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Exploration and Practice of the Path of "Vocational Education Going Overseas" in Jinhua City

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Abstract: This study aims to address the problem of inadequate implementation of vocational education internationalization policy in the context of the "Belt and Road", and takes Jinhua City as an example to explore the implementation path of "vocational education going to sea." Research has found that Jinhua City, relying on characteristic industrial clusters, has implemented 15 overseas education projects in 8 countries through the "industry-driven vocational education going global" model. However, it faces challenges such as cultural differences, insufficient policy coordination, and difficulty in adapting courses. By building a three-dimensional capability enhancement system, innovating the mechanism of government school enterprise collaboration, and cultivating characteristic brands such as "Luban Workshop", Jinhua Vocational College has achieved precise alignment between talent cultivation and industry demand. For example, the employment rate of the Rwanda project has increased from 13.3% to 56.7%, and three majors have obtained official overseas certifications. The study suggests that it is necessary to clarify policy objectives and integrate multiple resources to enhance policy feasibility and provide replicable practical experience for the internationalization of vocational education.

Keywords: Vocational education going global; Collaboration between government, schools, and enterprises; Jinhua

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1. Introduction

There are certain limitations to the research on vocational education in vocational colleges in Jinhua City [1]. On the one hand, the breadth of research is insufficient, and there is a lack of systematic research on the overall planning and strategic layout of "vocational education going to sea" of Jinhua vocational colleges in the context of the "Belt and Road", and it has failed to comprehensively sort out the matching points between the advantageous majors and characteristic courses of Jinhua vocational colleges and the needs of countries along the "Belt and Road." On the other hand, the depth of research needs to be strengthened. There is a lack of in-depth empirical research and targeted solutions for the specific problems encountered by Jinhua Vocational

College in the process of "vocational education going global", such as how to break through cultural barriers, cope with differences in education systems in different countries, and solve the problem of insufficient internationalization of teaching staff. In addition, from the perspective of regional coordinated development, there are few achievements in studying the cooperation and competition between Jinhua Vocational College and surrounding vocational colleges in the "vocational education going global" initiative, which makes it difficult to fully leverage the integration advantages of regional vocational education resources.

The purpose of this study is to explore the current situation and problems faced by vocational education institutions going global in Jinhua City, propose new solutions, and provide broader development space and strong support for vocational colleges' "vocational education going global."

2. Current situation analysis and problem diagnosis

Jinhua, as an important node city of the "Belt and Road", relies on Yiwu International Trade City, Yongkang Hardware Industry, Dongyang Wood Carving, and other characteristic industrial clusters to form a unique path of "industry leading vocational education to the sea." As of 2025, 12 vocational colleges, including Jinhua Vocational and Technical College and Yiwu Vocational and Technical College of Industry and Commerce, have implemented 15 overseas education projects in 8 countries, covering 6 major industries, including commerce, manufacturing, and light industry. The following is a cross-border cooperation network driven by industrial demand under school-enterprise collaboration (**Figure 1**).

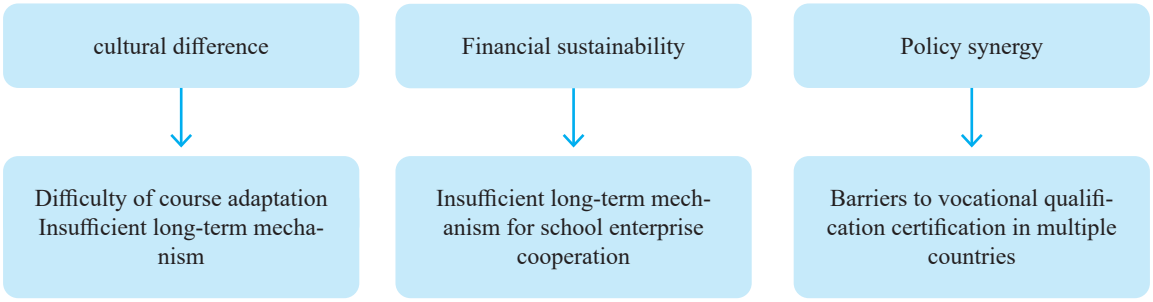

Figure 1. Cross-border cooperation dilemma

From the above network diagram (**Figure 1**), it can be seen that vocational colleges in Jinhua still face problems such as course mismatch, insufficient long-term mechanisms for school enterprise cooperation, and barriers to vocational qualification certification from multiple countries in their overseas practice [2].

According to the "2023 Jinhua Key Industry Shortage Talent Catalog", there are 58 scarce positions in the hardware manufacturing industry, ranking first among the 11 key industries in the city, with R&D and engineering positions accounting for over 33%. The third level positions with the highest shortage index (the most scarce) account for 22.4%, involving high-skilled positions such as mechanical engineers and CNC machine operators.

After the transformation of traditional manufacturing to intelligence, talents need to possess both mechanical operation experience and digital skills (such as mastering control system knowledge for welding robot inspection). However, the disconnect between vocational education courses and the needs of enterprises has led to a shortage of composite talents that meet the requirements.

The monthly salary in the manufacturing industry is generally lower than that of new forms of employment

(such as an average of 6803 yuan per month for delivery drivers compared to 900–1200 yuan lower for factory workers), and it faces problems such as harsh environments (oil pollution, noise) and narrow career development channels, resulting in low employment willingness among young people. Only 50% of graduates from a certain vocational and technical college are willing to enter the factory for employment.

Cross-border e-commerce is a key area for Jinyi New Area to build an "international hub city", and the talent gap is mainly reflected in:

Technical (development, data analysis): 54% of enterprises list it as the most scarce talent, with a monthly salary of 16000 yuan (front-end development engineer).

Operations (supply chain, platform management): The median monthly salary for e-commerce operations managers is 21400 yuan, but matching talent is scarce.

Marketing category: Cross-border market promotion and multilingual marketing talent demand account for 32%, requiring familiarity with overseas platform rules and cultural customs.

Enterprises value marketing and promotion capabilities the most (55.8%), data analysis capabilities (47%), and cross-border supply chain management (26.5%), while anchor positions are not core requirements (only 7%). In addition, there is a significant shortage of operational talents familiar with platforms such as TikTok and Amazon.

3. The effectiveness and experience of "vocational education going global" in Jinhua vocational colleges

Under the grand background of the "Belt and Road" initiative, school enterprise cooperation plays an indispensable role in the process of "vocational education going to sea" of Jinhua vocational colleges, playing an important role in many aspects.

Jinhua vocational colleges improve the internationalization ability of the specialty "going global", focus on the forefront of professional development, cooperate with the overseas school layout of vocational colleges and "the Belt and Road" education exchange and cooperation project, output courses and professional standards, strive to create professional standards with both competitiveness and influence, improve the local suitability of the specialty for overseas school running, and contribute to the Chinese wisdom of vocational education for "going global" enterprises [3]. Conduct in-depth research on the current economic development status and industrial structure characteristics of different countries, promote vocational education to "go global", and reflect industry characteristics, regional characteristics, and institutional characteristics. The main task is to serve international industrial cooperation, relying on the school's advantageous majors, and building an internationally recognized curriculum system. Focusing on the cultivation of key vocational abilities, the integration of job courses, competitions, and certificates, and the development of cross-cultural vocational literacy, professional training, and characteristic projects, corporations will focus on professional construction and complete the development of teaching resources for "Chinese+vocational skills."

Build a training model of "resource integration" and highlight brand characteristics. During the implementation process, government departments are only responsible for completing the quantity of overseas student training programs required by higher-level departments without paying attention to the quality of training, which makes it difficult for "production" vocational talents to meet the employment requirements of enterprises. Therefore, it is necessary for the government, domestic and foreign universities, industry

enterprises, and other parties to cooperate. On the basis of completing the training of recruited students, university departments should provide free training knowledge in relevant industries for students, and the government should also provide appropriate economic subsidies. Students can also be attracted by the culture and professional knowledge structure of the training company during the learning process, and are willing to pay for the company's knowledge. Students can gradually develop into talents needed by the company through learning, achieving a win-win situation for the government, enterprises, and students.

4. Path innovation and practical exploration

4.1. Construction of three-dimensional capability enhancement system

By conducting on-site research on the target country's hardware industry (such as Southeast Asian tool manufacturing and Middle Eastern construction hardware), combined with the overseas development needs of Chinese enterprises, clarify the job skill requirements. For example, adopting a "dual line drive" model to integrate cross-border marketing of hardware products and e-commerce platform operations into the "cross-border e-commerce+Chinese" course. Students sell Chinese hardware tools through TikTok live streaming, achieving "learning by doing, learning by doing."

Introduce real enterprise cases in course development, dynamically adjust teaching content, and ensure synchronization with industry technological development. At the same time, embedding the "Chinese craftsmanship spirit" and local cultural elements in the curriculum, such as combining Thai architectural hardware craftsmanship in Thai courses, promotes mutual learning of civilizations.

Develop personalized learning paths using AI and XR technologies, such as implementing precise teaching with "one person, one solution" through virtual simulation systems.

Through the above three paths, the modular course package of "Chinese+Hardware Manufacturing" can effectively enhance the language proficiency, technical skills, and cross-cultural literacy of overseas students, provide localized talent support for the overseas development of Chinese enterprises, and promote the international export of Chinese vocational education standards.

4.2. Innovation of government school enterprise collaboration mechanism

Establish a "Vocational Education Overseas Leadership Group" composed of the municipal government, industry associations, and leading enterprises, formulate the "Jinhua Vocational Education Internationalization Development Three-Year Action Plan", and clarify the rights and responsibilities of all parties involved. For example, the Education Bureau of Jinhua City took the lead in signing a cooperation agreement with the Indonesian Ministry of Education. The enterprise (now Fei Holdings) provided equipment and orders, while the university was responsible for teaching implementation, forming a collaborative model of "government platform—enterprise singing—university education."

Develop the "Jinhua Vocational Education Cloud Platform", which integrates multiple language online learning, virtual training, progress tracking, and other functions. Students can complete course learning, skill assessment, and cultural experience through the platform. For example, the "Hardware Manufacturing Cloud Classroom" at Jinhua Vocational and Technical College has served students from more than 10 countries, improving learning efficiency by 30%.

Incorporate local cultural elements into the curriculum, such as incorporating Vietnamese architectural

hardware craftsmanship into the Vietnamese curriculum and incorporating Islamic business etiquette into the Indonesian curriculum to promote cultural exchange. At the same time, organize activities such as "Chinese Culture Week" and "Intangible Cultural Heritage Experience Camp" to enhance students' cultural identity.

4.3. Practice of cultivating characteristic brands

In the process of promoting the construction of the "Luban Workshop", Jinhua Technician College adopts the vocational education "going global" mode of collaborative linkage between the government, schools, and enterprises [4]. Taking the Luban Workshop in Rwanda as an example, the college is deeply involved in the Musanze International College project of Jinhua Vocational and Technical College in Rwanda, actively connecting with the "turnkey" project of China's aid to Rwanda—Rwanda Institute of Technology Musanze Vocational and Technical College, and carrying out deep cooperation and joint construction. At the level of school enterprise cooperation, the college and enterprises jointly developed professional teaching standards, two of which were successfully incorporated into the Rwanda Education Qualification Framework System (RTQF), and developed over a hundred teaching resources, including bilingual courses, teaching materials, and lecture notes. Relying on this educational model, the college effectively integrates multiple resource elements to ensure that the construction of the "Luban Workshop" is deeply aligned with the local industrial development needs and the education system.

Through the export of cross-border e-commerce talent training standards from Yiwu Industrial and Commercial Vocational College and the construction of the "Luban Workshop" for intelligent manufacturing at Jinhua Technician College, vocational colleges have formed distinctive brands in their respective advantageous fields. This not only promotes the internationalization of Chinese vocational education standards but also makes positive contributions to local economic development and talent cultivation, providing a successful example for vocational education to go global. In the future, such practices should be further deepened to expand the breadth and depth of vocational education going global.

5. Effectiveness evaluation and optimization suggestions

5.1. Quantitative analysis of practical effectiveness

In the initial stage of cooperation, only 4 out of the first 30 Rwandan students achieved employment, with an employment rate of 13.3%. During the deepening period of cooperation, among the same 30 international students, 17 were successfully employed by a Chinese-funded enterprise's Rwanda branch, and the employment rate of graduates majoring in electrical automation reached 100%. The overall employment rate increased to 56.7%, an increase of 28% compared to the initial stage of cooperation. This data clearly indicates that the integration of industry and education promotes the close connection between talent cultivation and market demand, greatly enhancing the employment competitiveness of international students (**Table 1**).

Table 1. Quantitative table of practical effectiveness

Stage	Number of international students	Employment number	Employment rate
Early stage of cooperation	30	4	13. 3%
Deepening cooperation period	30	17	56.7%

Jinhua Vocational Colleges actively engage in international cooperation, pushing their advantageous professional standards overseas, assisting local vocational education, and enhancing the international influence of Chinese vocational education. Currently, three majors have been certified by the education department of their respective countries. For example, Yiwu Industrial and Commercial Vocational College has achieved outstanding results in the cultivation of cross-border e-commerce talents. Its International Economics and Trade major and two course standards, "Foreign Trade Documentary Practice" and "Cross-border E-commerce Practice", have been officially certified by the Moroccan Vocational Education and Employment Development Office in cooperation. This not only outputs professional standards but also spreads educational models and concepts, providing reference for the construction of relevant majors in Morocco, promoting the improvement of the local cross-border e-commerce talent training system, and providing successful examples for other vocational colleges in Jinhua to go global with professional standards.

5.2. Continuous improvement strategy

Utilizing big data analysis technology to deeply mine the massive amount of data collected. By analyzing historical data samples, a model system for predicting industry demand is constructed to predict the future direction of talent demand in various industries. Taking the cross-border e-commerce industry in Southeast Asia as an example, based on its growth rate and expansion trend in recent years, it can be estimated that there will be a demand for talents with multilingual abilities and full process operation experience in cross-border e-commerce in the future, as well as a focus on skill development. This analysis can provide a scientific basis for the professional setting and teaching content optimization of vocational colleges, promote the precise connection between talent cultivation in colleges and the actual needs of industries, and ensure that the cultivated talents not only meet the current development needs of the industry, but also adapt to future trends.

In the field of cross-border e-commerce, VR technology is used to create immersive e-commerce operation scenarios. Students can virtually enter the interfaces of e-commerce platforms in different countries, simulate operations such as store opening, product listing, and marketing promotion. In addition, virtual cross-border trade negotiation scenarios can be created for students to engage in business communication with virtual foreign clients, enhancing their cross-cultural communication and negotiation skills. For some high-risk or costly practical training projects, such as the maintenance of large hardware equipment faults, VR technology can allow students to practice repeatedly in a safe and low-cost environment, improving their skill level.

6. Conclusion

Looking to the future, the "vocational education going global" initiative of vocational colleges in Jinhua City will present a broader development prospect and diverse development paths and is expected to achieve new breakthroughs in talent training systems, innovative cooperation models, and educational resource construction.

In terms of talent cultivation, Jinhua Vocational College needs to further deepen and expand its training path. Pay close attention to the industrial upgrading and technological innovation trends of countries along the "Belt and Road", and optimize the professional structure and curriculum system in a timely manner. Guided by the development needs of the new energy industry along the route, corporations will strengthen the layout of majors such as new energy technology, develop application-oriented courses that are in line with the actual industry, and cultivate urgently needed talents in emerging fields. At the same time, educators focus on

enhancing students' comprehensive literacy and broadening their international perspective through international exchange programs, cross-border practical activities, and other means.

Innovation and diversification of cooperation models will become key directions. On the basis of existing school enterprise cooperation and intercollegiate cooperation, the industry will promote a multi-party collaborative mechanism between the government, schools, and enterprises, integrate the advantages of various resources, and help vocational education go global. In addition, strengthen cooperation and linkage with international organizations and non-governmental organizations, expand channels for resource acquisition, such as collaborating with international organizations such as UNESCO to conduct project research, and continuously enhance the international discourse power of universities.

The digitization and sharing of educational resources will usher in new opportunities. With the rapid development of information technology, Jinhua Vocational College should increase investment in the digital construction of vocational education teaching resources, and use cutting-edge technologies such as big data, artificial intelligence, and virtual reality to develop more diverse and high-quality digital teaching resources. Build an online learning platform, provide remote teaching services, break through time and space barriers, and enable students from countries along the Belt and Road to conveniently access high-quality vocational education resources. At the same time, the industry will deepen the co-construction and sharing of educational resources with universities along the route, create a resource sharing platform, and achieve the interconnection and exchange of course resources, teaching cases, practical training projects, and other elements.

In the field of research, the education policies, cultural context, and market demand of countries along the "Belt and Road" need to be further cultivated in the future to provide more precise decision support for "vocational education going to sea." Establish a dynamic tracking and research mechanism for education policies in countries along the route, to grasp the impact of policy changes on vocational education in real time and adjust educational strategies; Deepen the research on local cultural background, deepen the understanding of values, educational concepts, and learning habits, promote cultural integration to enhance teaching effectiveness; Strengthen market demand research efforts, accurately analyze industry development trends and talent demand structures, optimize professional layout and talent training plans. In addition, it is necessary to strengthen the research on the quality evaluation system of "vocational education going global", construct a scientific and reasonable evaluation index system, comprehensively and objectively evaluate the effectiveness of project implementation, and provide a scientific basis for continuously improving the quality of "vocational education going global."

Disclosure statement

The author declares no conflict of interest.

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