CHARACTERISTICS

2.1 Building a Transnational Cooperation Development Platform with "Leading Enterprises + Railway Characteristics"

2.1.1 Establishing the South China industry-education integration alliance and constructing a "four-party, four-cooperation" collaborative cultivation mechanism

GRP, guided by government agencies such as the Ministry of Education and Sports of Laos, the Ministry of Transport of Malaysia, and Chinese embassies and consulates abroad, and with the support of industry organizations like the Guangdong-Commonwealth of Independent States Science and Technology Alliance, has joined hands with leading rail transit enterprises such as CRRC Corporation Limited, and more than 80 foreign universities and Chinese railway enterprises and industry organizations, including Belorussian State University and so on [4]. It has established the South China "Belt and Road" Rail Transit Industry-Education Integration Alliance (hereinafter referred to as the "South China Industry-Education Alliance") and built a "234" China-foreign cooperative talent training mechanism. The "2" refers to establishing one set of regulations (the alliance regulations) and forming a management committee (the cooperative project management committee). The "3" refers to constructing three overseas learning centers - the "Eurasia High-Speed Rail Academy," the "Overseas Vocational Education Center," and the "High-Speed Rail Skills Training Center." The "4" refers to building four platforms, including the rail transit online education platform, to jointly serve the college's international development [5]. At the same time, a "government-industry-enterprise-school" four-party collaborative mechanism has been established to jointly research technical standards, job training standards, professional standards, and curriculum standards, to jointly build teaching resources, teaching teams, practice bases, and employment and entrepreneurship spaces, to share resources, and to jointly cultivate international rail transit talents. So far, four national and provincial teaching resource libraries, including "Railway Power Supply Technology," have been jointly built, and more than 30 professional course systems and professional standards for railway locomotive majors have been developed and exported, see Figure 1 and 2 [6].

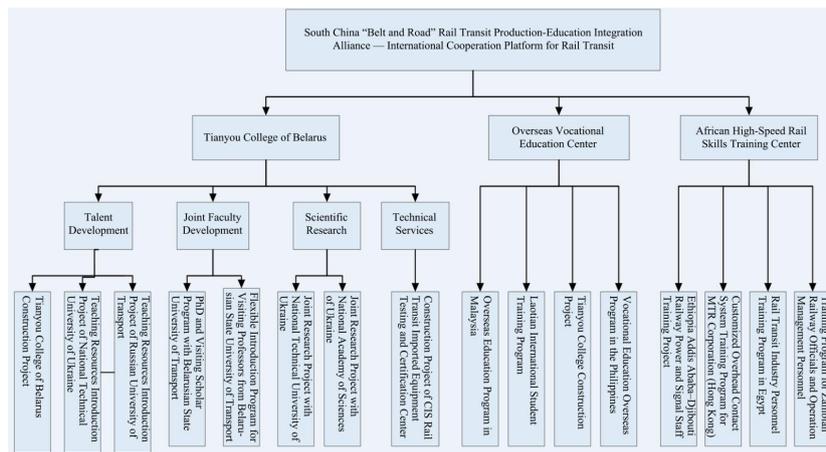


Figure 1 Architecture Diagram of the International Cooperation Platform for Rail Transit

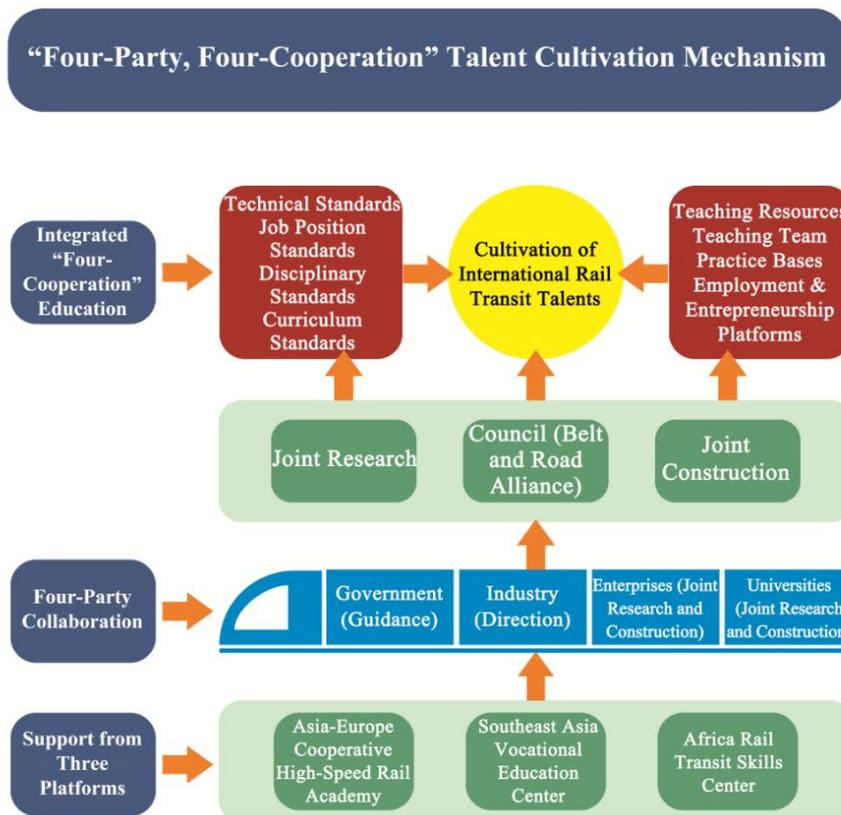


Figure 2 “Four-Party, Four-Cooperation” Talent Cultivation Mechanism

2.1.2 Establishing the railway-featured “Tianyou Academy” based on the “Luban Workshop” standards

GRP, leveraging the regional characteristics and industrial advantages of the “Greater Bay Area,” and relying on the South China “Belt and Road” Rail Transit Industry-Education Integration Alliance, the China-ASEAN Education Exchange Week Rail Transit Education and Training Alliance, and the CIS Technology Alliance, has established two railway-featured “Tianyou Academies” in Egypt and Belarus in collaboration with “going global” leading enterprises such as AVIC Complete Equipment, Egypt’s “HITT,” and the Belarusian State University of Transport, based on the standards of the “Luban Workshop.” These academies are designed to become significant platforms for international development, integrating overseas education, training, technical services, and cultural exchanges. GRP has gathered and developed a range of international course resources, project resources, and corporate resources to advance the implementation of “Chinese + Vocational Skills” training programs and collaboratively cultivate compound international railway technical and skilled talents through the joint efforts of the government, schools, industries, and enterprises.

Since 2020, the Tianyou Academy in Belarus has launched two Sino-foreign cooperative education programs in railway transportation management and railway power supply technology, enrolling a total of 255 students. It has also conducted various forms of international exchanges and cooperation, including student study tours, teacher visiting studies, Chinese language training, joint doctoral training, and academician workstations. The Tianyou Academy in

Egypt has built one training base at AVIC International and one teaching center at HITT, offering training to local enterprises and teachers and benefiting more than 1,000 people.

2.2 Joint Education Projects for International Students

2.2.1 The "China-Malaysia 2+1" school-enterprise dual-subject talent cultivation program in railway locomotive major has been selected as the third batch of "China-ASEAN Higher Vocational Colleges' characteristic cooperation projects" by the Ministry of Education

GRP has launched a three-year associate degree program in railway locomotive major for Malaysia, adopting a "2+1" education model. In collaboration with Raman, GRP has jointly established the "China-Malaysia Railway Locomotive College." Working together with leading "going global" enterprises such as China Railway and CRRC, GRP has jointly built and shared a production-oriented training base in Malaysia. GRP and enterprises have jointly developed talent training programs, tailor-made course systems, and reverse-developed personalized teaching modules in basic knowledge, basic technology, specialized technology, and job training. By linking the local market and human resources of "going global" enterprises with GRP's educational resources, GRP has promoted the deep integration of railway technical standards and railway talent standards. The enterprises' certification courses and certificate systems have been incorporated into the professional teaching plans to facilitate the organic connection of the railway education chain, talent chain, industry chain, and innovation chain. This approach reduces the enterprises' labor costs and achieves "certificate-based assessment" and "integration of courses and positions."

2.2.2 Relying on the Southeast Asia vocational education center to build the academic training model for Lao students

Based on the demand for local talents in the construction and development of the "China-Laos Railway," GRP has actively recruited Lao students since 2018 and innovated the international student training system. To ensure that international students achieve academic success, GRP has implemented unified requirements and homogeneous management for domestic and Lao students in professional learning and skill training. GRP has developed a series of high-speed rail context-based Chinese language textbooks for Lao students in five majors, including railway locomotive and railway transportation management. GRP provides Lao students with the same educational resources and teaching standards as Chinese students to ensure their rapid improvement in professional skills. Leveraging the advantages of platforms such as the Rail Transit ICT Technology Collaborative Talent Cultivation Center, GRP relies on four platforms, including online education platforms and Chinese language interactive teaching systems. By combining theory with practice, skills with culture, and using real-world high-speed rail scenarios, GRP enhances the professional abilities and cross-cultural communication skills of international students.

2.2.3 Establishing overseas education points in Laos and the Philippines to promote the establishment of mutual recognition of course standards

GRP actively participates in the vocational education academic training system for Southeast Asian countries and is committed to becoming a participant and leader in the development of professional and course standards. Since 2018, under the joint organization and coordination of the Department of Technical and Vocational Education under the Ministry of Education and Sports of Laos and the Guangdong Provincial Department of Education, GRP has collaborated with four Lao higher vocational colleges, including the Lao-Belarusian Technical College, Vientiane Provincial Technical College, and Polytechnic College, to jointly launch the Lao international student academic education project. The project has recruited the first batch of 17 full-time international students for Guangzhou municipal higher vocational colleges. Since its launch, the project has successfully recruited five cohorts, totaling more than 150 students, covering five rail transit majors, including railway locomotive operation and maintenance, railway power supply technology, and railway communication and information technology. This has opened a window for Lao students to understand China and Chinese high-speed rail through "Chinese + Vocational Skills." Li Ke, a Lao international student from the 2018 cohort of Guangzhou Railway Polytechnic, told a reporter from China Education Daily, "There is no railway school in Laos. I have learned a lot about railways at Guangzhou Railway Polytechnic, which is a valuable experience for someone who has never seen a train before." Due to his outstanding performance, he was rated as an excellent employee by Lao-China Railway Co., Ltd. Currently, nine Lao graduates from GRP, after gaining work experience, have become backbone employees serving the China-Laos Railway.

In 2023, to meet the demand for cross-border e-commerce talents in the Philippines, GRP expanded its overseas cooperation projects in Southeast Asia and jointly cultivated cross-border e-commerce talents with Negros Oriental State University in the Philippines. The first batch recruited 17 international students, adopting a "2+1" academic education and overseas branch joint training model to promote local employment and industrial development.

2.3 Overseas Employee Training Projects Based on the High-Speed Rail Skills Training Center

2.3.1 Innovating the "customized training based on specific needs, classified implementation" training model to empower overseas employees

GRP, in collaboration with Southwest Jiaotong University and Beijing Jiaotong University, has undertaken more than 10 training programs, including the "Hungary and Serbia Railway Operation Management Training," "Railway Engineering Construction Technology Training for Developing Countries," and "Indonesia's Jakarta-Bandung High-Speed Rail EMU Ground Maintenance Mechanic Training." GRP has also conducted customized employee

training with leading enterprises such as AVIC International, training more than 1,000 local rail transit technical talents for "Belt and Road" countries such as Ethiopia, Indonesia, and Egypt, and completing over 15,000 person-days of foreign aid training. In addition, GRP has jointly conducted nine training sessions on catenary design theory and practice with MTR Corporation, training more than 100 MTR employees and contributing to the development of rail transit in the Guangdong-Hong Kong-Macao Greater Bay Area. Since 2014, GRP has continuously dispatched a cross-disciplinary, English-speaking dual-teacher teaching team composed of provincial special support teaching masters, provincial professional leading talents, and doctors. The team has successfully completed two batches of training tasks for Egyptian employees in four majors, including substation and catenary, providing more than 4,100 person-days of customized services for over 220 Egyptian railway employees. The training has received high praise from enterprises and has been applied in production workshops using GRP's teaching methods, see Figure 3.

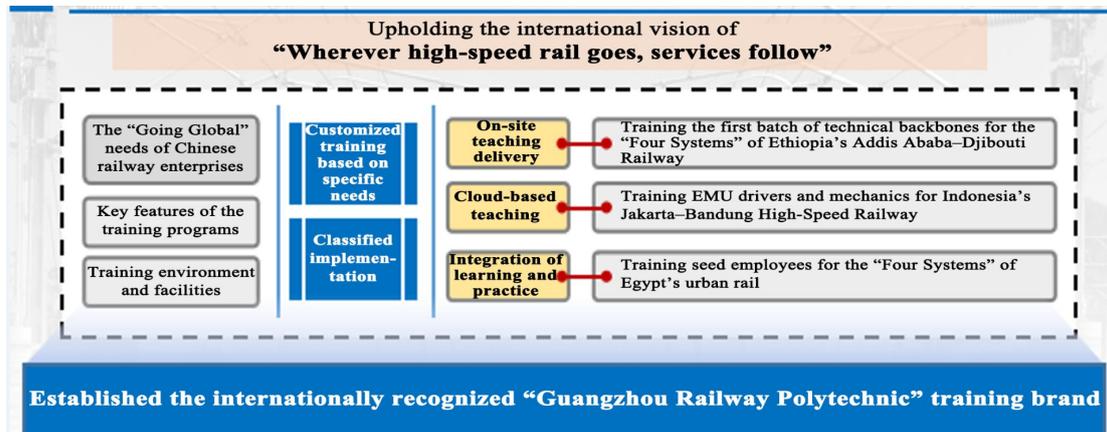


Figure 3 Schematic Diagram of the "Customized Training Based on Specific Needs, Classified Implementation" Foreign Aid Training Model

2.3.2 Relying on the "CIS Countries Rail Transit Import Equipment Testing and Certification (China) Center," conducting export equipment testing and certification, and training for equipment use and maintenance

GRP fully leverages its profound railway industry background, close school-enterprise cooperation, and prominent professional technical advantages. With strong support from the Guangzhou Municipal Government, the Consulate General of Belarus in Guangzhou, the Minsk Municipal Government, and other government departments, GRP has jointly established the "CIS Countries Rail Transit Import Equipment Testing and Certification (China) Center" with the Belarusian State University of Transport, Guangdong CIS International Science and Technology Cooperation Alliance, Guangzhou WK Testing Technology Co., Ltd., and other partners. This center aims to create an authoritative certification platform and has taken the lead in forming the "CIS Countries Rail Transit Import Equipment Testing and Certification (China) Center." The center has assembled a testing and certification team composed of senior testing technicians from various parties, as well as backbone teachers and researchers in majors such as Railway Power Supply Technology and Railway Locomotive. Based on the relevant technical standards for rail transit equipment in China and CIS countries, the team has jointly developed export testing and certification standards for CIS countries' rail transit equipment and successfully obtained testing and certification qualifications from China and Belarus in 2022.

Since its official operation in 2021, the center has focused on export equipment testing and certification, as well as training for personnel using and maintaining export equipment. It operates independently under the Guangzhou Rail Transit Society. The center has provided performance testing and product testing and certification services for rail transit export equipment, such as the "Running Gear Dynamic Monitoring System" and "Large Railway Castings (Side Frames, Heavy Haul Truck Beams), Wheel Series Products (Rolled Wheels, Hubs, Rims) Cyclic Testing," for more than ten Sino-foreign trade export companies, including Pakhtamon LLC of Belarus and Shenzhen Tongye Technology Co., Ltd. It has also completed five training sessions for personnel using and maintaining rail transit export equipment, providing technical support to solve the difficulties in using and maintaining export equipment and helping Chinese rail transit equipment "go global."

3 ACHIEVEMENTS AND OUTCOMES

GRP has established nine international platforms, set up two railway-featured "Tianyou Academies," and had its overseas education projects included in the "China-ASEAN Higher Vocational Colleges' Characteristic Cooperation Projects." It has developed and exported five sets of 35 professional and training standards to 25 countries and regions. The outcomes have won the second prize for provincial teaching achievements and been selected as one of the first batch of "Lingnan Craftsmen Colleges" in Guangdong Province in 2024. In recent years, GRP has received nearly 10 titles, including the "2024 Belt and Road Vocational Education Internationalization Outstanding Contribution Award" and "Typical Vocational Education International Cooperation Institution." The case "Diversified Collaboration and Categorized Implementation: Exploration and Practice of Rail Transit International Talent Cultivation" won the second prize for provincial teaching achievements in 2021. Relevant international cases have been successfully included in the

2021, 2023, and 2025 "National Quality Annual Reports", selected into various excellent cases of "Belt and Road" vocational education cooperation, and reported by overseas media such as Malaysia's Nanyang Siang Pau, Belarus's Belarusian News Agency, and Egypt's Al-Ahram.

4 EXPERIENCE SUMMARY

1. Platform Foundation: Establish railway-featured international development platforms such as industry-education integration alliances and "Tianyou Academies," and provide supporting overseas learning centers and online learning platforms.

2. Customized Training Based on Specific Needs: Adopt various foreign aid training methods such as on-site teaching delivery, cloud-based teaching, and integration of learning and practice to solve practical problems of complex and diverse training environments and demands.

3. Innovative Teaching: Relying on the national professional teaching resource library for railway power supply, bilingual textbooks, course resources, and experienced "bilingual + dual-teacher" teaching teams, adopt integrated learning and practice and "little teacher" teaching methods to link theory with practice and conduct group cooperative inquiry.

5 CONCLUSION

The practice of Guangzhou Railway Polytechnic's "going global" leading enterprises + railway-featured international rail talent cultivation model has cultivated local rail talents for countries along the "Belt and Road" and enhanced the international influence of Chinese rail transit vocational education [7,8]. In the future, GRP will further expand international cooperation fields, improve the level of international education, and provide stronger talent support for the "going global" of high-speed rail.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

FUNDING

This study was supported by the 2024 Guangdong Provincial Education Science Planning (Higher Education Special): "Research on the Connotation and Implementation Path of Digital Transformation of Higher Vocational Education in Guangdong Province under the 'New Double High' Construction" (2024GXJK854); Bilingual Course on High Voltage Equipment Testing: A Lifelong Education Brand Course Project (JXJYGC2024A021).

REFERENCES

- [1] Jiang Wei, Geng Qingzheng, Han Jingke. Ban Mo College: Shandong's Practice of "Vocational Education Going Global" in the New Era. *Vocational and Technical Education*, 2025, 46(09): 74-80.
- [2] Wang Heng'an, Li Yubo. The Target Framework and Implementation Path for the Sustainable Development of "Vocational Education Going Global". *Vocational and Technical Education*, 2025, 46(07): 6-11.
- [3] Yang Xiuping. Cultural Soft Power Construction of "Vocational Education Going Global": Era Significance, Real Difficulties, and Breakthrough Paths. *Vocational and Technical Education*, 2025, 46(07): 20-25.
- [4] Liu Xingfeng, Qin An. Characteristics, Problems, and Governance Strategies of Industry-Education Integration in Luban Workshop. *Journal of Tianjin Sino-German University of Applied Sciences*, 2025(01): 12-16. DOI: 10.16350/j.cnki.cn12-1442/g4.2025.01.009.
- [5] Qiao Xinyi, Liang Yixin, Wei Miao. Measurement, Spatial-Temporal Differences, and Influencing Factors of the Internationalization Level of Higher Vocational Education under the "Vocational Education Going Global" Strategy. *Vocational Education Forum*, 2025, 40(01): 110-119.
- [6] Liu Xingfeng, Xiang Chengjun. Some Thoughts on the Final Performance Evaluation of the "Double High Plan" Construction: Regulatory Logic, Implementation Path, and Quality Assurance. *Southern Vocational Education Journal*, 2024, 14(04): 12-18.
- [7] Chen Xiaoping, Zhang Lihua. Digital Transformation Pathways for Higher Vocational Education under the Background of International Industry-Education Integration. *China Vocational and Technical Education*, 2024(12): 45-52.
- [8] Zhou Jianqiu, Wang Fang. Construction of Cross-Cultural Competency Framework for International Talents in Rail Transit Vocational Education. *Journal of Railway Vocational Education*, 2024, 34(02): 28-35.