DOI: 10.66069/ojspub.5170261006

From Scale to Structure: Deficiencies in Chinese-foreign Cooperation in Vocational Education and a Replicable Pathway for Cultivating International Craftsmen under the Double High Plan

Xidong Yang

Tangshan Vocational and Technical College, Tangshan 063300, Hebei, China

Abstract: ***Through a quantitative analysis of publicly available Ministry of Education data on Chinese-foreign cooperation in vocational education, this paper reveals both the scale and the structural deficiencies of the current landscape in terms of regional distribution, educational resources, and program offerings. The aggregate picture is one of rapid expansion alongside persistent imbalance: by late 2024, locally approved and MOE-registered higher vocational cooperation programs and institutions numbered 1,181, comprising 58 institutions and 1,123 programs—programs accounting for over 95% of the total—spread across 29 provincial-level regions and 30 partner countries and territories. The pathway proceeds along four dimensions: adjusting the strategic goals and top-level plans of Chinese-foreign cooperation so that it aligns with outbound industrial capacity rather than credential supply; optimizing existing cooperation majors toward intelligent manufacturing, digital economy, and other priority fields; expanding the "going global" route through branded platforms such as the 36 Luban Workshops in 30 countries and enterprise-embedded Silk Road colleges that accompany Chinese firms abroad; and exploring a new model of international talent cultivation through the integration of production and education, in which standards, curricula, and work-based learning are co-designed with enterprises. Together, these measures constitute a transferable framework for vocational colleges seeking to convert international cooperation from a scale-driven accessory into a strategic instrument for cultivating internationally competent artisans***

Keywords: Vocational Education, Chinese-foreign Cooperation in Running Schools, Cultivation of International Talents in Vocational Education**.**

1. Introduction

China has built the world's largest vocational education system, but the contradiction between the society's demand for high-quality vocational education and the insufficient high-quality resources of higher vocational colleges has become increasingly acute. Especially with the in-depth implementation of the national "Belt and Road" initiative, international production capacity cooperation is rapidly strengthening, and Chinese vocational education needs to quickly step onto the international stage to cultivate more "international craftsmen". "Bringing in" and "going global" are the two wings for steadily promoting the internationalization of vocational education. We should not only actively absorb and draw on the advanced development experience of vocational education in the world to improve the quality and level of running schools, but also actively spread the characteristics of Chinese vocational education in the international arena to help Chinese vocational education go global.

2. Characteristics of China's Vocational Education in International Cooperation in Running Schools

Through the modeling and analysis of the publicly available data on the supervision information platform for Chinese-foreign cooperation in running schools by the Ministry of Education, the following characteristics of the current Chinese-foreign cooperation in vocational education are found.

2.1 Regional Distribution of Chinese-foreign Cooperation in Vocational Education: More in the Southeast Coast and Less in the Central and Western Regions

Information released by the Ministry of Education's Overseas Education Service shows that as of June 2023, there were a total of 1,193 Chinese-foreign cooperative education institutions and programs approved by local authorities and reported to the Ministry of Education for record, including 54 Chinese-foreign cooperative education institutions and 1,139 Chinese-foreign cooperative education programs.

There are obvious regional distribution differences in the Sino-foreign cooperative education in higher vocational education. There are more Sino-foreign cooperative education institutions and projects in the southeastern coastal areas. Among them, the three provinces of Jiangsu (228), Shandong (134), and Zhejiang (111) rank among the top three, with Jiangsu Province being the most prominent; while there is still basically a blank in Sino-foreign cooperative education in western provinces, and there is a relative lack of high-quality overseas educational resources.

2.2 Resources of Sino-foreign Cooperative Education in Vocational Education: More "bringing in" and less "going out"

Currently, the main form of Sino-foreign cooperation in Chinese vocational education is relying on Sino-foreign cooperative education institutions or Sino-foreign cooperative education projects. The countries or regions of the foreign cooperation parties are mainly developed countries such as

Australia, Canada, the United States, the United Kingdom, and South Korea, accounting for about 80%. The number of Sino-foreign cooperative education institutions and projects cooperating with the countries jointly building the "Belt and Road" is relatively small. In recent years, under the strong guidance of national policies, projects such as Luban Workshops, Chinese Language Bridge, and Chinese Overseas Vocational and Technical Colleges have been steadily promoted in the countries jointly building the "Belt and Road", and the number of projects and the quantity of "going out" have increased to a certain extent. However, there is still a long way to go for Chinese vocational education brands to "go out".

2.3 Professional Settings of Sino-foreign Cooperative Education in Vocational Education: More Low-cost Majors and Fewer Urgently Needed Majors

According to the data of the Information Platform for the Supervision of Sino-foreign Cooperative Education of the Ministry of Education (see Table 1), the majors offered by Sino-foreign cooperative education institutions and projects in higher vocational education are mainly accounting, tourism management, construction engineering technology, nursing, mechatronics technology, international business, and marketing, etc. Among them, the number of accounting majors offered leads far ahead. These majors have been opened in China relatively early, with low Operating costs, mathematical models, but there are problems such as a high saturation in the talent market, being out of touch with the country's emerging industries, and an obvious lag in the dynamic adjustment of professional settings. The state and the urgently needed major in the countries are jointly building the Belt and Road, such as new generation information technology, transportation, construction, medicine, new energy, environmental engineering, and biological science, etc., still have a relatively low number of openings [3].

Table 1: Majors Ranking Top 20 in the Number of Sino-foreign Cooperative Education in Higher Vocational Education

Order	Cooperative Major	Number of Cooperations
1	Accounting	69
2	Tourism Management	44
3	Building Engineering Technology	35
4	Nursing	35
5	Mechatronic Engineering	33
6	International Business	33
7	Marketing	32
8	Computer Application Technology	32
9	Software Technology	28
10	Preschool Education	27
11	E-commerce	27
12	Hotel Management	26
13	Computer Network Technology	21
14	Logistics Management	20
15	Automobile Detection and Maintenance Technology	20
16	International Economics and Trade	19
17	Mechanical Manufacturing and Automation	18
18	Art Design	17
19	Industrial and Commercial Business Administration	15
20	Electrical Automation Technology	15

The data in the table is collated based on the data from the Information Platform for the Supervision of Chinese-Foreign Cooperative Education Programs of the Ministry of Education, as of June 2023.

3. Elements Affecting Chinese-Foreign Cooperative Education in Vocational Colleges

3.1 Top-Level Design of Chinese-Foreign Cooperative Education

In 2019, the State Council issued the "National Vocational Education Reform Implementation Plan", which clearly stated that "implement the action of vocational education serving international production capacity cooperation, accelerate the cultivation of urgently needed talents for international production capacity cooperation, encourage the introduction of high-quality foreign vocational education institutions to cooperate in running schools in China, and promote the localization and re-innovation of international experience". In 2020, the "Opinions of the Ministry of Education and Other Eight Departments on Accelerating and Expanding Educational Opening Up in the New Era" emphasized that China will make policy breakthroughs in learning from school-running models such as the "dual-system" and introducing high-quality foreign vocational education resources. In 2021, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the "Opinions on Promoting the High-Quality Development of Modern Vocational Education", which emphasized enhancing the level of Chinese-foreign cooperative education and running a number of demonstration Chinese-foreign cooperative education institutions and projects. On the basis of the gradual improvement of the national top-level design, each province and vocational college formulates an international school-running plan applicable to its own region and school according to its own school-running advantages and characteristics, which is the institutional guarantee for the continuous progress of the internationalization process of China's vocational education.

3.2 External Economic Environment of International Production Capacity Cooperation

International production capacity cooperation means that a country introduces competitive equipment, building material production lines, advanced technologies and management experience required for infrastructure construction according to its needs during construction. With the advance of the "Belt and Road" Initiative, international production capacity cooperation has become an important economic force driving industrial changes in a country or region. As a powerful means to seize the technological high point and economic growth point, carrying out international production capacity cooperation in the new generation of information technology industry has become the focus of the "Belt and Road" Initiative. The current shortcoming in promoting international production capacity cooperation lies in the imbalance between the supply and demand of internationalized technical and skilled talents. The key to solving this problem lies in higher vocational colleges cultivating internationalized technical and skilled talents. From this perspective, the challenging international economic environment is also a major

opportunity for foreign cooperation in vocational education.

3.3 Vocational Education Standard System with Chinese Characteristics

Mr. Huang Yanpei is known as the "Father of Chinese Vocational Education". He put forward the grand vocational education thought system that connects education and vocation and the goal of "earning a living for oneself and serving the society". During the long development process of Chinese vocational education, influenced by the advanced experiences of developed countries such as the United States, the Soviet Union, and Germany, it has experienced a process from passive acceptance, digestion and improvement to active reform, and finally formed a vocational education system with Chinese characteristics, with standards to follow and norms to evaluate for the talent cultivation in vocational colleges. Connecting Chinese standards with the world is the only way for Sino-foreign cooperative education.

3.4 "Bilingual, Dual-qualified and Dual-capable" Faculty Team

A "bilingual, dual-qualified and dual-capable" faculty team is a prerequisite for vocational education to carry out international education. Most of the teachers in vocational colleges who understand the profession are not proficient enough in language to teach overseas, while language teachers do not have the corresponding professional capabilities. In addition, some teachers lack an understanding of overseas cultures and are unwilling to change their current working status to teach overseas. A high-level and responsible faculty team in vocational colleges is the soft power of Sino-foreign cooperative education.

4. Paths and Practices of Vocational Colleges Conducting Sino-foreign Cooperative Education under the Background of the New Generation of Information Technology Industry

In today's society, international competition is intensifying, social transformation is accelerating, and industrial upgrading is speeding up. Digital transformation, artificial intelligence, big data, blockchain, etc. are leading the development of science and technology. There is an urgent need for a large number of high-level technical and skilled talents at home and abroad to escort the economic and social development. This requires the Sino-foreign cooperative education model to change with the times to meet the needs of talent cultivation and social development [4].

4.1 Keep Pace with the Times and Adjust the Strategic Goals and Plans of Sino-foreign Cooperative Education in a Timely Manner

Based on the national development strategy and in line with regional and institutional characteristics, clarify the issue of "what to build" in international cooperation in education. At present, a considerable number of Sino-foreign cooperation projects in higher vocational colleges in China run counter to the demands of Sino-foreign cooperation in education. The Sino-foreign cooperation projects with low levels, high fees, and duplicate majors have turned into "depressions" in vocational education. Sino-foreign cooperation projects in education should start from the overall national and local educational needs for top-level design, and combine the local positioning and school-running characteristics to set up emerging, weak, and urgently needed majors in the country, so as to narrow the gap between China's educational level and the world's advanced level. Especially in the cooperation among the countries jointly building the "Belt and Road", in order to increase the intensity of technological innovation, Chinese-funded enterprises urgently need a group of international technical and skilled talents with Chinese feelings, who are familiar with international rules and can participate in international affairs to help Chinese enterprises go global. This requires higher vocational education to provide suitable talents and education. At the same time, it is also necessary to investigate the demands of developing countries along the "Belt and Road", select suitable cooperation partners and cooperation fields, formulate a cultivation plan that keeps pace with the times, build a high-level teaching staff, and output high-quality higher vocational education products and services.

Actively participate in the construction of the national teaching standard system for vocational education, and build a "Chinese plan" for the international certification system of vocational education to clarify the issue of "what to achieve". After years of continuous construction, a relatively complete national teaching standard system has been formed in the field of vocational education in China to regulate the development and implementation of talent cultivation plans in vocational colleges. Many leading institutions are also actively participating in the development of foreign industry or professional standards. However, from the perspective of the international status of China's vocational education standards, the world still lacks a unified understanding of China's vocational education, and there is still a lack of a complete and advanced Chinese standard and system for China's vocational education to "go global". Sino-foreign cooperation in education should, on the basis of the characteristics and advantages of the domestic standard system, fully integrate the school-running characteristics of foreign school-running entities, connect with world standards, and actively carry out international certification. For example, strengthen the docking of international professional standard evaluations and certifications by the National Academic Recognition Information Centre for the United Kingdom (UK ENIC), the Technical and Further Education (TAFE) certification in Australia, well-known international industry certifications, and vocational certifications, etc., to build an international standard system of "world recognition and Chinese characteristics" and establish the "vocational education brand" of China. At the same time, the international connectivity and mutual recognition of vocational standards also contribute to the high-quality flow of international talents.

Implement the localization of international standards and the internationalization of local standards to solve the problem of "how to build". Seize the opportunities of major national special projects such as the "Double High Plan" construction, combine Chinese-foreign cooperative education with project construction, highlight the characteristics of the school and

the major, promote the coordinated development of Chinese-foreign cooperative education and major construction, and advance the two goals of the localization of international standards and the internationalization of local standards simultaneously, forming an innovative model of cooperative education with the major as the core. Pay attention to the advantageous majors and disciplines in the countries jointly building the "Belt and Road", and earnestly implement each link from the aspects of major setting, talent cultivation plan formulation, curriculum construction, teacher team formation, teaching method reform, teaching environment, funding investment, and education and teaching quality evaluation. In terms of the professional talent cultivation goal, cultivate internationalized technical and skilled talents that are in line with international standards, providing intellectual support for the country's economic development, industrial transformation and upgrading, and international production capacity cooperation; in terms of major and curriculum construction, promote the connection of China's higher vocational education professional standards, curriculum standards, and quality standards with international standards, and create a vocational education brand with Chinese characteristics; rely on the platform of Chinese-foreign cooperative education to expand Chinese-foreign cooperative exchange activities, showcase China's school-running strength, actively participate in the formulation of international rules and standards in the vocational education field, and enhance China's right to speak in the international vocational education field; in terms of teacher team construction, build a "bilingual, dual-qualified, and dual-capable" teacher team that can use bilingual teaching, has both teacher and engineer qualifications, and combines teaching ability and practical ability. Through the combination of local cultivation and introduction, select a teacher team with strong professional capabilities and certain foreign language abilities, conduct regular professional training, and accept regular teaching quality evaluation and assessment, so that they can undertake internationalized teaching tasks.

4.2 Optimize the Existing Chinese-foreign Cooperative Education Majors and Explore an Internationalization Model for Higher Vocational Education with Chinese Characteristics

Introduce and optimize the existing cooperative majors. Take the Sino-Malaysian cooperative cross-border e-commerce major of Shandong Institute of Commerce and Technology as an example. According to the course package provided by the Malaysian side and the teaching plan of the Chinese side, combined with the major characteristics, cooperate with the "going global" enterprise Alibaba International Station, and introduce the "Orange Point Classmates" (inclusive education platform) as a supplement and extension of the training courses. The "ability points" covered in the course package are organically integrated with the "Alibaba International Station Operator" in China, forming a Sino-Malaysian cooperative production-education integration teaching plan for this major, and refining the professional ability and quality structure (see Figures 1 and 2).

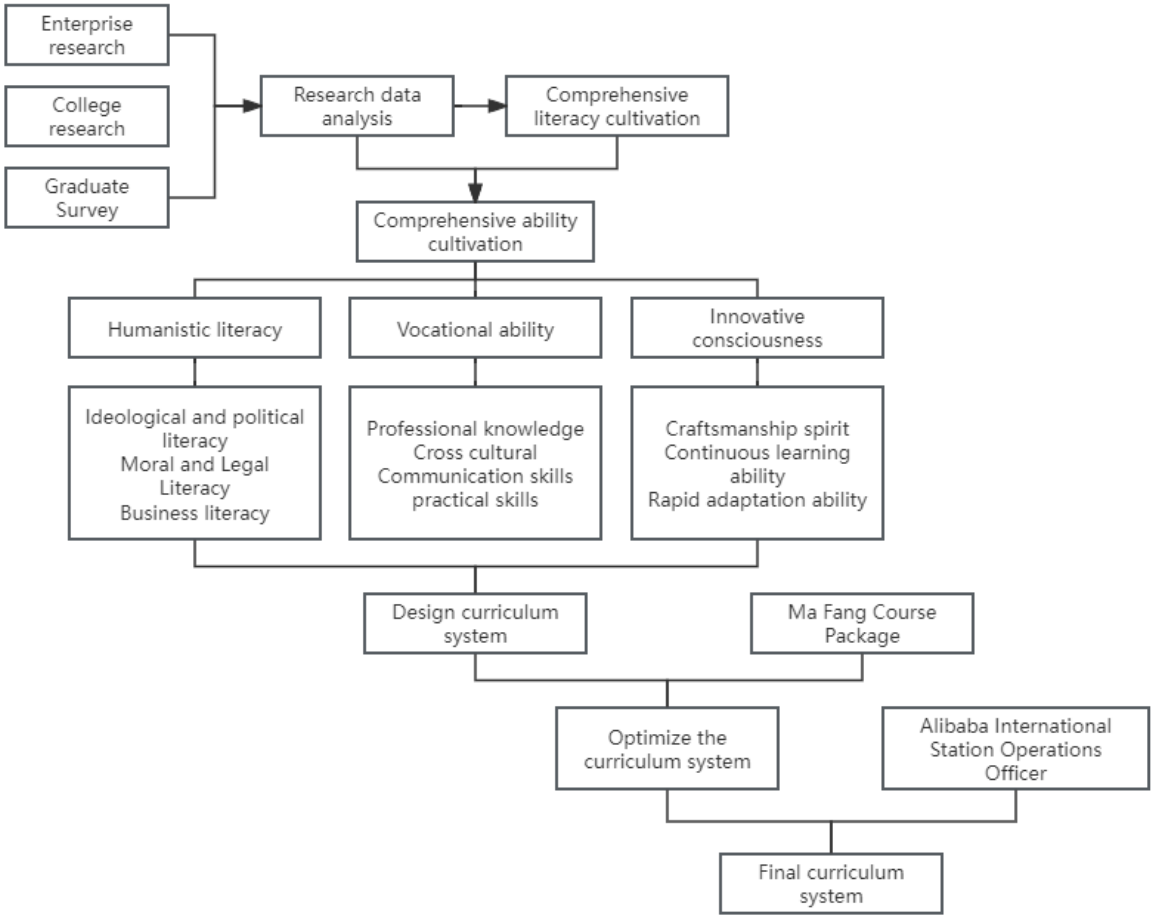


Figure 1: The process of "localization" of the curriculum system for Chinese-foreign cooperative majors

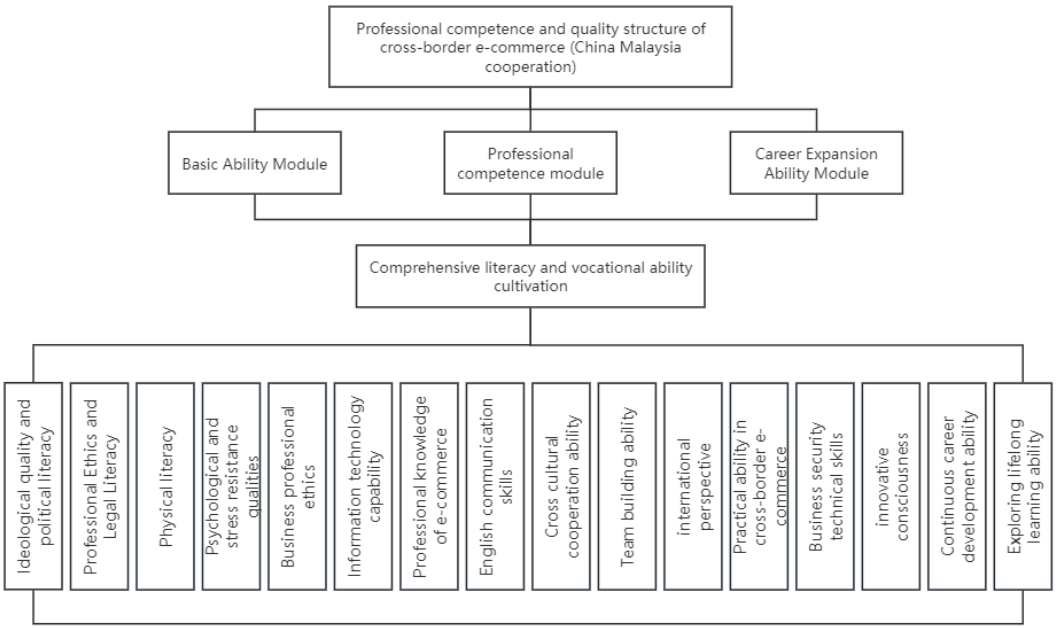


Figure 2: The professional ability and quality structure of Chinese-foreign cooperative majors

The optimized teaching plan has formed distinct characteristics of China-Malaysia cooperation: first, the teaching concept is advanced and the training objectives are clear; second, it integrates Chinese and foreign elements with distinct Chinese characteristics; third, it combines production and education, and the "going global" enterprises participate throughout the process, from the determination of the teaching plan, the implementation of the teaching process to students' internships and employment.

4.3 Aligning with National Strategies and Actively Expanding the Path for Vocational Colleges to "Go Global"

Currently, there are generally two modes of "going global" for running schools in China: running schools "going global" relying on external conditions and exporting high-quality educational resources based on the advantages of the institutions themselves. Due to reasons such as the lack of experience of vocational colleges as the main bodies of cooperative education, and considerations of many unstable factors in the politics, economy, culture, etc. of the host countries, in order to reduce risks, currently, it mainly relies on external resources, policies and other conditions.

4.3.1 Vocational colleges actively follow enterprises "going global"

Vocational colleges following enterprises "going global" not only helps to avoid international barriers to the cross-border flow of education, but also can utilize the platforms provided by enterprises for the internationalization of higher vocational education, helping vocational education to specifically address the technical and talent shortages required for the cross-border flow of enterprises. Taking Shandong Province as an example, as a highland for vocational education, in the past two years, 47 vocational colleges in Shandong have participated in the construction of 15 campuses of Chinese overseas vocational and technical colleges, exporting high-quality resources such as China's vocational education curriculum system and talent training programs. While providing local talent support for the overseas development of Chinese-funded enterprises, it has also cultivated a large number of high-quality applied professional and technical talents for the countries jointly building the "Belt and Road". The "Double High" vocational college, Shandong Institute of Commerce and Technology, has actively explored the construction of an overseas education demonstration park and jointly built a vocational skills training base in Gwadar Port, Pakistan with China Overseas Port Holding Co., Ltd., contributing to the high-quality development of the "China-Pakistan Economic Corridor".

4.3.2 Boost the "going global" of vocational education through project-driven approaches

Follow the path of "introduction - integration - output", rely on school-school and school-enterprise cooperation projects at home and abroad, introduce high-quality global vocational education resources, integrate Chinese characteristics, develop a batch of internationally recognized professional standards, curriculum standards and teaching resources, and export them to overseas cooperative education institutions, so as to achieve the "going global" of vocational education with Chinese characteristics and international standards. First, promote the "going global" of vocational education standards. Taking Shandong Institute of Commerce and Technology as an example, the school has reached multiple curriculum standard development agreements with universities in countries such as Australia, South Korea, and France, completed the development of business curriculum standards under the TAFE system, and exported them to overseas branches such as the Sino-French Brest College, the Sino-Thai International Business School, the Overseas Vocational College in the Democratic Republic of the Congo, and the Gwadar Branch in Pakistan, promoting the international exchange of technical and skilled talents. Second, promote the "going global" of vocational education resources. Schools and enterprises work together to develop international learning resources, establish a teaching resource library, build digital English training resources, and form a teaching resource system that combines online and offline.

4.3.3 Build platforms to help Chinese culture, technology and skills "go global"

Integrate humanistic qualities into the whole process of cultivating international technical and skilled talents, and hold the project of the Chinese Language Bridge Online Group Exchange Program of the Chinese-foreign Language Exchange and Cooperation Center of the Ministry of Education, helping overseas employees understand traditional Chinese culture and improve their personal vocational skills and Chinese practical abilities. Give full play to technical advantages, cooperate with overseas vocational colleges, enterprises, etc. to build international technology R & D platforms, "Lu Ban Workshops", etc., carry out engineering and technical education, and achieve win-win results for education and industrial economy.

4.4 New Demands of the New Generation of Information Technology Industry Chain

The emergence of new-generation information technologies has given rise to more new industries, and the shortage of high-level technical and skilled talents has become a common challenge faced by all countries. In the past decade, China has signed over 200 documents on jointly building the Belt and Road with 151 countries and over 30 international organizations. To better carry out international production capacity cooperation in cutting-edge fields such as the digital economy and artificial intelligence, Chinese vocational education needs to cultivate more high-level "international craftsmen" around the new-generation information technology industrial chain. First, give full play to the advantages of school-enterprise cooperation in vocational education, introduce experts and part-time teachers from the front line of existing cooperative enterprises into the formulation, implementation, evaluation and other links of the talent cultivation plan for international cooperation projects in schools, incorporate internationally recognized industry standards into the talent cultivation plan, and achieve seamless connection between education and teaching and internationally recognized skill standards; second, make full use of the school-enterprise cooperation platform resources already built by vocational colleges, actively strive to go global with industry enterprises, and open up new windows for the international development of schools; third, provide opportunities for teachers and students to participate in international cooperation projects through the international influence of industry enterprises. By having teachers and students participate in the international projects of cooperative enterprises, cultivate talents with an international perspective and a grasp of international skill standards, and export China's products, technologies and services overseas through cooperative enterprises [6].

5. Conclusion

With the support of various national policies, nearly 500 new vocational education Chinese-foreign cooperation institutions and projects have been added across the country, such as the "Future Africa - China-Africa Vocational Education Cooperation Program", the BRICS Vocational Education Alliance, the China-ASEAN Vocational Education Cooperation Community, the "Luban Workshop", the "Chinese + Vocational Skills" project, etc.. There have been certain breakthroughs in both the countries of cooperation, the content of cooperation and the forms of cooperation. In the future, under the trend of economic globalization, higher vocational colleges in China should better serve the country's Belt and Road Initiative, broaden their horizons, cultivate more high-level international craftsmen, and establish a vocational education brand with Chinese characteristics.

References

[1] Qiu Yi, He Zhengying, Yang Yong. Steadily Promote the Internationalization of Vocational Education: Foundation, Principles and References [J]. Chinese Vocational and Technical Education, 2022 (29): 34-41.

[2] Wang Dan. The Internationalization of Higher Vocational Education from the Perspective of Chinese Modernization: Value Logic, Realistic Representation and Promotion Strategies [J]. Vocational and Technical Education, 2023, 44 (07): 18-25.

[3] Liu Cong. The Realistic Dilemmas and Improvement Paths of the Development of Chinese-foreign Cooperation in Vocational Education during the 14th Five-Year Plan Period [J]. Journal of Tianjin Vocational University, 2023, 32 (01): 15-20.

[4] Liu Qingwen. Research on the Innovation of Sino-foreign Cooperative Running Mode in Higher Vocational Education [J]. Journal of Hebei Software Institute, 2023, 25(01): 25-28.

[5] Pei Chenwei. Improve the Vocational Education System in the Process of "Bringing in" and "Going Global" [N]. Science and Technology Daily, April 21, 2023.

[6] Wang Dan. Internationalization of Higher Vocational Education from the Perspective of Chinese Modernization: Value Logic, Realistic Representation and Promotion Strategies [J]. Vocational and Technical Education, 2023, 44(07): 18-25.

[7] Zhao Yan. Exploration and Practice of the "Chinese + Vocational Skills" Curriculum System for International Students in Higher Vocational Colleges - Taking Tongren Polytechnic College as an Example [J]. Hebei Vocational Education, 2022, 6(04): 54-59+70.