

RESEARCH ON THE NEEDS FOR INTERNATIONAL EDUCATION COOPERATION IN MEDICAL VOCATIONAL COLLEGES: A CASE STUDY OF M VOCATIONAL COLLEGE IN CHINA

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Abstract

Amid deepening globalization and educational internationalization, medical vocational colleges face the imperative to enhance quality and competitiveness through international cooperation. This study, using M Vocational College as a case, employed an explanatory sequential mixed design combining questionnaires and semi-structured interviews to analyze the cognition, needs, barriers, and support factors of students, faculty, and administrators. A total of 126 valid samples were collected (111 students, 10 faculty, 5 administrators), with strong reliability.

The results showed that students hold positive attitudes, with the greatest concern for scholarships and funding support ($M=4.29$); faculty emphasize the establishment of international collaboration teams ($M=4.40$) and funding for overseas visits ($M=4.30$); and administrators highlight special funds ($M=4.40$) and project expansion ($M=4.20$). Qualitative analysis reveals systemic problems such as weak top-level design, cumbersome procedures, insufficient service platforms, and lagging incentives. Accordingly, based on the framework of “demand analysis → priority integration → action sequencing,” this study proposes five strategies: strengthening top-level design and special funding, improving faculty training and incentive mechanisms, expanding student scholarships and information platforms, broadening international cooperation channels, and establishing a PDCA evaluation system with participation, learning outcomes, and employment conversion as core indicators.

This study’s innovation lies in its diagnostic framework of “three subjects × four dimensions,” combining quantitative and institutional evidence to link directly to management improvements. The mixed approach strengthens explanatory power and feasibility, offering empirical and practical reference for medical vocational colleges advancing international cooperation.

Keywords : International Education Cooperation, Medical Vocational Colleges, Demand Analysis, Mechanism Evaluation, Strategy Optimization

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Introduction

1. The development trend of internationalization of medical higher vocational education

In today's era of deepening globalization, the internationalization of higher vocational medical education has become a crucial path to improving educational quality and serving the national public health strategy. Through diverse collaborative approaches such as student exchange, visiting faculty, dual degree programs, and transnational research, institutions can introduce advanced educational concepts from abroad, optimize teaching content, and enhance talent cultivation quality. In recent years, guided by the "Healthy China 2030" strategy and the Belt and Road Initiative, the internationalization of higher vocational medical education has ushered in significant development opportunities. At the policy level, the state has issued a series of documents promoting international cooperation between vocational and medical education. The "Healthy China 2030" Outline explicitly calls for "strengthening collaboration between medical and educational institutions" to support the development of a high-quality healthcare workforce and enhance the global adaptability and competitiveness of Chinese medical education (State Council of PRC. 2016). The "Guiding Opinions of the General Office of the State Council on Accelerating the Innovation and Development of Medical Education" emphasizes the need to "strengthen exchanges and cooperation with high-level international universities and research institutions," supporting joint education, talent development, and scientific research between institutions to establish mutually beneficial and win-win cooperation mechanisms (State Council General Office. 2020). Driven by a number of national policies, some medical vocational colleges have actively participated in the construction of overseas training bases, dual-degree programs and international exchange activities, and explored diversified cooperation paths.

Despite this, Chinese medical vocational colleges still face numerous challenges in promoting international collaboration. Overall, the level of collaboration is low, the forms are relatively simple, and they often remain limited to short-term visits and exchanges, lacking institutionalization and long-term planning. Such collaboration often relies on personal connections rather than systematic, top-level design at national and regional levels. Furthermore, there are gaps in institutional, cultural, and management systems compared to international institutions. In reality, there is a mismatch between input and output, making it difficult to ensure the effectiveness of international collaboration. Furthermore, systematic empirical research on medical vocational colleges is relatively scarce. First, there is a misalignment between research subjects and evidence. Existing research has long focused on comprehensive universities and research-oriented medical schools, lacking first-line empirical support for medical vocational colleges, resulting in limited generalizability and contextual adaptability of conclusions. Second, there are inadequate analytical levels and methodologies. Research often focuses on conceptual and policy interpretation, lacking mechanistic evidence that translates "conceptual consensus" into governance, funding, platforms, and processes. There is a disconnect between quantitative and qualitative approaches, lacking reliability, validity, and triangulation. Furthermore, there is a lack of systematic testing of new forms of post-pandemic collaboration, compliance, and quality governance. Third, there is a weak closed-loop system for measuring and improving outcomes. The lack of comparable and traceable core indicators (participation rates, learning outcomes, and employment conversion) makes it difficult to support continuous improvement through the PDCA process. Evidence is also insufficient on the impact of "equitable access" and support systems (scholarships, information availability, and language/intercultural competence) on participation and quality.

Fourth, heterogeneity is insufficiently captured. Differences between specialties (nursing, rehabilitation, pharmaceutical testing, and clinical practice) and regions (resource endowments, partner networks, and policy compliance) are not fully identified and compared, limiting the contextual adaptability and operationalization of strategies.

Based on this, this study takes M Vocational College as an example, using a combination of questionnaires and semi-structured interviews, focusing on three types of subjects: students, teachers, and administrators, and conducting a systematic analysis from four dimensions: cognitive attitudes, cooperation needs, obstacles, and support conditions. On a theoretical level, the study aims to fill the gap in the existing literature "from conceptual consensus to operational mechanisms," especially the lack of empirical evidence from medical vocational colleges and insufficient attention to the needs of international cooperation in the post-pandemic era. On a practical level, the study combines international experience to propose cooperation path recommendations suitable for my country's medical vocational colleges, providing data support and reference value for schools to promote internationalization strategies, improve educational quality, and formulate relevant policies.

2. Theoretical Basis and Research Framework

Related theories. To rationalize the analytical dimensions and achieve operational transformation from concepts to mechanisms, this article integrates four theories: First, theories of internationalization of higher education (including "local internationalization" and "global competence") are used to define the goals and values of internationalization, supporting the demand-side dimension of "cognition attitudes-collaboration needs"; second, theories of organizational governance and resource dependence/collaborative governance explain how institutions allocate resources and collaborate across departments on the supply side through the "governance-funding-service platform-process" framework, thereby identifying obstacles and areas for support/capacity building; third, the PDCA (Plan-Do-Check-Accept) approach, combined with a logical model (input-process-output-outcome), connects mechanisms with outcomes and provides evaluation criteria and closed-loop improvement paths for core indicators such as participation rates, learning outcomes, and employment conversion; and fourth, stakeholder theory defines the analytical units and comparative perspectives for students, teachers, and administrators, ensuring precise alignment of policies and management recommendations. This combination of theories provides a clear and verifiable theoretical basis for the dimension setting and indicator system.

Conceptual Framework. Based on the aforementioned theory, this paper constructs an analytical framework of "three types of actors × four dimensions – four mechanisms – three types of indicators." Focusing on students, teachers, and administrators, a diagnostic matrix is formed across four dimensions: cognitive attitudes, collaboration needs, barriers, and support and capacity building. At the performance level, participation rates, learning outcomes, and employment conversion are core outcome indicators, and a closed-loop evaluation is conducted using the PDCA process. The evidence translation pathway follows the "needs analysis → priority integration → action sequencing" approach. Specifically, based on a comparison of the three types of actors and the differences between different disciplines/departments, the current situation and needs are considered to prioritize policy and resource allocation, ultimately forming an actionable, evaluable, and iterative plan for enhancing international collaboration.

3. Research Objectives

- 1) Understand the overall demand of medical vocational colleges for international education cooperation.
- 2) Analyze the differences and commonalities among different groups in their needs for international education cooperation to form an evidence baseline for priority setting.
- 3) Explore countermeasures and approaches to promote the sustainable development of international educational cooperation.

Literature Review

Against the backdrop of globalization and the accelerating development of the knowledge economy, international educational cooperation has become a crucial path for higher vocational education, particularly medical colleges, to improve quality and enhance the international competitiveness of faculty and students. With national policies emphasizing the internationalization of vocational education and new changes in international exchange methods in the post-pandemic era (such as virtual exchanges and the localization of international courses), researchers have begun to focus on the process of transforming international cooperation mechanisms from "conceptual declarations" to "operational mechanisms." This article aims to construct a diagnostic framework from a stakeholder perspective, combining four theoretical foundations, to identify the current state of medical colleges' understanding and needs in international educational cooperation, as well as the obstacles and supporting conditions, and to propose strategies for sustainable development.

1. Theory of Internationalization of Higher Education

This article selects the theory of internationalization of higher education as one of its theoretical foundations, aiming to provide support for the "cognition and attitude-cooperation needs" dimension and clarify the goals and value orientations of internationalization. The evolution of the theory of internationalization of higher education in recent years has particularly emphasized the following aspects:

Global Competence: Global competence refers to students' (and faculty's) ability to understand and understand global cultures, develop a global perspective, and develop critical and reflective skills within a global context (Jiaxin et al. 2024). A review of this topic notes that higher education institutions have made significant progress in defining, dimensionalizing, and assessing global competence, but there remain challenges such as inconsistent assessment standards and a lack of longitudinal research.

Internationalization at Home: Internationalization no longer refers solely to students or faculty traveling abroad or collaborating abroad. It also encompasses on-campus educational experiences that integrate global perspectives, local needs, and international standards. In their systematic review of "internationalization at home," Soulé, MV, et al. (2024) note that this strategy can help enhance students' cognition and attitudinal dimensions, particularly in resource-limited or geographically constrained settings.

Internationalization Strategy and Policy Trends: In recent years, global higher education internationalization strategies have trended toward inclusiveness, social responsibility, and win-win cooperation. Policies are also increasingly prioritizing equitable and sustainable models, such as joint training programs, dual degree programs, and online collaboration. Marinoni et al. (2024) emphasized in their internationalization survey report that these trends have shifted the traditional notion of

"internationalization equates to studying abroad" and are increasingly being incorporated into institutional design.

2. Organizational Governance and Resource Dependence/Collaborative Governance Theory

In the analysis of the mechanisms of international educational cooperation, organizational governance, resource dependence theory (RDT), and collaborative governance theory provide a powerful explanatory framework for the supply-side mechanisms. Resource dependence theory emphasizes that the operation and development of universities inevitably depend on external resources, and this dependence influences their strategic choices and governance structures. In the international educational cooperation of medical vocational colleges, funding sources, government policies, and partner support often directly determine the scale and sustainability of projects. Research by Kohtamäki et al. (2024) shows that the higher the degree of external resource dependence, the more constrained universities are by the policy requirements of funders in performance agreements and resource allocation, thereby affecting the autonomy and flexibility of internal governance (Kohtamäki et al. 2024). Furthermore, empirical research by Chynybaev et al. (2025) found that universities with greater financial autonomy are more able to flexibly allocate resources to support internationalization projects, but are also more vulnerable to market fluctuations and policy changes by external partners (Chynybaev et al. 2025). This shows that on the supply side, the design of funding and governance mechanisms is directly related to the school's internationalization capabilities and risk resilience.

Complementing resource dependence theory, collaborative governance theory emphasizes cooperative mechanisms between different departments and stakeholders. In medical vocational colleges, international education cooperation typically involves cross-departmental collaboration among the Office of Academic Affairs, the Office of International Cooperation, and the Human Resources and Finance departments. Coordination mechanisms must also be established with overseas partner institutions, government agencies, and industry partners. A systematic literature review by Fehrenbach et al. (2024) found that transnational education alliances often fail due to unclear governance structures, ambiguous divisions of responsibilities, and redundant processes. Therefore, establishing joint decision-making committees or one-stop service centers is key to improving efficiency and ensuring quality (Fehrenbach et al. 2024). Furthermore, recent research on "shared governance" suggests that universities can more effectively promote international cooperation despite limited resources through faculty participation, institutional transparency, and standardized processes in decision-making (Katzman & DeVaney. 2024). This is particularly important for medical vocational colleges, which often lack large-scale funding and human resources and rely more on institutional innovation to compensate for these resource constraints.

3. Quality Assurance and Continuous Improvement Theory (PDCA + Logic Model)

Quality assurance and continuous improvement theory plays a bridging role in research on international collaboration in higher education. It helps effectively connect the mechanisms (governance, funding, platforms, and processes) with the outcomes (participation rates, learning outcomes, and employment conversion), forming an actionable path for improvement. The Plan-Do-Check-Act (PDCA) cycle provides a closed-loop improvement model, enabling institutions to continuously provide feedback and optimize collaborative mechanisms through the four stages of planning, implementation, checking, and acting. In recent research, this theory has been widely applied in educational quality management,

curriculum reform, and teaching evaluation. For example, Zakharova (2025) proposed that combining digital change management with the PDCA cycle in higher education institutions can systematically plan, implement, monitor, and evaluate educational quality improvements. Their research clearly identified clear strategies, leadership support, sufficient resources, and readiness for change as key prerequisites for successful implementation.

Logic models (PLMs) provide another structural aid, describing the internal causal chain of "inputs → activities → outputs → outcomes." In medical education and other higher education programs, logic models not only help plan the organization and resource investment of internationalization projects, but also facilitate identification during implementation of activities that produce expected outputs and those that fall short, allowing for comparison and optimization of results. Fuller et al. (2025) used logic models in their medical school project to collaboratively define project objectives and roadmaps with stakeholders, enhancing transparency and comparability in design and implementation.

In the context of Chinese vocational education, Wang & Chen (2025) developed an evaluation model for the quality assurance system of English courses in Chinese higher vocational colleges based on the PDCA cycle theory. This model incorporates key factors such as quality philosophy, goal setting, curriculum design, faculty qualifications, teaching resources, evaluation and improvement mechanisms, and student outcomes. These factors are continuously monitored and adjusted using the PDCA cycle. The results show that this model can identify weaknesses in curriculum design and faculty qualifications in actual course evaluations and enable timely improvements through a "check-and-act" feedback mechanism, thereby improving the overall quality of the course.

4. Stakeholder Theory

Stakeholder theory provides a crucial analytical framework for understanding the roles and demands of diverse groups in educational management and collaborative projects. It emphasizes the need for organizations to identify and respond to the multiple actors that influence and are influenced by their goals. In research on international educational collaboration at medical vocational colleges, incorporating students, faculty, and administrators into the analytical unit helps reveal differences in their perceptions, needs, barriers, and support conditions, thereby providing a more targeted basis for policy and mechanism design.

Recent empirical research has further confirmed the importance of this perspective. Haile and Mekonnen (2024), in their study at the Ethiopian National Defense University, found that students, faculty, and management had distinctly different levels of engagement and focus in curriculum implementation: faculty emphasized the stability of institutions and support systems, students focused on learning experiences and feedback mechanisms, and management was more concerned with the alignment of policies and resource allocation. This suggests that differences in stakeholder roles directly influence their attitudes and demands (Haile & Mekonnen. 2024). In the field of medical education, Suliman, Könings, et al. (2024) studied a case study involving multi-stakeholder co-creation of a residency transition curriculum and found that students valued being heard and participating, while faculty focused on translating the results of co-creation into curriculum effectiveness and institutional improvements. These differences are often influenced by power structures and resource allocation. Similar conclusions also appeared in technical and vocational education and training (TVET) research. Semali (2024) pointed out that students,

industry employers and managers have different expectations in international cooperation projects: students hope to obtain more internship and employment opportunities, employers value skills matching and efficiency, and managers focus on policy support and resource guarantees.

5. Literature Review Summary

Through the review of the above theoretical foundations and empirical literature, several key findings and inspirations in the study of international educational cooperation can be clarified: First, the theory of internationalization of higher education clearly emphasizes goals such as "global competence" and "internationalization in the local", which provides a clear direction for understanding the needs and cognitive attitudes of cooperation; second, organizational governance and resource dependence/collaborative governance theory show that governance structure, financial support, process and service platform are the core levers on the mechanism side, affecting the sustainability and efficiency of cooperation; third, quality assurance and continuous improvement theory (PDCA + logic model) and its application in vocational/medical education provide this article with a closed-loop path of mechanism → process → result → feedback → improvement; in addition, stakeholder theory and its application in empirical research highlight the differences in cognition, needs, barriers and support among students, teachers and managers, which are crucial for priority setting and strategic accuracy.

Research Methods

This study employed an explanatory sequential mixed research design, initially using a questionnaire survey to capture general trends and then supplementing in-depth understanding with interviews. Stratified purposive sampling, rather than random sampling, was used for the quantitative component to ensure adequate representation of all three groups: administrators, teachers, and students. The questionnaire covered cognitive attitudes, collaboration needs, barriers, and support conditions, using a five-point scale and differentiated by group characteristics. The questionnaire items were expertly reviewed and pre-tested. Reliability tests showed that the student questionnaire ($\alpha = 0.980$), teacher questionnaire ($\alpha = 0.858$), and administrator questionnaire ($\alpha = 0.786$) all exceeded the 0.7 threshold, indicating high internal consistency and reliability. The qualitative component utilized semistructured interviews, conducted with respondents from diverse professional backgrounds and international collaboration experiences until information saturation was achieved.

In terms of data analysis and integration, quantitative data were primarily analyzed using descriptive statistics to present group characteristics and trends; qualitative data were analyzed using thematic analysis, which gradually coded and categorized the interview content to extract core themes. The integration of the two types of data employed an embedded strategy, embedding qualitative findings within the interpretation of quantitative results.

Table 1 Reliability Statistics (Students: Cronbach's α = 0.980, Items = 20)

Reliability Statistics	
Cronbach Alpha	Number of items
.980	20

Table 2 Reliability Statistics (Teachers: Cronbach's α = 0.858, Items = 20)

Reliability Statistics	
Cronbach Alpha	Number of items
.858	20

Table 3 Reliability Statistics (Administrators: Cronbach's α = 0.786, Items = 20)

Reliability Statistics	
Cronbach Alpha	Number of items
.786	20

Study Results

1. Questionnaire Analysis:

This survey collected 126 valid questionnaires, covering three groups: students, teachers, and school leaders. Of these, 111 were students, representing 88.1% of the total; 10 were teachers, representing 7.9%; and 5 were school leaders, representing 4.0%. In terms of sample structure, students comprised the majority of the survey participants. While the sample size of teachers and school administrators was relatively small, their opinions, as implementation and decision-making bodies, are representative and instructive for the research. Therefore, this survey achieved reasonable coverage and hierarchical representativeness, providing a solid data foundation for subsequent analysis.

1.1 Student Questionnaire Analysis

Table 4 Student Survey Item Statistics & Ranking (M, SD)

Item	Average value	Standard deviation	Rank	Level
8. Expect the school to provide financial assistance or scholarships to support international exchanges.	4.29	0.87	1	high
4. International educational cooperation can improve my language skills and cross-cultural adaptability.	4.2	0.9	2	high
19. Look forward to receiving more scholarships and financial aid support.	4.2	0.91	2	high
9. Hope to improve practical skills and employment competitiveness through international cooperation.	4.19	0.91	4	high
20. Hope to expand career development paths through international cooperation.	4.15	0.94	6	high
10. I hope the school will provide overseas internship and career development opportunities.	4.15	0.92	6	high

Item	Average value	Standard deviation	Rank	Level
3. I hope to participate in the international exchange and internship programs organized by the school.	4.14	0.91	5	middle
18. We hope to establish a special international exchange guidance and service center.	4.13	0.91	8	middle
7. Schools are required to provide language training and cross-cultural communication courses.	4.12	0.93	9	middle
6. Hope to participate in overseas exchange, joint training and short-term visiting scholar programs.	4.11	0.92	10	middle
14. Lack of effective channels for international information exchange.	4.10	0.9	11	middle
15. The project application process is complicated and lacks guidance and support.	4.10	0.93	11	middle
17. Cross-cultural adaptation and communication skills training is needed.	4.09	0.92	13	middle
5. The school provides students with sufficient international cooperation information and resources.	4.02	0.97	14	middle
16. Schools should strengthen the teaching of English and other foreign languages.	4.02	0.91	14	middle
12. The financial burden affects my willingness to apply for international cooperation projects.	4.01	0.99	16	middle
13. The difficulty in cross-cultural adaptation makes me worried about international communication.	4.00	0.96	17	middle
2. International exchange programs are very important to my professional studies and future development.	3.98	0.93	18	middle
11. Insufficient language skills limit my opportunities to participate in international exchanges.	3.97	1.02	19	middle
1. I understand the international education cooperation programs offered by the school.	3.83	1.01	20	Low
Summary	4.09	0.93		

A total of 111 valid responses were collected from students in four departments : Nursing, Rehabilitation, Pharmaceutical Testing, and Clinical Medicine . The data shows that students generally hold a positive attitude toward international education cooperation:

Most mean scores were above 4.0, with the highest being 4.29 (expecting financial assistance from the school), indicating a strong motivation among students to participate in international exchange and a particular focus on financial support. The mean scores for questions like "The importance of international exchange for professional development" and "Improving language and intercultural skills through collaboration" were both above 4.1, demonstrating a strong international perspective and a desire

to improve. However, some items showed potential challenges, such as "Understanding the school's international programs" at only 3.83, suggesting that the school needs to strengthen its information dissemination efforts. Several standard deviations were close to 1, indicating individual differences. For example, language proficiency, financial burdens, and intercultural adaptation remain obstacles for some students.

Conclusion: The student group generally supports international cooperation and mainly expects the school to strengthen services in terms of funding, information, language support and platform construction.

1.2 Analysis of Teacher Questionnaires

Table 5 Teacher Survey Item Statistics & Ranking (M, SD)

Item	Average value	Standard deviation	Rank	Level
18. It is recommended to set up a special international cooperation team to support teacher projects.	4.40	0.52	1	high
17. Funding and incentives for overseas study and training need to be provided.	4.30	0.48	2	high
9. Need to improve their language ability and cross-cultural communication skills.	4.20	0.63	3	high
10. I hope the school will support teachers' international collaborative research projects.	4.20	0.63	3	high
14. Insufficient funding and resource support restricts teachers' participation in international exchanges.	4.20	0.63	3	high
20. We hope to strengthen our cooperation network with foreign universities and institutions.	4.20	0.79	3	high
4. International exchanges can enrich my teaching content and vision.	4.10	0.74	7	middle
3. I am willing to actively participate in international cooperation projects and activities.	4.00	0.67	8	middle
8. Applicants wish to participate in the design and implementation of dual degree and joint training programs.	4.00	0.82	8	middle
19. Hope to enhance personal career development opportunities through international cooperation.	4.00	0.82	8	middle
2. International cooperation will help improve my teaching and research abilities.	3.90	0.57	11	middle
6. More overseas training and academic exchange opportunities are needed.	3.90	1.1	11	middle
16. Schools should strengthen language and cross-cultural training.	3.90	0.74	11	middle
13. Due to heavy work and teaching tasks, it is difficult to allocate time to participate in international activities.	3.80	0.63	14	middle
15. Lack of clear understanding of policies and procedures related to international cooperation.	3.70	0.68	15	middle
1. I understand the school's international education cooperation projects and their significance.	3.60	0.7	16	middle
5. The school provided me with sufficient information about international cooperation opportunities.	3.50	0.97	17	Low
12. Lack of overseas cooperation experience limits the expansion of international projects.	3.50	0.85	17	Low
7. Hope to introduce internationally advanced courses and teaching materials.	3.40	0.97	19	Low
11. Language barriers affect my enthusiasm and effectiveness in participating in international cooperation.	3.20	1.14	20	Low
Summary	3.90	0.75		

A total of 10 teacher questionnaires were collected, covering different age groups and educational levels:

The average score was generally above 3.9, reflecting a high level of faculty enthusiasm for international collaboration. This was particularly evident in areas such as "hoping for the university to support international research projects," "introducing advanced international teaching materials," and "hoping to participate in dual degree programs." The highest average score was 4.40 (suggesting the establishment of a dedicated international collaboration team), indicating a strong desire among faculty for institutional support for international collaboration management. Standard deviations generally ranged from 0.6 to 0.9, with individual items such as "language barriers hindering participation" reaching 1.135, indicating that some faculty still face challenges with language proficiency and time allocation. Faculty also expressed concerns about "lack of clarity in policy understanding" and "insufficient funding resources," suggesting that current institutional support needs improvement.

Conclusion: The faculty has shown a willingness to actively participate in international projects, but is limited by factors such as language, heavy workload, and inadequate funding and systems. Systematic training and policy support are needed.

1.3 Analysis of the Questionnaire for School Administrators

Table 6 Leader Survey Item Statistics & Ranking (M, SD)

Item	A verage value	Standard deviation	Rank	Level
17. A special fund for international cooperation should be established to ensure the sustainable development of the project.	4.40	0.89	1	high
20. Encourage collaboration between schools and enterprises to jointly promote the development of international education cooperation.	4.20	0.84	2	high
16. Schools should strengthen support for international training and further studies for teachers.	4.20	0.45	2	high
5. International education cooperation helps enhance the school's social influence and brand image.	4.20	0.84	2	high
6. We hope to expand diverse international cooperation projects, including dual degrees, joint training, and scientific research collaboration.	4.20	0.84	2	high
7. There is a need to strengthen financial support and resource input in international cooperation.	4.20	0.84	2	high
18. Special training on cross-cultural management and communication skills is needed.	4.00	0.71	7	middle
15. There is information asymmetry in international cooperation and a lack of effective cooperation platforms.	4.00	0.71	7	middle
12. The school lacks sufficient professional management personnel to support international cooperation.	4.00	0.71	7	middle

Item	A verage value	Standard deviation	Rank	Level
1. I understand the existing international education cooperation projects of our university and their operation status.	4.00	0.71	7	middle
8. We hope to establish stable international partnerships and achieve long-term win-win results.	4.00	1.00	7	middle
19. I hope the government can introduce more policies to support international cooperation among vocational colleges.	4.00	0.71	7	middle
10. We hope to improve the internationalization level of teachers and students through international cooperation.	4.00	0.00	7	middle
9. There is a need to improve the international cooperation management system and specialized team.	3.80	0.84	14	middle
2. International education cooperation is an important way to enhance the comprehensive strength and quality of education of a school.	3.80	0.84	14	middle
11. The current approval process for international cooperation projects is complex, which affects the speed of project progress.	3.60	1.14	16	Low
13. Cross-cultural communication barriers affect the depth and effectiveness of international cooperation.	3.60	1.14	16	Low
14. Insufficient funding and resource input limits the scale and quality of cooperation.	3.60	0.89	16	Low
4. The school has formulated clear international cooperation policies and development plans.	3.20	1.10	19	Low
3. The school leadership attaches great importance to and actively supports international education cooperation.	3.20	0.84	19	Low
Summary	3.91	0.80		

A total of five manager questionnaires were collected. Although the sample size is small, the results are of directional reference value:

school administrators , most items scored between 3.8 and 4.4, demonstrating widespread recognition of the positive role international collaboration plays in enhancing the school's overall strength, brand influence, and internationalization. Top concerns included establishing partnerships, with an average score of 4.0; establishing dedicated funds, with an average score of 4.4; and expectations for government support policies, with an average score of 4.0, suggesting leadership is prioritizing institutional development and external collaborative mechanisms. However, leaders also noted issues such as the complexity of current collaboration processes, with an average score of 3.6; insufficient management talent, with an average score of 4.0; and information asymmetry, with an average score of 4.0. Individual items, such as the school's emphasis on international collaboration, received an average score of only 3.2, suggesting that some leaders believe the school's internal emphasis on international collaboration needs to be strengthened.

Conclusion: The leadership group generally recognizes the value of international cooperation and is willing to promote the institutionalization of cooperation. However, there are still bottlenecks in the process, and it is necessary to optimize the matching of management systems and policies.

2. Analysis of mean differences in four dimensions

Statistical analysis of the cognition, needs, obstacles and support conditions of the three groups in international educational cooperation, as well as the significance test of the differences

Table 7 Table 3 Analysis of mean differences among groups on four dimensions of international education cooperation (N=126)

Dimensions	Students (M±SD)	Teacher (M±SD)	Managers (M±SD)	Overall (M±SD)	F- value	P- value	η^2 (Eta ²)	Significant difference
Cognitive attitude (Cog_M)	4.03 ± 0.83	3.82 ± 0.39	3.68 ± 0.39	4.00 ± 0.80	0.76	0.470	0.012	No significant difference
Cooperation Requirements (Dem_M)	4.17 ± 0.83	3.94 ± 0.62	4.04 ± 0.61	4.15 ± 0.81	0.42	0.658	0.007	No significant difference
Barrier factor (Bar_M)	4.04 ± 0.89	3.68 ± 0.55	3.76 ± 0.26	4.00 ± 0.86	0.99	0.373	0.016	No significant difference
Support conditions (Sup_M)	4.12 ± 0.83	4.16 ± 0.46	4.16 ± 0.59	4.12 ± 0.80	0.02	0.981	0	No significant difference

2.1 Descriptive Statistics

After statistically analyzing the questionnaire results of three groups (students, teachers, and administrators) in four dimensions, it was found that the overall mean of each group was at a medium-to-high level ($M > 3.5$), indicating that medical vocational colleges as a whole are relatively positive in their understanding of and demand for international education cooperation.

In the cognitive attitude dimension, students have the highest mean value ($M=4.03$), while teachers and managers have a slightly lower mean value ($M\approx 3.7-3.8$), indicating that students have a more positive attitude, while teachers and managers are relatively conservative.

In the dimension of cooperation needs, students and managers scored higher ($M\approx 4.1$), higher than teachers ($M=3.94$), indicating that students and managers have more urgent needs for scholarship policies, joint training, etc.

In the dimension of barrier factors, students had the strongest perception ($M=4.04$), focusing on language, economy and cross-cultural adaptation; teachers and administrators scored lower ($M\approx 3.7$), and were more restricted by systems and resources.

In terms of support conditions, the three groups were highly consistent ($M\approx 4.1$), and generally expected the improvement of systems, funding, and service platforms.

Overall, the mean scores for all four dimensions were around 4.00 (Cog_M=4.00; Dem_M=4.15; Bar_M=4.00; Sup_M=4.12), indicating that respondents generally hold a positive attitude toward international education cooperation and generally recognize its necessity and value. While some differences exist among different groups, there is particularly strong consistency in supportive conditions, providing an important basis for developing management strategies that balance universality with differentiation.

2.2 Homogeneity of variance test

Prior to conducting a one-way ANOVA, this study used Levene's test to test for homogeneity of variance. The results showed that the assumption of homogeneity of variance was met for cooperation needs ($p=0.330$) and support conditions ($p=0.116$); however, the assumption of homogeneity of variance was not fully met for cognitive attitudes ($p=0.013$) and barriers ($p=0.005$). However, despite group size differences, the ANOVA results remain valid. In reporting the results, this study used conventional ANOVA methods and combined them with the effect size η^2 for interpretation.

2.3 Inferential statistical results

To further examine the significance of differences among the three groups (students, teachers, and administrators) on the four dimensions, this study conducted one-way analysis of variance (ANOVA). The results showed no significant differences between the groups on any of the four dimensions: cognitive attitude ($F=0.759$, $p=0.470$, $\eta^2=0.012$), need for collaboration ($F=0.420$, $p=0.658$, $\eta^2=0.007$), barriers ($F=0.994$, $p=0.373$, $\eta^2=0.016$), and support conditions ($F=0.019$, $p=0.981$, $\eta^2=0.000$). The effect sizes (η^2) were all close to zero, indicating that group category had minimal explanatory power for each dimension.

This result suggests that students, teachers, and administrators generally maintain consistency in their understanding of international educational cooperation, their needs, perceived barriers, and expectations for support conditions. While slight differences exist at the mean level, these are insufficient to constitute statistical significance. Therefore, when formulating management strategies, it is advisable to prioritize universal measures, supplemented by differentiated support tailored to group characteristics, to ensure that strategies are both holistic and account for the nuances of group needs.

3. Interview Analysis:

Table 8 Questionnaire and interview integrated analysis table

Interviewees	Thematic Dimension	Representative questionnaire items (M±SD)	Typical Quotes from the Interview
student	Financial support (advantage)	Q8. Expect the school to provide scholarship support (4.29±0.87)	"If the school could offer a special scholarship, we would be more likely to participate."
student	Language and cross-cultural (barriers)	Q11. Insufficient language skills limited participation (3.97±1.02)	"I really want to participate in international exchanges, but I'm worried that my spoken English isn't good enough and I won't be able to keep up."

Interviewees	Thematic Dimension	Representative questionnaire items (M±SD)	Typical Quotes from the Interview
student	Information channels (bottleneck)	Q5. Adequacy of information provided by the school on international cooperation (4.02±0.97)	"It mainly depends on classmates to forward the news, and there is no centralized official channel."
student	Career Development (Positive Opportunities)	Q9. International collaboration improves employment competitiveness (4.19±0.91) / Q20. Expands career development paths (4.15±0.94)	"If there are opportunities for overseas internships, I will be more confident in finding a job."
student	Diversified forms (potential)	Q3. Hope to participate in international exchange and internship programs (4.14±0.91)	"Even if you can't go abroad, it would be very helpful if you can communicate with foreign students online."
teacher	Teaching and research income (positive)	Q4. International exchange can enrich teaching content and perspectives (4.10±0.74)	"If I have the opportunity to study abroad, the classroom content will be more enriched when I come back."
teacher	Language and time barriers (dilemma)	Q13. Heavy work and teaching responsibilities make it difficult to allocate time (3.80±0.63) Q11. Language barriers affect motivation (3.20±1.14)	"Usually, my teaching and research workload is very heavy, so even if I have the opportunity, it's hard to find time."
teacher	Policies and procedures (bottleneck)	Q15. Unclear understanding of international cooperation policies and procedures (3.70±0.68) Q5. Insufficient information (3.50±0.97)	"Applying for international cooperation projects is complicated, with many procedures and a long time frame, and sometimes opportunities are missed."
teacher	Funding and resources (support needs)	Q14. Insufficient funding and resource support (4.20±0.63)	"If the school can provide special funds, teachers will definitely be more enthusiastic about participating."
teacher	Institutional guarantee (core demand)	Q18. Establishing an international collaborative team (4.40±0.52) Q17. Funding and incentives for	"If the school can establish a dedicated international cooperation team, we can spend less time on procedures and focus more on teaching and research."

Interviewees	Thematic Dimension	Representative questionnaire items (M±SD)	Typical Quotes from the Interview
teacher	Long-term cooperation (positive opportunity)	overseas visiting scholars (4.30±0.48) Q20. Strengthening cooperation networks with foreign universities and institutions (4.20±0.79)	"I hope to establish a long-term scientific research network with foreign colleagues through international cooperation."
lead	Policy and planning (insufficient)	Q4. Does the school have clear international cooperation policies and plans? (3.20±1.10) Q3. Leadership emphasis (3.20±0.84)	"We have indeed made some explorations in international cooperation, but there is a lack of systematic top-level planning, and many projects are scattered."
lead	Funding and resource guarantee (core demand)	Q17. Establishment of special funding guarantee (4.40±0.89) Q7. Insufficient funding (4.20±0.84)	"If a special fund is established, it will not only stabilize cooperation but also attract better international partners."
lead	Collaborative Impact (Positive Opportunities)	Q5. International collaboration enhances social impact (4.20±0.84) Q20. Encourages collaboration between schools and enterprises (4.20±0.84)	"International cooperation can significantly enhance the school's reputation, especially in joint projects with businesses, where the impact is even greater."
lead	Cooperation system construction (room for improvement)	Q9. Improved management system and team (3.80±0.84) Q8. Stable partnership (4.00±1.00)	"We have already established a preliminary cooperation foundation with some foreign universities, and the next step is to integrate these projects into a system."
lead	Teacher support (supplementary needs)	Q16. Strengthen international teacher training (4.20±0.45)	"If the teaching staff can receive systematic training, the depth of international cooperation will be even higher."

3.1 Analysis of Student Interviews

Student interviews provide a more nuanced interpretation of the quantitative data. Most students emphasized the urgency of financial support, stating, "If the university offered a dedicated scholarship, we would be more likely to participate," consistent with the high mean score for financial support in the questionnaire. Language proficiency was also widely viewed as a major barrier ("I'm worried my spoken English isn't good enough and I won't be able to keep up"), corresponding to the finding that

"lack of language skills limits participation." Despite these challenges, students also expressed positive expectations: for example, they hoped to compensate for travel restrictions through online exchanges or on-campus cross-cultural activities, and believed that overseas internships would significantly enhance their employability. This echoes the high mean score for improved employability ($M=4.19$, $SD=0.91$) in the questionnaire. Overall, while students face barriers related to funding, language, and access to information, they maintain high expectations for career development, cross-cultural exchange, and diverse program formats, providing important support for universities in developing targeted support strategies.

3.2 Analysis of Teacher Interviews

Faculty interviews revealed that most faculty members agreed that international collaboration can enhance teaching and research, stating, "If I had the opportunity to study abroad, my classes would be more enriched upon my return," consistent with Q4 ($M=4.10$, $SD=0.74$). However, they also frankly acknowledged language barriers and workload pressures, stating, "Teaching and research are often very demanding, and even when opportunities arise, it's difficult to find time," corresponding to Q13 ($M=3.80$). Regarding support conditions, faculty members felt that funding and policies were insufficient, stating, "Applying for international collaboration projects is complex, with numerous procedures and a long timeframe," echoing Q15 ($M=3.70$) and Q5 ($M=3.50$). They also emphasized the importance of dedicated funding (Q14, $M=4.20$). Furthermore, some faculty members suggested establishing dedicated teams to streamline processes (Q18, $M=4.40$) and expressed a desire to "establish long-term research relationships with international colleagues." Overall, while faculty members actively acknowledged the value of collaboration, they faced significant practical constraints, with core concerns regarding funding, visiting opportunities, and institutional support.

3.3 Analysis of leadership interviews

Leader interviews revealed shortcomings in top-level design and resource allocation. One leader noted, "We have indeed explored some international collaboration, but lack a systematic top-level plan, and many projects are fragmented," corresponding to the low mean score in Q4 ($M=3.20$, $SD=1.10$). They also generally emphasized the importance of funding, stating, "If dedicated funds were established, it would not only stabilize collaboration but also attract higher-quality international partners," consistent with the highest mean score in Q17 ($M=4.40$, $SD=0.89$). Regarding effectiveness, leaders also believed that "international collaboration can significantly enhance the university's visibility, especially in joint projects with businesses," echoing the high mean score in Q5 ($M=4.20$, $SD=0.84$). Another leader added, "We have already established preliminary collaborations with some foreign universities, and the next step is to integrate these projects into a system." Overall, leaders generally acknowledge the value of international collaboration, but further development is needed in terms of institutional planning and implementation. Key concerns focused on dedicated funding, team building, and systematic advancement, with the hope of enhancing the university's influence and potential for development.

Discussion

1. Overall Demand Analysis

Findings indicate a high level of consensus among students, faculty, and administrators regarding the value of international cooperation. All groups recognize its importance in enhancing

educational quality, broadening international perspectives, and strengthening institutional competitiveness. This is consistent with existing studies and suggests that a value consensus has been established. However, institutional support and practical conditions remain insufficient, resulting in a significant gap between recognition and implementation. Students mainly demand language training, cross-cultural opportunities, and scholarship support; faculty emphasize visiting scholar funding, institutional incentives, and research resources; administrators focus on special funds and institutionalized governance to enhance the college's overall influence.

2. Group Differences and Commonalities

While all three groups share the view that international cooperation is a key pathway to improving talent training quality, differences emerge in the level and type of demand. Students prioritize individual accessibility, such as financial aid and information channels; faculty focus on empowerment through academic networks and institutional incentives; administrators concentrate on governance frameworks, including top-level design and resource allocation. This hierarchy suggests that funding and institutional inadequacies are common bottlenecks, while individual support and academic empowerment reflect group-specific needs. Strategic design should therefore address shared challenges while adopting a tiered approach to meet group-specific demands, thereby enhancing overall collaboration effectiveness.

3. Sustainable Development Pathways

To transform “value consensus” into “practical results,” systematic progress is needed along four main lines. First, institutional mechanisms: establish a dedicated international cooperation management team, clarify responsibilities, and build a top-down governance loop. Second, resources and incentives: create a stable special funding system and diversified scholarships, while improving support for faculty exchanges and incentive mechanisms. Third, capabilities and services: provide students with tiered language and cross-cultural training, develop a unified information platform, and offer faculty overseas training and project-matching services. Fourth, networks and ecosystems: expand collaboration with overseas universities, research institutes, and enterprises, shifting from short-term exchanges to long-term, institutionalized cooperation such as joint courses, collaborative research, and university–enterprise partnerships.

4. Study Limitations

This study still has several limitations: First, the overall sample size is limited, especially the sample size of managers, which affects the generalizability of the conclusions. Second, the study focuses more on demand-side perceptions and lacks objective measurement of policy implementation and program effectiveness. Third, cross-sectional data and self-report questionnaires may introduce subjective bias. Subsequent research could address these issues by expanding the sample, introducing multi-source objective data, and conducting longitudinal follow-up.

Conclusions and Recommendations

1 Conclusion

This study draws the following three conclusions: First, regarding current demand, students, teachers, and administrators share a consensus on the value of international educational cooperation. However, deficiencies remain in institutional provision, funding, and resource allocation, constraining the

transition from concept to implementation. Second, regarding both group differences and commonalities, bottlenecks exist in funding and processes. Furthermore, different groups exhibit distinct needs: students prioritize accessibility, teachers prioritize empowerment, and administrators prioritize governance. Third, regarding sustainable development, integrated reform should be promoted along the lines of "institutional mechanisms—resource incentives—capability services—network ecosystems." This would move international cooperation from fragmentation to institutionalization, and from mere expansion of scale to an emphasis on quality.

2 Application Recommendations

Based on the research findings, the following five improvement paths are proposed. First, strengthen top-level design and dedicated funding, incorporate international cooperation into the university's medium- and long-term development strategy, establish dedicated institutions and special funds, and form an institutionalized governance loop to ensure policy implementation and sustainable advancement. Second, improve faculty training and incentive mechanisms. Through visiting scholar grants, student workload reduction policies, and performance-based rewards, encourage faculty to actively participate in international cooperation, strengthen the development of bilingual and cross-cultural teaching skills, and enhance the internationalization of teaching and research. Third, improve the student scholarship and information platform, establishing a support system of "scholarships + tiered language and cross-cultural training + one-stop information services" to lower the threshold for student participation and achieve the transition from "willing" to "able to participate." Fourth, expand international cooperation channels and practical platforms, prioritizing overseas training, joint research, and curriculum co-development, promote university-enterprise-government-research collaboration, and build a sustainable collaborative network ecosystem. Finally, establish a PDCA evaluation and improvement mechanism, using participation rate, learning outcomes, and employment conversion as core indicators. Establish a closed-loop evaluation system to promote the continuous optimization and quality improvement of resource allocation and project implementation.

3 Recommendations for follow-up research

Future research directions can be explored in the following four areas: First, expand from needs diagnosis to effectiveness evaluation, introducing quantitative tracking and causal identification methods (such as panel data and quasi-experiments) to examine the actual effects of policies and projects. Second, expand the sample size and conduct cross-school comparisons to enhance the universality and transferability of research conclusions. Third, conduct longitudinal tracking and process research to identify key influencing factors and failure points in project implementation. Fourth, strengthen multi-agent collaborative research, incorporating government, businesses, and overseas partners into the analytical framework, and explore governance and interest coordination mechanisms for cross-agent collaboration.

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