

Research on the Practical Path and Development Strategy of Digital Empowerment for Vocational Education Going Global: Based on the "Going Global Practice" of Shandong Vocational College of Light Industry

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Abstract: Against the backdrop of global economic integration and the "Belt and Road" Initiative, Chinese vocational education faces challenges in supporting overseas enterprises, including resource coverage limitations, standard-localization conflicts, quality-scale balance issues, and cross-cultural barriers. This paper takes Shandong Vocational College of Light Industry as a case study to explore digital empowerment for vocational education going global. The study identifies four core problems: insufficient resource coverage, standard-localization contradictions, quality-scale balance difficulties, and cultural integration barriers. To address these, the college proposes a "mechanism coordination—curriculum reconstruction—teaching innovation—standard leadership" solution, constructing a digital-driven model. Key practices include multi-party collaboration, curriculum adaptation, hybrid teaching, and standard output. Practice results show the model effectively solves talent shortages, promotes industrial standardization, and enhances cross-cultural communication, providing valuable references for Chinese vocational education internationalization in the digital era.

Keywords: Digital Empowerment; Vocational Education Going Global; Practical Path; Development Strategy; Belt and Road Initiative

1. Introduction

Against the backdrop of accelerating global economic integration and the deepening implementation of the "Belt and Road" Initiative, China's economic ties with the world have become increasingly close. The "going global" of traditional advantageous industries to

pursue international layout has become an irreversible trend [1]. Among them, labor-intensive industries such as textile and apparel have significantly accelerated their transfer to countries along the "Belt and Road". However, Chinese-funded enterprises rooted overseas face practical challenges of "difficulty in recruiting and retaining skilled technical talents" during their localization development, and are in urgent need of vocational education services that align with industrial demands [2]. Meanwhile, educational digitalization has emerged as the core driving force behind global educational reform. The rapid development and widespread application of digital technologies are quietly reshaping the educational ecosystem, breaking down temporal and spatial barriers, and opening up a new path for the internationalization of vocational education [3].

From a policy perspective, the state attaches great importance to the deep integration of vocational education internationalization and digital education. The Outline for Building a Powerful Education Country (2024-2035) clearly proposes to promote the international development of vocational education and strengthen international exchanges and cooperation in digital education [4]. At the local level, Shandong Province actively responds to national strategies, takes the "Ban Mo Academy" as a key starting point, vigorously promotes the "Digital University Going Global" plan, and helps vocational colleges expand their international development paths from multiple aspects such as policy support, resource integration, and platform construction. This has formed a three-level (national, local, and institutional) linkage policy support system.

Vocational education going global is not only a strategic measure to serve national industrial upgrading and implement the "Belt and Road" Initiative but also an inherent requirement for

vocational education to achieve high-quality development and enhance international competitiveness [5]. However, in practice, vocational education going global faces numerous challenges: obstacles brought by temporal and spatial distances, adaptation of educational resources to local needs, balance between teaching quality control and large-scale training, and barriers to integration and communication between different cultures. Traditional school-running models can hardly meet the diverse and personalized needs of overseas talent cultivation [6]. As a vocational college with distinctive features in light industry and textiles, Shandong Vocational College of Light Industry, relying on its profound professional accumulation and rich industry resources, took the lead in integrating digitalization with vocational education going global, constructing a "light industry model" of collaborative linkage among "government-industry-enterprise-school". This model has successfully addressed many practical difficulties in vocational education going global and provided a highly valuable practical sample for the high-quality international development of China's vocational education. In-depth analysis of the construction logic, practical paths, and effective experiences of this model has important theoretical significance and practical value, whether for enriching the theoretical system of vocational education internationalization or guiding more vocational colleges to carry out going global practices.

2. Problems Existing in the Practice of Higher Vocational Education Going Global

Higher vocational education going global is a complex systematic project involving multiple subjects and spanning different regions and cultures. It inevitably encounters many deep-seated challenges during its advancement. These intertwined and interacting problems have severely restricted the quality and effectiveness of vocational education going global, which are specifically reflected in the following four aspects:

2.1 Insufficient Coverage of High-Quality Resources Due to Temporal and Spatial Restrictions

Geographical distance is the primary challenge that vocational education going global cannot avoid [7]. High-quality teaching resources of

domestic vocational colleges, such as renowned teacher resources, advanced training equipment, and mature curriculum systems, are mostly concentrated in local campuses, making it difficult for overseas students to directly access and effectively utilize them. The traditional offline school-running model requires institutions to dispatch teachers for cross-border teaching and transport training equipment, which is not only costly but also affected by uncertain factors such as visas, flights, and epidemics, resulting in unstable guarantee [8].

Moreover, countries along the "Belt and Road" are geographically vast, and the overseas layout of Chinese-funded enterprises is relatively scattered. It is basically unrealistic for vocational colleges to establish physical school-running bases in every region [9]. This leads to limited coverage of high-quality educational resources, which cannot meet the large-scale and wide-ranging talent cultivation needs. What is more troublesome is that in rural areas of some Southeast Asian countries, inconvenient transportation and weak network infrastructure make it difficult for students to smoothly obtain online teaching resources even if they exist, further exacerbating the problem of uneven resource allocation. Such temporal and spatial restrictions make it difficult for vocational education going global to achieve efficient radiation of high-quality resources, directly affecting the scale and quality improvement of talent cultivation [10].

2.2 Prominent Contradiction between Localization Adaptation and Standardized Output

The core value of vocational education lies in cultivating technical and skilled talents who meet industrial demands. However, different countries have obvious differences in industrial development levels, technical standards, and industry norms, as well as in cultural backgrounds, language habits, and employment market demands [11]. This places vocational education going global in a dilemma: on the one hand, it is necessary to output China's mature teaching standards, curriculum systems, and evaluation models to demonstrate the characteristics and advantages of Chinese vocational education; on the other hand, it is necessary to adapt to the local industrial realities and cultural backgrounds to avoid "acclimatization". The contradiction between

localization adaptation and standardized output is really difficult to reconcile.

After years of development, Chinese vocational education has formed a relatively mature set of teaching standards, curriculum systems, and evaluation models. These standards embody the practical experience of China's industrial development, are the core competitiveness of vocational education going global, and must be effectively output to reflect the value of Chinese vocational education. However, if domestic standards are completely copied regardless of local actual conditions, problems will definitely arise. For example, domestic textile and apparel professional courses are designed around advanced production equipment and processes, but some Chinese-funded enterprises in Southeast Asian countries are still using relatively old equipment, making it difficult for students to quickly adapt to job requirements after graduation. In addition, language barriers make it difficult for pure Chinese teaching standards and curriculum content to be understood and accepted by overseas students [3]. How to achieve effective adaptation to local industrial needs and cultural backgrounds while adhering to the core connotation of Chinese standards has become a core contradiction that must be resolved in vocational education going global.

2.3 Difficulty in Balancing Teaching Quality Control and Large-Scale Training

With the continuous expansion of overseas Chinese-funded enterprises, the demand for localized technical talents has grown explosively, which requires vocational colleges to carry out large-scale talent cultivation [5]. However, large-scale training often increases the difficulty of teaching management, making it difficult to effectively control teaching quality, and leading to the development dilemma of "emphasizing scale over quality".

On the one hand, overseas school-running points are relatively scattered, and the quality of teaching staff is uneven. Some locally hired teachers lack systematic vocational education teaching concepts and methods, making it difficult for them to accurately grasp the standards and requirements of Chinese vocational education. Domestic dispatched teachers, due to language barriers and unfamiliarity with local culture, cannot give full play to their teaching effects. On the other hand,

the traditional teaching quality evaluation model mainly relies on offline assessment and manual evaluation. For overseas students scattered in different regions, it is difficult to achieve full-process traceability and dynamic monitoring of the teaching process. Key information such as students' online learning progress, standardization of training operations, and skill mastery cannot be timely fed back to teaching managers, resulting in problems in teaching not being discovered and solved in a timely manner. At the same time, large-scale training makes it difficult for teachers to provide personalized guidance to each student, and they can only adopt a "one-size-fits-all" teaching method, which cannot meet the differentiated learning needs of students. This dilemma not only affects the quality of talent cultivation but also may damage the international reputation of Chinese vocational education and hinder the sustainable development of vocational education going global.

2.4 Cultural Integration and Communication Barriers Affecting Teaching Effectiveness

Cultural differences and language barriers are important factors hindering the in-depth advancement of vocational education going global. Vocational education is not only a process of imparting knowledge and skills but also a process of cultural exchange and value identification. There are significant differences between China and countries along the "Belt and Road" in terms of history and culture, values, and ways of thinking. These differences will directly affect the development of the teaching process and the achievement of teaching effects. Domestic vocational colleges emphasize collectivism and discipline awareness, but some students in Southeast Asian countries pay more attention to personal autonomy and flexibility, and the traditional teaching management model is likely to arouse students' resistance. In terms of teaching methods, domestic vocational education focuses on the combination of theory and practice and emphasizes the standardization of training operations, while some overseas students are more accustomed to passively accepting theoretical knowledge and lack the awareness and ability for active practice. In addition, language barriers are the most direct communication problem. Although some overseas students have a certain foundation in Chinese, it is difficult for them to meet the

requirements of professional learning, resulting in teachers having to spend a lot of time on language explanations during teaching, which not only affects the teaching progress but also cannot guarantee the accuracy of knowledge transmission. Poor communication between teachers and students, as well as between students, leads to insufficient teaching interaction, making it difficult to form a good teaching atmosphere, thereby reducing students' learning enthusiasm and sense of belonging. Cultural integration and communication barriers make it difficult for vocational education going global to achieve in-depth educational goals and restrict the quality of talent cultivation and the effectiveness of cross-cultural communication.

3. Solutions and Practices

Facing these multiple challenges of higher vocational education going global, Shandong Vocational College of Light Industry, based on its advantages in light industry and textile majors, takes digital technology as the core driving force, innovatively proposes a full-chain solution of "mechanism coordination-curriculum reconstruction-teaching innovation-standard leadership", and constructs a unique "light industry model" for vocational education going global. It relies on digital means to solve core problems and achieve high-quality development of vocational education going global. The specific practical paths are as follows:

3.1 Building a Digital Coordination Mechanism and Constructing a Four-Party Linkage Ecology

To solve the problems of insufficient coordination among multiple subjects and scattered resources in vocational education going global, the college breaks through the limitations of traditional cooperation models, creates a digital cooperation mechanism of four-party coordination among "government—industry association—enterprise—school", and realizes resource sharing, responsibility sharing, and win-win benefits through platform-based operation, thus constructing a benign interactive collaborative education ecology [1].

In terms of collaborative platform construction, the college, together with local governments, textile and apparel industry associations, and overseas Chinese-funded enterprises, jointly develops a four-party collaborative management platform, which integrates core functional

modules such as policy docking, talent demand release, curriculum resource sharing, teaching process supervision, and employment information feedback. Government departments release policy documents and fund support information related to vocational education going global through the platform and conduct macro supervision of cooperation projects. Industry associations, relying on their resource advantages, collect and sort out technical standards, industry dynamics, and talent demand data of the global textile and apparel industry to provide a basis for curriculum development and standard formulation. Overseas Chinese-funded enterprises submit talent demand lists and post skill requirements through the platform, participate in teaching process evaluation and training program design, and provide internship and employment positions for students. The college uploads curriculum resources, teaching plans, and student learning data, and accepts supervision and feedback from all parties. Through this digital platform, the four-party subjects realize real-time information sharing and efficient business collaboration, break through the limitations of time and space, and form a collaborative education pattern of "policy guidance, industry leadership, enterprise participation, and school implementation".

As to overseas project management, the college has established a digital project management system in the "Ban Mo Academy" of key cooperation countries such as Cambodia and Vietnam, realizing full-process digital control of cooperation projects. Taking the Cambodia "Ban Mo Academy" as an example, the system covers all links such as student recruitment, teaching implementation, assessment and evaluation, and employment tracking. Through digital means, it realizes closed-loop management of accurate student screening, real-time teaching monitoring, comprehensive effect evaluation, and dynamic teaching optimization, ensuring the standardized operation and education quality of cooperation projects. In the aspect of resource integration, the college integrates high-quality resources of the four parties with digital means, constructs a composite resource pool, realizes efficient allocation and recycling of resources of all parties, and provides all-round support for cross-border talent cultivation.

3.2 Reconstructing the Digital Curriculum System and Realizing the Unity of Adaptation

and Integration

To solve the contradiction between localization adaptation and standardized output, the college, guided by enterprise needs, relies on digital technology to reconstruct the curriculum system and constructs a bilingual digital curriculum system of "three-stage progression—three-dimensional integration", realizing the organic unity of Chinese standards and local needs. "Three-stage progression" follows the law of students' skill growth, which is divided into three stages: basic operation, special reinforcement, and comprehensive training, to cultivate technical skills step by step. "Three-dimensional integration" runs through the cultivation of professional skills, language ability, and comprehensive quality throughout the whole process, taking into account the transmission of Chinese standards, language communication adaptation, and cross-cultural literacy cultivation.

In the development of digital resources, the college, together with enterprises and industry associations, builds a bilingual teaching resource library, which covers various forms of teaching materials and carries out localization adaptation according to the industrial realities of different countries. At the same time, the college develops a virtual simulation training system to simulate the whole-process production scene, making up for the lack of overseas training conditions and reducing training costs and safety risks. In addition, the college establishes a dynamic curriculum adjustment mechanism based on big data, collects various data through the collaborative platform, accurately optimizes curriculum content, and ensures that the curriculum keeps pace with industrial development.

3.3 Innovating the Digital Teaching Model and Solving Cross-Border Teaching Problems

To break through temporal and spatial restrictions and improve teaching quality, the college relies on digital technology to create an online-offline integrated teaching model of "digital empowerment, virtual-real combination". The college builds an online education platform for "Ban Mo Academy", which integrates various teaching functions, supports multi-language switching, and adapts to different network environments to ensure that overseas students can smoothly obtain learning resources. The platform sets up exclusive

accounts and permissions for different subjects to realize full-process online collaboration.

In teaching implementation, a hybrid teaching model of "online theory + offline practice" is implemented. Online, domestic famous teachers record courses for students to learn flexibly, and regular dual-teacher joint live Q&A sessions are carried out. Offline, relying on overseas training bases and enterprise workshops, local teachers and enterprise technical backbones guide training operations, realizing the ladder-type cultivation of "theory—simulation—actual combat". To ensure teaching quality, the college establishes a "Chinese/skill" double tutor system and a digital evaluation system. Double tutors jointly formulate personalized learning plans. The digital evaluation system covers process and summative evaluations, realizing full-process controllable and precise improvement of teaching quality.

3.4 Establishing a Digital Standard Output System and Promoting the Internationalization of Chinese Standards

The college, supported by digital technology, constructs a full-chain standard output system of "R&D—promotion—adaptation", realizing the unity of standard output and local adaptation [1]. In standard R&D, a cross-regional and cross-field R&D team is formed, which collects various standards and demand data through the collaborative platform, extracts the core elements of Chinese standards, and absorbs local industrial characteristics to form a highly adaptable vocational standard system. In standard promotion, the strategy of "government promotion—industry leadership—enterprise pilot—school promotion" is adopted, and training and seminars are carried out relying on the digital platform to expand the application scope of standards. At the same time, a digital dynamic adaptation mechanism is established to collect application feedback data through the platform, revise the standard content in a timely manner, and ensure the adaptability and forward-looking of the standards.

4. Practice Summary

The "light industry model" of digital empowerment for vocational education going global constructed by Shandong Vocational College of Light Industry has achieved remarkable results through practical exploration, providing a useful reference for the high-quality

development of vocational education internationalization. At the talent cultivation level, this model has effectively solved the imbalance between large-scale cultivation and quality control, alleviated the shortage of localized talents in overseas Chinese-funded enterprises, and the trained students are adapted to job requirements and recognized by cooperative enterprises. At the industrial service level, the curriculum resources and vocational standards developed relying on digital technology have become important carriers for Chinese industrial technology to "go global", promoting the standardized and standardized transformation of local industries and realizing the deep coordination between vocational education and industrial development. At the cultural exchange level, the digital platform has built a bridge for mutual learning between Chinese and foreign cultures. By integrating cultural elements into courses and carrying out diverse exchange activities, it has enhanced the mutual understanding between Chinese and foreign people and improved the international influence of Chinese vocational education. At the school development level, the practice of vocational education going global and domestic school-running form a benign interaction, promoting the comprehensive improvement of the teaching staff, teaching resources, and school-running conditions, and constructing a circular pattern of "overseas practice feeding back domestic teaching, and domestic advantages supporting overseas development". The successful practice of the "light industry model" has extracted the core experience of digital empowerment for vocational education going global. Firstly, the coordination of government, industry, enterprise, and school is the foundation. Through the digital mechanism of four-party coordination, efficient resource integration is realized, a benign education ecology is formed, and stable guarantee is provided for project advancement. Secondly, digital technology is the key engine. With the help of online platforms, virtual training, big data, and other technologies, it effectively solves traditional problems such as temporal and spatial restrictions, resource adaptation, and quality control, and reconstructs the cross-border talent cultivation model. Thirdly, the unity of standard output and local adaptation is the core path. Adhering to the principle of "taking me as the main body and being inclusive", it not only

adheres to the advanced nature of Chinese standards but also fits local realities through a dynamic adaptation mechanism, improving the international recognition of standards. Fourthly, cultural integration is the guarantee for sustainable development. Integrating cultural exchange throughout the whole process of education, eliminating communication barriers, and laying an emotional and social foundation for the long-term and stable development of the project.

Digital empowerment for vocational education going global is an inevitable trend of vocational education internationalization in the new era, with broad development space in the future. Shandong Vocational College of Light Industry will continue to deepen the innovation and promotion of the "light industry model", expand cooperation fields and territories, upgrade the functions of the online platform, and build a benchmark for digital vocational education going global. For vocational colleges across the country, they should learn from the experience of the "light industry model", based on their own advantages, accelerate digital transformation, and strengthen the coordination of government, industry, enterprise, and school. The government, industry associations, and enterprises also need to perform their respective duties, cooperate with each other, improve policy support, integrate industrial resources, deepen the integration of production and education, and jointly promote the international development of Chinese vocational education. In the future, with the iteration of digital technology and the in-depth advancement of the "Belt and Road" Initiative, Chinese vocational education will play a greater role on the international stage. Through technology empowerment, standard leadership, and cultural integration, it will cultivate high-quality technical and skilled talents for countries along the route, help Chinese and foreign industrial upgrading and common development, and contribute Chinese wisdom and solutions to building a community with a shared future for mankind.

Acknowledgements

The research findings in this paper originate from the "2025 Research Project of China Vocational Education Association, Shandong." This project focuses on the research of digital empowerment for the "going global" path of

vocational education and the construction of a talent cultivation system. The project number is SDZJ2025072.

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