"Standard Guidance, Digital Empowerment, Co-construction and Sharing" Model Construction and Empirical Research on the International Promotion of Digital Resources in Civil Aviation Vocational Education

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ABSTRACT

Against the background of the deepening of "the Belt and Road" Initiative and the accelerated construction of the "Air Silk Road" of civil aviation, the international promotion of digital resources of civil aviation vocational education has become an important starting point to enhance the international influence of China's vocational education. In view of the problems of insufficient cross-cultural adaptability, lack of co-construction and sharing mechanism, and low international recognition of Chinese standards in the process of "going global" of digital resources, the author puts forward a trinity international promotion model of "standard guidance, digital empowerment, co-construction and sharing". Based on the theory of innovation transfer and tacit knowledge, it builds a four-party collaborative operation framework of "government - school - industry - enterprise", and develops a number of modular and multilingual digital resource packages, which are verified by the international cooperation practice of Guangzhou Civil Aviation College. The research shows that the collaborative development model is significantly better than the one-way output model. The application of technologies such as digital twins effectively improves the cross-cultural adaptability of training resources, and standard docking and mutual recognition are the key paths to enhance the international discourse power of China's civil aviation vocational education.

Keywords: *Civil aviation vocational education, Digital resources, The Belt and Road, Co-construction and sharing, International promotion, Standard leading, Digital empowerment.*

1. INTRODUCTION: PROBLEM PROPOSAL AND RESEARCH BACKGROUND

1.1 Opportunities of the Times: The Transformation from "Resource Flow" to "Rule Leading"

In November 2024, the Second World Congress on the Development of Vocational and Technical Education adopted the "Tianjin Consensus on the Development of World Vocational and Technical Education — 32 Ministerial Declaration" in Tianjin. It proposed to build a closer, fairer, more inclusive and more sustainable vocational education system, so that skills can play a more critical role in enhancing employment and entrepreneurship and achieving global economic recovery [1]. This consensus marks a new stage of global vocational education governance and opens a strategic window for China's vocational education to "go global".

"Opinions on Deepening the Reform of Modern Vocational Education System Construction" also points to a clear direction: it is necessary to not only make the national vocational education wisdom education platform bigger and stronger, but also build key projects such as professional teaching resource database, excellent online open courses, virtual simulation training bases, and expand the sharing of high-quality resources; it is

also necessary to “promote the ‘Chinese + vocational skills’ project, serve international production capacity cooperation and Chinese enterprises going out, and cultivate international talents and local technical and skilled talents urgently needed by Chinese-funded enterprises" [2].

In the field of civil aviation, China has signed air transport agreements with 62 countries along "the Belt and Road", with about 5,100 direct flights per week, accounting for more than 50% of international passengers [3]. Flights are flying, but people can't keep up. As scholars have said, "promoting the construction of the ‘Air Silk Road’ is inseparable from giving full play to the soft power in the field of civil aviation education”. It is necessary for China to carry out intergovernmental cooperation with participating countries to provide online “Internet + civil aviation education” and offline guidance training. The combination of resource output [4]. However, when combing the literature, the author found that the "going global" of civil aviation digital resources is not smooth, at least across three barriers: lack of cross-cultural adaptability, lack of sustainable sharing mechanism, and low international recognition of Chinese standards [5].

1.2 Realistic Dilemma: The Limitations of One-way Output

Ma Yuxia et al. (2025) pointed out that China's vocational education "going global with enterprises" faces four structural challenges: "the coordination mechanism of industry and education is not smooth enough, the supply of institutional guarantee is relatively insufficient, the path of internationalization of standards is not smooth, and the innovation of talent training paradigm is weak" [5]. Specific to digital resources, Tang Xiaojun et al. (2025) further revealed that the construction “positioning is not clear, the collaborative promotion mechanism of all parties involved is not perfect”, “key attributes are not highlighted”, “promotion is limited, international application is not deep”; it is particularly striking that “almost all the bilingual teaching resources of vocational education are written in Chinese and English, and very few are compiled in other official languages” [6].

He Zhengying's (2025) research gives a deep explanation for this: China's vocational education standards "going global" focus on traditional majors such as equipment manufacturing, communication electronics, transportation, and e-commerce, accounting for more than 60%. In the region, ASEAN, Africa and South Asia are the main areas, while Central Asia, Central and Eastern Europe, Latin America and other regions with close economic and trade relations have blind spots [7].

The more fundamental problem lies in the underlying logic. The essence of unidirectional output is “separation” rather than “integration”. Wang Yuan (2026) pointed out that there is a widespread dilemma of "project suspension" and "acclimatization" in overseas schools. The root is exogenous in value logic and dependent on the operation network, and fails to be embedded in the endogenous cycle of economic and social development in the host country [8]. The research of Cheng Tao and Wang Zhengqing (2023) also confirmed that “Chinese + vocational skills” is transforming from “technology + Chinese” and “Chinese + major” to “Chinese × vocational skills”, which is truly integrated. In the future, vocational education should be promoted to go to sea scientifically, high-quality and integrated. [9] This path provides theoretical support for the view of "co-construction is better than one-way output” in this paper.

2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Research status in China and Foreign Countries

2.1.1 Research in China

The first is the construction results first. By 2022, the 203 vocational education professional teaching resource libraries established by the Ministry of Education have included nearly 200,000 online courses, with a total of nearly 5 million resources and a total of more than 16 billion visits [10]. Sun Shanxue (2025) believed that this makes China “undoubtedly a big country in the construction of digital resources for vocational education”, and reminds the next stage to attach importance to quality improvement and copyright protection [11].

The second is the brand building. Yun Youzheng et al. (2025) proposed that China has formed a three-level brand system of “national strategy and major initiative brands, platform and alliance cooperation brands, school-running institutions and training project brands”. “It has become a basic consensus to go to sea to help the

international brand building of vocational education with vocational education standards" [12].

The "Lancang-Mekong Cooperation" foreign aid training program of Civil Aviation Flight University of China has accumulated a lot of experience, but frankly, the internationalization research of civil aviation digital resources is still in its infancy, lacking both systematic theoretical guidance and replicable models.

2.1.2 Research in Foreign Countries

The Australian TAFE system combines standardized course output with localization adaptation; the EU uses the “Erasmus +” plan to promote the sharing of resources among member states. However, these models may not be applicable along the “Belt and Road” — high cost, cultural differences, and insufficient response to local industrial demand [9].

International vocational education cooperation is showing a new trend of "from following the sea to taking root in symbiosis". Wang Yuan (2026), taking Liuzhou City Vocational College as an example, proposed that "vocational education going global" should shift from "following to overseas" of serving Chinese-funded enterprises to "local symbiosis" with the deep integration of industrial ecology in the host country. The key is to make the core nodes of the collaborative network shift from focusing on the Chinese side to focusing on the local leading enterprises and industrial needs of the host country [8].

2.2 Theoretical Basis: Innovation Transfer Theory and Tacit Knowledge Theory

The theoretical framework of this study is based on two core theories.

Diffusion of Innovation divides the internationalization of higher education into two dimensions: inward and outward, as well as two types: “relocation migration” and “diffusion migration” [13]. In the context of the internationalization of digital resources, the cross-border flow of resources is a “relocation migration”, and the active adoption, transformation and re-innovation of the target country is a “diffusion migration”. Which is more important? Chen Zhuo et al. (2024) confirmed that cross-cultural innovation transfer depends not only on the material process, but also on the drive of the attraction of “innovation” itself, and the latter plays a more long-term role [14] — resources ultimately depend on their own quality, which is the theoretical fulcrum of “co-construction is better than one-way output”.

Based on Polanyi's Tacit Knowledge, the acquisition of “tacit knowledge” relies on first-hand experience and exemplar learning.[15] Aircraft maintenance, cabin service and other skills are highly dependent on contextualized practice, which requires digital resources to “externalize” tacit knowledge through virtual simulation and digital twins, otherwise cross-cultural skills transfer is difficult to occur.

2.3 Analytical Framework

Based on the above theories, the author proposes to build a three-in-one analysis framework of "standard guidance, digital empowerment, co-construction and sharing". (see “Table 1”) The three dimensions support each other: standards guidance determines the direction and quality requirements, digital empowerment provides technical means, and co-construction and sharing ensure that the mechanism is sustainable and indispensable.

Table 1. The main problems and solutions of the internationalization of digital resources in civil aviation vocational education

Type of problem	Specific performance	Solution direction
Cross-cultural adaptation issues	Language barriers, cultural differences, standard docking difficulties	Developing multilingual resources, establishing cultural adaptation standards, and carrying out localization transformation.
Resource sharing mechanism issues	The definition of intellectual property rights is not clear, the update of resources is not timely, and the distribution of benefits is unreasonable.	Designing a multi-subject coordination mechanism, clarifying the relationship between rights, responsibilities and interests, and establishing a continuous update mechanism.

Type of problem	Specific performance	Solution direction
International recognition of standards	The lack of docking between Chinese standards and international standards and the low degree of international recognition.	Promoting mutual recognition of standards, participating in the formulation of international standards, and establishing a certification system.

3. THE CONSTRUCTION OF "STANDARD GUIDANCE, DIGITAL EMPOWERMENT, CO-CONSTRUCTION AND SHARING" MODE

3.1 Standard Guidance: from "Integration" to "Track Construction"

3.1.1 Docking International Civil Aviation Standards

Civil aviation vocational education is highly standardized and internationalized. The standards developed by the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) are authoritative in the world. If the construction of digital resources is not based on these standards, the scientificity and versatility of the content cannot be talked about. Aircraft maintenance requires docking ICAO Annex 1 "personnel license" and EASA Part-66 "maintenance personnel license requirements"; air traffic control command needs to dock ICAO Doc 4444 "air rules and air traffic services"; aviation safety needs to be connected to ICAO Annex 17 "Aviation Security".

3.1.2 Promoting Chinese Standards "Going Global"

Another meaning of standard guidance is to promote the excellent standards of civil aviation vocational education in China to the world. He Zhengying (2025) pointed out that the "going global" of vocational education standards is "an important part of institutional openness" and "the only way for China's vocational education to deeply participate in global education governance and strive for the right to speak in the field of international vocational education" [7]. Youzheng et al. (2025) further emphasized that the standard has three aspects of value: "from nothing to something, from something to excellence, laying the brand foundation with the leading advantage", "unified standardization, overall participation, co-construction and cohesion of brand synergy", "ensuring quality, strengthening cognition, and scientifically shaping brand identity". It has always been an important support for vocational education going abroad and international brand building [12].

Are Chinese standards competitive? The "5G communication technology training standard" formulated by Shenzhen Polytechnic and Huawei was introduced by 9 countries such as Egypt and the Philippines [7]. It shows that Chinese vocational education standards in emerging fields have the strength to go global. Civil aviation also has a foundation: China has accumulated rich experience in the application of drones, smart airports, and aviation logistics, and has the conditions to form professional standards with international influence. The teaching standard of aircraft electromechanical equipment maintenance major in Guangzhou Civil Aviation College has been officially certified by the Ministry of Education of the Gambia, and has participated in the mutual recognition project of aviation skills standards between China and Europe, which is a successful example in the field of civil aviation.

3.1.3 Construction of Gradient Standard Output System

The standard output can not be "all in one standard without changing". Wang Heng'an and Li Yubo (2025) proposed that sustainable "vocational education going to sea" requires "a good blend of unified standards and personality standards" [16]. Based on this, the author designed the "three-level gradient" standard system.(See "Table 2")

Table 2. Standard gradient system of digital resources for civil aviation vocational education

Standard level	Scope of application	Core content	Output strategy
Basic general layer	All partner countries	Civil aviation basic English, safety culture and professional quality	Standardized output, multilingual adaptation

Standard level	Scope of application	Core content	Output strategy
Professional core layer	Major partner countries	Aircraft maintenance, air traffic control command, operation management and other core skills.	Differentiated customization, localization transformation
Characteristic innovation layer	Key partner countries	UAV applications, smart airports, aviation logistics and other cutting-edge areas	Collaborative development, joint certification

3.2 Digital Empowerment: Technology-driven Resource System Construction

3.2.1 The Application of Digital Twin Technology in Practical Training Resources

High-cost and high-risk operation training is a difficult problem that civil aviation vocational education cannot avoid. Traditional training is subject to the number of equipment and venues, and it is easy to talk about large-scale promotion. By constructing a virtual mapping of physical entities, digital twins provide an ideal solution for cross-cultural training: geometric twins restore physical forms, physical twins embed physical laws, and behavioral twins simulate decision-making and emergency processes.

The cross-cultural value of this path has been verified. Leshan Vocational and Technical College has created a digital intelligent training system of "virtual simulation + real workshop", forming a three-stage training mode of "virtual simulation first-real workshop practice-enterprise post replacement", and the training efficiency has been improved by more than 60% [17], which provides evidence for the application of digital twin in the field of civil aviation.

3.2.2 Modular Resource Architecture Design

How to build a resource system? The "six centers, two venues, one garden" structure of the teaching resource database of Hunan Railway Vocational and Technical College provides a reference [10]. Drawing on its ideas, the author proposes a “three-tier module” design: the basic sharing level is shared to all learners, including general modules such as civil aviation basic English and aviation safety knowledge; the professional customization layer develops modules such as aircraft maintenance, air traffic management, aviation services, and airport operations; The expansion and improvement layer develops cutting-edge modules such as drone driving, smart airport operation and maintenance, and aviation big data analysis.

3.2.3 Multi-language Adaptation Strategy

The language barrier is the first hurdle, which cannot be overemphasized. Chen Zhuo et al. (2024) found that foreign students with strong Chinese ability have higher mastery of skills and stronger interest in learning [14]. The author puts forward the "three-step” strategy: the first is to ensure accurate communication based on Chinese and English bilinguals; the second is to develop local language auxiliary versions for key partner countries; the third is to establish an integrated curriculum system of “Chinese + civil aviation vocational skills”. After three steps, language is no longer a threshold, but a binder.

This strategy is highly consistent with the latest practice. The "five strengthening" strategy reported by the Central Broadcasting Network clearly stated that it is necessary to "develop multilingual and modular teaching resources for the youth of the cooperative countries, and cultivate localized compound talents who understand technology, language and culture" [18]; Chongqing Institute of Engineering Technology's “introduction-internalization-output” closed-loop development of more than 150 multilingual courses [19] also provides evidence.

3.3 Co-construction and Sharing: The Design of Four-party Coordination Mechanism

3.3.1 “Government-School-Industry-Enterprise” Collaborative Model

Zhou Wang et al. (2024) pointed out that the internationalization of vocational education faces four major challenges under the background of jointly building the "Belt and Road": lack of high-quality top-level design, in-depth school-enterprise

cooperation, strong professional support and scientific evaluation system. To solve these challenges [20], it is not realistic to rely on either side alone.

The division of labor of the “government-school-industry-enterprise” collaborative model constructed by the author in this paper is as follows: the government provides policy support and standard guidance, and establishes a three-level linkage mechanism of “national-provincial-institution” [18]; colleges and universities are responsible for resource development and teaching implementation; industry organizations provide technical standards and demand docking; enterprises transform job requirements into teaching resources. The four parties perform their duties and bite each other.

The "five-party linkage and three-tier governance" mechanism of Chongqing City Management Vocational College is similar to it. It has formed the construction mechanism of "top-level planning-meso design-micro implementation" and the governance chain of "demand analysis-standard formulation-resource development-implementation feedback" [21].

3.3.2 Intellectual Property Distribution and Copyright Protection

Sun Shanxue (2025) specifically pointed out that it is necessary to explore the Internet publishing license and certification of teaching resource libraries, and improve the protection of high-quality resources [11]. Based on this, the author designs an intellectual property allocation scheme based on blockchain, and divides the resources into three categories: open sharing of basic resources, paid use of value-added resources, and customized resource contract management. Specifically, the common basic resources developed by China adopt the CC-BY-SA open-source protocol, allowing partner countries to use them free of charge and encouraging localization transformation; the core resources are licensed for use, and the income is distributed proportionally; customized resources are assigned through commercial contracts.

3.3.3 Continuous Update and Quality Assurance

According to the research of Qian Wenjun and Xin Yanling (2022), there are three major problems in the internationalization of regional vocational education: the lack of systematic planning by the government, the lack of necessary ability by colleges and universities, and the lack of scientific guidance in practice [22]. Aiming at the common problem of resource update out of file, the author designs a "double circulation" quality assurance mechanism: iterative update of internal circulation tube, quarterly collection of user data of partner countries, and semi-annual update of resources; the external circulation tube standard is connected with the international civil aviation standard organization to maintain a normalized information channel.

4. PRACTICE VERIFICATION: BASED ON THE CASE OF GUANGZHOU CIVIL AVIATION COLLEGE

4.1 Practical Background and Basic Conditions

As a national model higher vocational college directly under the Civil Aviation Administration, Guangzhou Civil Aviation College has established stable cooperation with Sri Lanka, Nepal and other "Belt and Road" countries. It is an IATA authorized training unit, and the course certificate is universal; there are 20TB digital teaching resources and more than 50 online courses. The teaching standard of aircraft electromechanical equipment maintenance major in the school has been officially certified by the Ministry of Education of the Gambia, and has participated in the mutual recognition project of aviation skills standards between China and Europe, which provides a direct standard basis for the international transformation of resources.

4.2 Pilot Implementation and Effect Evaluation

4.2.1 Findings from the Needs Assessment

Before the launch of the pilot, the author's team made a systematic investigation on the civil aviation management departments, vocational colleges and aviation enterprises in the partner countries. The four findings are as follows: The most direct pain point is the talent fault: the development of the aviation industry in the partner countries is faster than the talent training, and the local senior technical talents are heavily dependent on overseas introduction. The uneven English proficiency is the main constraint on the training

effect, which is consistent with the findings of the "Lancang-Mekong Cooperation" project [9]. More noteworthy is the difference in digital infrastructure-some remote areas have a strong demand for offline resources, and resource design cannot default that everyone has a high-speed network. Surprisingly, respondents have a high degree of acceptance of the "Chinese + civil aviation vocational skills" model, and most people believe that mastering Chinese is conducive to career development.

4.2.2 Resource Package Development and Pilot Application

Based on the research, the team developed a resource package of three modules: Module 1 "Civil Aviation Safety English" (basic sharing layer), includes 100 situational dialogues, 500 professional term interaction exercises, 20 virtual simulation training tasks and automatic evaluation system, supporting Chinese-English bilingual switching; Module 2 "Aircraft Maintenance Foundation" (professional customization layer), uses digital twin to build a virtual maintenance environment, including 12 training tasks such as body structure cognition, engine disassembly and assembly, and avionics system detection; Module 3 "Airport Ground Service" (professional customization layer) simulates the real service process and uses gamification design to stimulate power.

4.2.3 Pilot Application Effect

From March to August 2026, the team conducted a six-month pilot application at the Ogun State Learning Center in Nigeria, with remarkable results. After 25 students completed Module 1, the average score of civil aviation professional English test increased from 62.3 points to 81.7 points (full score 100), an increase of 31.1%; the passing rate of skill assessment of aircraft maintenance module is 87.5%, which is significantly higher than 65.0% of the traditional mode. What is more gratifying to the author is the attitude of the students: the satisfaction of resource content is more than 8.8 points (10 points full score). At the same time, the students also responded to some questions, including adding local language subtitles, providing more offline downloads, and strengthening real-time interaction between teachers and students. These comments have entered the next iteration list.(See "Table 3")

Table 3. Pilot application before and learning effect the comparison

Evaluation indicators	Data results
The improvement of professional English test	62.3 points → 81.7 points (increased by 31.1%)
Aircraft maintenance skills assessment pass rate	87.5% (65.0% in the traditional model)
Resource content satisfaction	≥8.8 (out of 10)

4.3 Empirical Test of Co-construction and Sharing Mechanism

In the pilot project, the four-party coordination mechanism of "government-school-industry-enterprise" has been preliminarily verified. The relevant departments of China Civil Aviation Administration provide policy guidance; Guangzhou Civil Aviation College is responsible for resource development and teaching implementation; China Air Transport Association assists in docking IATA standards; the Ogun State Learning Center in Nigeria provides relevant job demand information. They sign a resource use and co-construction agreement: general resources are provided free teaching and training; the two sides of the derivative resources generated by the localization transformation share intellectual property rights; customized resources are shared by intellectual property rights, and business income is allocated at a ratio of 7:3.

The above practice verifies Wang Yuan's (2026) "grounded symbiosis" theory: when the core nodes of the collaborative network turn to the needs of the host country's local leading enterprises and industries, the project can achieve a qualitative transition from "following to the overseas" to "grounded symbiosis" [8]. Although the project is in the initial stage, the mechanism of intellectual property sharing and income distribution has revealed the prototype of the three mechanisms of "subject coordination, resource circulation and institutional culture integration".

5. DISCUSSION AND IMPLICATIONS

5.1 The Deep Logic of "Co-construction Is Better than One-way Output"

Why is co-construction better than output? It can be understood from three levels. On the cultural

level, Cheng Tao and Wang Zhengqing (2023) revealed the trend of "Chinese + vocational skills" from "separation" to "integration" [9]: one-way output is the "separation" model, collaborative development is the "integration" model. And with the deep participation of the target country, the resources can really adapt to the local culture, otherwise "acclimatized" is only a matter of time. At the economic level, Wang Heng'an and Li Yubo (2025) pointed out that the brand of "vocational education going global" is numerous but the quality is uneven, and the sustainable path is urgently needed [16]: one-way output depends on continuous investment, and the project is difficult to sustain as soon as it ends, while co-construction and sharing bind interests together. At the educational level, Chen Zhuo et al. (2024) confirmed that the intrinsic attraction of "innovation" is more long-lasting than the material process [14]: partner countries change from passive recipients to active participants, and learning motivation and engagement naturally increase.

5.2 The Unique Value of Digital Technology in Solving International Cooperation Problems

Digitization is the key to solve the problem of international cooperation. First, digital technology reduces cooperation costs. Traditional international cooperation relies on the cross-border movement of people, which is costly and geographically limited; the teaching resource database "broke the limitations of traditional education, a screen, a line across time and space, to achieve the sharing of high-quality educational resources and learning" [7]. Second, digital technology overcomes language barriers. Multimedia presentation assists language understanding, and virtual simulation training has the highest satisfaction in the pilot, which is due to the intuitive operation reducing the dependence on language mediation. Third, digital technology supports personalized learning, and resource composability allows learners to choose their own paths, which is difficult to do in offline classrooms. This path is highly consistent with the latest strategy of "vocational education going global". The report of China Central Radio and Television Network clearly puts forward "promoting digital empowerment of overseas schools... to achieve cross-border sharing of high-quality resources" [18].

5.3 Strategic Significance of Standard Guidance

Standard guidance and technology empowerment must be equally important. Jiang Jiyou (2021) pointed out that the cultivation of international talents should "adhere to the principle of sharing innovation", so that the achievements of vocational education can benefit all countries [23]. In the author's opinion, standard output is the highest level of "sharing" - not only technical communication, but also the shaping of rules and discourse power. China has not yet established a national qualification framework, and the academic certificate faces the difficulty of docking the qualification framework of other countries [7]; the digital resources based on unified standards can provide an objective basis for the mutual recognition of academic qualifications and skills, and promote the construction of the mutual recognition system of vocational education qualifications in the Belt and Road Initiative. The standard construction is the "core starting point", "the follow-up resource matching and landing service of vocational education standards, and digital technology support are the path to follow" [12]. The trinity model of this paper just responds to this judgment and realizes the organic unity of the three dimensions of standard, resource and mechanism.

6. PRACTICE PATH AND POLICY RECOMMENDATIONS

6.1 Practice Path: "Three-stage" Promotion Strategy

Based on the research conclusions, the author proposes a " three-stage " promotion strategy (see "Table 4"): the pilot verification period (1-2 years) selects 2-3 national pilots with mature conditions; the expansion and promotion period (3-5 years) expands the scope of cooperation to more than 10 countries, and establishes regional resource centers; the mature operation period (5-10 years) forms a self-running co-construction and sharing ecology, participates in the formulation of international standards, and exports Chinese standards. The three stages are linked together, and can not be delayed.

Table 4. "Three-stage" strategy for international promotion of digital resources in civil aviation vocational education

Stage	Time span	Core tasks	Key indicators
Pilot verification period	1-2 years	Select 2-3 countries with mature conditions to carry out pilots to verify the applicability of resources and the feasibility of the mechanism.	Number of pilot countries, user satisfaction, learning effectiveness improvement rate
Expand the promotion period	3-5 years	Sum up the pilot experience, expand the scope of cooperation to more than 10 countries, and establish regional resource centers	Number of cooperative countries, resource usage, localization transformation ratio
Stage	Time span	Core tasks	Key indicators
Mature operation period	5-10 years	Form a self-running co-construction and sharing ecology, participate in the formulation of international standards, and export Chinese standards.	The number of countries adopting Chinese standards, the number of international certifications, and brand influence

6.2 Policy Recommendations

6.2.1 Improving the System Security

The author suggests that the internationalization of digital resources of civil aviation vocational education should be included in the construction of "education power" and the overall deployment of civil aviation development planning. With reference to Wang Heng'an and Li Yubo's (2025) "Central-Local Linkage Project Establishment System"[16], a hierarchical management mechanism for projects is established: the state is responsible for overall planning and investment, the province is responsible for auditing and filing and process supervision, and colleges and universities implement development and implementation; at the same time, a three-level linkage mechanism of "national-provincial-institution" is constructed [18].

6.2.2 Strengthening the Construction of Standard System

It is suggested that the Ministry of Education should take the lead and jointly establish a standard system with China Civil Aviation Administration, IATA and other institutions, including at least three sub-systems: resource development standards (content, technology, language), quality evaluation standards (learning effect, resource applicability, cultural adaptation) and international cooperation standards (intellectual property rights, benefit distribution, dispute resolution) [7].

6.2.3 Constructing an International Teacher Training System

It is necessary to implement the "two-wheel drive" teacher training: on the one hand, it is to introduce foreign teachers with experience in the civil aviation industry; on the other hand, it is to implement of bilingual ability improvement and overseas training programs for local teachers [20]. At the same time, we can learn from the experience of Chongqing Engineering Vocational and Technical College to set up a "professional + language + enterprise" resource development team [19].

6.2.4 Establishing Special Support Funds

It is suggested to establish a special fund for the internationalization of digital resources in civil aviation vocational education, and adopt a multi-input model of "government guidance + school-enterprise sharing + social participation". Referring to the deployment of "exploring new mechanisms for local governments and social forces to support the development of vocational education" in the "Opinions on Deepening the Construction and Reform of Modern Vocational Education System" [2], the qualified projects will be included in the scope of special bonds and budgetary investment support; at the same time, it explores the funding guarantee system of "National Cooperation Agency assistance + corporate donation + foreign investment + Chinese self-financing", and Turkmenistan Ruban Workshop has made a successful demonstration [24].

7. CONCLUSION

Through theoretical construction and case verification, the author puts forward the mode of "standard guidance, digital empowerment, co-construction and sharing", which provides a systematic scheme for the digital resources of civil aviation vocational education to serve the "Belt and Road".

“Co-construction is better than one-way output” is the core concept. Through interest binding and cultural integration, collaborative development solves the problem of sustainability of one-way output, which is consistent with the judgment in the theory of innovation migration that "the attraction of innovation itself is more long-term than the effect of material process" [14].

Digital twin, artificial intelligence and so on are the key means to solve the problem of cross-cultural training. Technology empowerment reduces the cost of cooperation, and improves the learning effect through intuitive, gamification and personalized design, which verifies the scientific nature of the strategy of "digitally empowering overseas education" [18].

The guidance of standards is a strategic path to enhance the international discourse power of China's civil aviation vocational education. By docking ICAO/IATA standards, promoting the "going global" of Chinese standards and building a gradient output system, we can achieve a leap from "integration" to "track building" - which is the core meaning of "vocational education going global" from "going global" to "staying" [16].

The four-party coordination of "government-school-industry-enterprise" is the institutional guarantee for the sustainable development of co-construction and sharing. The reasonable distribution of intellectual property rights and the continuous updating mechanism ensure the balance of interests and the stability of cooperation, reflecting the inherent requirements of "subject coordination, resource circulation, and institutional culture integration" [8].

Of course, this study also has boundaries. The future research can be deepened from four directions: In terms of pilot scope, comparative research should be carried out in countries with different regions and cultural backgrounds. In the application of technology, the potential of generative AI in the adaptive generation of digital resources is explored. In terms of follow-up evaluation, a long-term effect monitoring and data accumulation mechanism should be established. On the brand system, promoting the internationalization of digital resources of civil aviation vocational education into the overall strategic framework of national vocational education brand [12].

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