

Article

Research on the Demand Analysis of International Nursing English and the Innovation of Talent Cultivation Model from the Perspective of Industry-Education Integration in Hainan Free Trade Port

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Abstract: This study analyzes the demand for international nursing English competencies within the context of the Hainan Free Trade Port, exploring the internationalization trends of the healthcare industry and specific English language requirements for nursing positions. From the perspective of industry-education integration, it examines existing challenges in nursing English education, including imperfect curriculum systems, limited teaching methods, insufficient faculty capacity, and inadequate collaboration between schools and enterprises. To address these issues, an innovative talent cultivation model is proposed, emphasizing joint curriculum development, diversified practical training platforms, dual-qualified faculty development, and international exchange mechanisms. The model incorporates task-based, situational, and case-oriented teaching approaches. Through a typical industry-education integration case, replicable operational mechanisms are summarized, providing theoretical and practical references for improving nursing English proficiency and comprehensive capabilities in the Hainan Free Trade Port. Finally, the study discusses the advantages and challenges of the model and outlines prospects for future development.

Keywords: Hainan Free Trade Port; Industry-Education Integration; International Nursing English; Talent Cultivation Model; Curriculum Reform; Industry Demand

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1. Introduction

The establishment and rapid development of the Hainan Free Trade Port have ushered in new opportunities and challenges for the medical and healthcare industry in the region. As an important pilot zone for China's opening-up policy, Hainan is attracting an increasing number of international medical institutions, healthcare professionals, and patients from around the world. This trend has significantly raised the demand for nursing professionals who are not only skilled in clinical care but also proficient in international nursing English. These skills include effective cross-cultural communication, mastery of specialized medical terminology, and the ability to interact fluently with patients and colleagues in diverse international settings. Despite these growing needs, existing nursing English education in many universities remains primarily focused on basic language proficiency and traditional medical English vocabulary, which often fails to meet the comprehensive communication demands of global healthcare environments. This mismatch underscores the urgent need to analyze the specific English language requirements for international nursing practice within the context of the Hainan Free Trade Port and to innovate talent cultivation models that align with these evolving industry standards [1].

This study aims to systematically identify and analyze the international nursing English competency requirements driven by the development of the Free Trade Port's healthcare sector. From the perspective of industry-education integration, it seeks to explore innovative pathways to reform nursing English education and training. By examining the core components of nursing communication skills, relevant industry standards, and the practical demands of typical nursing roles in international medical institutions, the research will contribute to enhancing the quality of nursing talent development in Hainan. It will also support the strategic goal of building Hainan into an International Medical Center, ensuring that nursing graduates possess the language skills and professional competencies necessary to thrive in a global healthcare environment. Furthermore, this study provides theoretical and practical insights for aligning nursing education more closely with the real-world needs of international healthcare services, thus fostering a sustainable talent pipeline [2].

The research framework encompasses three main aspects. First, through a comprehensive review of existing literature, industry standards, and typical clinical scenarios, the study analyzes the essential components and current gaps in international nursing English competencies. Second, it critically reviews the current status of nursing English education in universities from the standpoint of industry-education collaboration, identifying structural deficiencies in curriculum design, practical training, and faculty capabilities. Third, it proposes an innovative talent cultivation model centered on authentic clinical communication skills and real-world nursing situations. This includes a redesigned curriculum system, novel approaches to practical teaching such as simulation and task-based learning, and enhanced collaboration mechanisms between educational institutions and medical enterprises. Methodologically, the study employs literature analysis, competency framework construction, and case study methods, aiming to integrate theoretical rigor with applied relevance [3].

2. International Nursing English Demand Analysis under the Hainan Free Trade Port Background

2.1. Development Trends of the Medical and Healthcare Industry in the Free Trade Port

The Hainan Free Trade Port, as a national strategic initiative, has placed significant emphasis on the development of its medical and healthcare industry. With supportive policies aimed at promoting high-quality healthcare services and international cooperation, the medical sector in Hainan is undergoing rapid transformation. Key trends include the attraction of international hospitals and medical research institutions, the expansion of medical tourism, and the promotion of cross-border healthcare services.

Driven by the increasing inflow of foreign patients and the integration of global medical resources, Hainan is actively building itself into an international healthcare hub. This transformation demands the enhancement of medical service capabilities, including the professional language skills of healthcare practitioners, especially nurses. The growing complexity and internationalization of medical services require nursing professionals to possess not only strong clinical competencies but also proficiency in English for effective communication with multinational patients and healthcare teams.

Moreover, the government's focus on health technology innovation and smart healthcare systems is fostering new models of medical service delivery [4]. These developments reinforce the need for nurses to adapt to technologically advanced, multicultural clinical environments where international nursing English serves as a critical tool for daily professional interaction. As a result, the medical and healthcare industry's evolution within the Free Trade Port context is a key driver for revising and upgrading nursing English education and training programs.

2.2. Analysis of Competency Requirements for International Nursing Positions

International nursing positions within the Hainan Free Trade Port demand a comprehensive set of competencies that go beyond clinical skills to include effective communication in English [5]. According to international healthcare standards and job descriptions from leading medical institutions, nursing professionals are expected to demonstrate proficiency in several key areas of language use. These include understanding and correctly using specialized medical terminology, conducting patient assessments and health education in English, and effectively coordinating with multidisciplinary healthcare teams across cultural and linguistic boundaries.

Furthermore, nurses must be capable of clear and empathetic communication with patients from diverse backgrounds, ensuring that language barriers do not impede the delivery of safe and quality care. This requires not only verbal proficiency but also intercultural communication competence, including sensitivity to cultural differences and non-verbal cues.

In addition to direct patient care, international nursing roles often involve documentation and reporting duties in English, such as writing clinical notes, preparing care plans, and participating in case discussions. These tasks demand high standards of accuracy and clarity to meet legal and institutional requirements.

Overall, the competency framework for international nursing positions integrates clinical expertise with advanced language and intercultural skills. Identifying these requirements is essential for aligning nursing English education with the practical demands of the Free Trade Port's healthcare industry, ensuring that graduates are well-prepared for their roles in globalized medical settings.

2.3. Practical English Language Requirements from Enterprises and Medical Institutions

Enterprises and medical institutions within the Hainan Free Trade Port have increasingly emphasized the need for nursing staff to possess strong English communication skills tailored to clinical and administrative settings. Based on industry reports and job postings from international hospitals and healthcare providers operating in the region, the practical English requirements focus on several core competencies.

Firstly, nurses are expected to engage in effective verbal communication with international patients, including explaining medical procedures, providing health education, and responding to patient inquiries with clarity and empathy. This necessitates not only general conversational ability but also proficiency in specialized nursing English phrases and terminology relevant to diverse clinical scenarios such as emergency care, surgery, and chronic disease management.

Secondly, accurate and timely written communication is crucial. Nursing staff must prepare detailed patient records, medication charts, and discharge summaries in English, ensuring compliance with international documentation standards and facilitating interdisciplinary collaboration.

Thirdly, teamwork and coordination with multinational healthcare teams require nurses to participate in case discussions, handovers, and training sessions conducted in English. This collaborative environment demands strong listening skills, the ability to comprehend medical discourse, and the confidence to contribute insights clearly and professionally [6].

Lastly, many institutions emphasize cross-cultural communication skills, recognizing that cultural competence directly impacts patient satisfaction and treatment outcomes. Training programs increasingly integrate scenarios that simulate real-world interactions with patients and colleagues from diverse cultural backgrounds.

In summary, the practical English language requirements set by enterprises and medical institutions highlight a blend of communicative proficiency, technical terminology mastery, and cultural awareness. These requirements provide a critical

reference point for designing effective nursing English curricula and training modules in the Hainan Free Trade Port context.

2.4. Summary of Demand Analysis: Skills Gaps, Language Weaknesses, and Industry Challenges

The analysis of international nursing English demand within the context of the Hainan Free Trade Port reveals several critical gaps and challenges. Despite the growing need for proficient English communication in clinical settings, current nursing graduates often lack sufficient practical language skills, especially in real-world medical scenarios requiring quick, accurate, and culturally sensitive interactions. Key skill gaps include limited mastery of specialized medical terminology, insufficient ability to conduct patient education and health communication in English, and a lack of confidence in interdisciplinary teamwork involving international colleagues. Additionally, many nursing professionals demonstrate weaknesses in written English, affecting the quality of clinical documentation and reporting.

Beyond language proficiency, industry challenges also encompass the limited integration of authentic clinical practice within nursing English education, inadequate opportunities for exposure to cross-cultural medical environments, and a shortage of qualified instructors with international clinical experience. The fragmented collaboration between educational institutions and healthcare enterprises further exacerbates the disconnect between training and actual job requirements. Addressing these gaps requires a strategic overhaul of nursing English curricula, emphasizing task-based learning, immersive clinical simulations, and strengthened school-industry partnerships. Only through targeted interventions can the talent cultivation system effectively meet the demands of the rapidly internationalizing healthcare sector in the Hainan Free Trade Port [7].

3. Current Status and Challenges of International Nursing English Education from the Industry-Education Integration Perspective

3.1. Current Situation of University Nursing English Curriculum System from the Perspective of Industry-Education Integration

Currently, the nursing English curriculum in many universities, including those in Hainan, primarily focuses on foundational language skills and basic medical terminology. The curriculum structure tends to emphasize grammar, vocabulary acquisition, and reading comprehension within a theoretical framework rather than practical application. While these courses provide essential language knowledge, they frequently lack alignment with the specific communicative demands encountered in international clinical nursing settings. Moreover, the curriculum content is often outdated and does not adequately reflect the evolving nature of healthcare in the Hainan Free Trade Port, where international collaboration and patient diversity are increasing. There is a noticeable absence of modules tailored to cross-cultural communication, real-life clinical scenarios, and specialized nursing English tasks such as patient education, medical documentation, and interdisciplinary teamwork in English.

From the perspective of industry-education integration, this gap between academic teaching and clinical practice undermines the effectiveness of nursing English education. The lack of input and collaboration from healthcare institutions in curriculum design results in a disconnect between what students learn and the language skills required by employers in international healthcare environments. Furthermore, the curriculum rarely incorporates experiential learning opportunities such as internships, simulations, or interactions with international patients and professionals, which are crucial for developing practical communication competencies. Consequently, graduates often face challenges when transitioning into real-world nursing roles that demand immediate and effective use of English in complex and dynamic situations. To address these issues, it is essential to reform the nursing English curriculum by incorporating industry feedback,

updating course content to include practical and culturally relevant materials, and integrating hands-on learning experiences. This will better prepare students to meet the language requirements of the international nursing workforce in the Free Trade Port context [8].

3.2. Issues in Teaching Methods and Curriculum Materials

The current nursing English teaching methods are predominantly traditional and teacher-centered, emphasizing vocabulary memorization, grammar instruction, and textbook-based exercises. This approach often results in passive learning, limiting students' opportunities to actively engage in developing communicative skills essential for real clinical environments. The teaching style seldom incorporates interactive or task-based activities that simulate authentic nursing scenarios, which are crucial for fostering practical language proficiency.

In addition, curriculum materials tend to be outdated and overly generic, focusing mainly on basic medical terminology and isolated language points rather than integrated communication competencies. Textbooks rarely address the complexities of international nursing practice, such as patient education, emergency communication, interdisciplinary teamwork, and cross-cultural interactions. This disconnect between the curriculum content and the real-world language demands reduces student motivation and impairs their ability to apply English skills effectively in professional settings. Moreover, the lack of multimedia resources, case studies, and simulation-based teaching materials further limits experiential learning, highlighting the urgent need for curriculum reform to align more closely with the practical language needs of nursing professionals in the Hainan Free Trade Port.

3.3. Limitations of Faculty and Insufficient Practical Training

A significant challenge facing nursing English education is the shortage of qualified faculty with both strong language teaching skills and practical experience in international clinical settings. Many instructors possess theoretical knowledge but lack direct exposure to cross-cultural nursing communication or hands-on international practice. This gap limits their ability to provide students with authentic, practice-oriented instruction that bridges language learning and clinical application. Consequently, students may find it difficult to acquire the nuanced communication skills needed to navigate diverse healthcare environments.

In addition to faculty limitations, practical training opportunities are often inadequate. Partnerships between universities and healthcare institutions are underdeveloped, restricting students' access to internships, clinical simulations, and real-world language practice. Without sufficient exposure to authentic clinical situations and interaction with international patients or professionals, students struggle to build confidence and competence in using English in complex medical contexts. Strengthening faculty development through international exchange and professional training, alongside expanding practical teaching platforms, is essential to enhance the effectiveness of nursing English education and better prepare graduates for the demands of the global healthcare market.

3.4. Challenges in School-Enterprise Collaboration and International Cooperation

Effective school-enterprise collaboration is essential for bridging the gap between nursing English education and practical industry requirements. However, in the context of the Hainan Free Trade Port, such collaborations face several challenges. First, communication and coordination between educational institutions and healthcare enterprises are often limited, resulting in misalignment between curriculum design and the evolving needs of international medical organizations. Many universities lack established partnerships with foreign or international hospitals, which restricts students'

opportunities for real-world internships and hands-on language practice in authentic clinical environments. This weak collaboration undermines the integration of theoretical knowledge and practical skills, reducing the overall effectiveness of talent cultivation.

Moreover, international cooperation poses additional difficulties due to differences in regulatory frameworks, educational standards, and cultural practices. Navigating these complexities requires sustained effort and resources, which many institutions currently find challenging. Language barriers, administrative hurdles, and varying expectations between domestic universities and overseas healthcare partners further complicate joint programs and exchange initiatives. Addressing these issues demands strategic planning, enhanced communication channels, and supportive policies to foster deeper, more sustainable collaborations. Strengthening school-enterprise and international partnerships is critical to creating comprehensive nursing English training systems that meet the high standards of global healthcare services in the Free Trade Port.

3.5. Analysis of the Gap between Current Teaching Models and Industry Needs

Despite ongoing efforts to improve nursing English education, there remains a significant gap between existing teaching models and the practical demands of the healthcare industry within the Hainan Free Trade Port. Current curricula tend to focus heavily on theoretical language knowledge and standardized testing preparation, while underemphasizing the development of practical communication skills necessary for international clinical settings. This imbalance leads to graduates who are linguistically competent in controlled academic environments but struggle to apply their English skills effectively in dynamic, real-world healthcare scenarios.

Moreover, the lack of authentic clinical practice opportunities and insufficient exposure to multicultural and multidisciplinary environments further widen the gap. Industry stakeholders consistently highlight that newly graduated nurses often lack confidence and fluency in English communication, particularly in complex situations such as patient education, emergency response, and interdisciplinary teamwork. This discrepancy underscores the urgent need for a comprehensive reform of nursing English education that aligns more closely with industry expectations. Integrating practical training, task-based learning, and closer collaboration with healthcare providers can help bridge this divide, ultimately enhancing the readiness of nursing graduates to meet the challenges of an internationalized healthcare environment.

4. Innovation in Talent Cultivation Models for International Nursing English

4.1. Training Objectives: Targeting Internationalized and Interdisciplinary Nursing Talents

With the rapid development of the Hainan Free Trade Port as an international medical hub, nursing education must align its training objectives to cultivate talents equipped for global healthcare environments. This means nurturing nursing professionals who possess not only proficient English language skills but also solid clinical competencies and a deep understanding of cross-cultural communication. Graduates should be able to communicate effectively with patients from diverse cultural backgrounds, utilizing specialized nursing terminology and patient education techniques tailored to multicultural needs.

In addition to language proficiency, interdisciplinary collaboration is a critical component of the training goals. Nurses must be prepared to work seamlessly within multidisciplinary healthcare teams, cooperating with doctors, pharmacists, therapists, and other professionals to provide holistic patient care. This requires strong communication, critical thinking, and problem-solving skills in dynamic clinical situations.

Furthermore, the training objectives emphasize the importance of clinical documentation and reporting in English, ensuring accuracy and compliance with international healthcare standards. Lifelong learning and continuous professional

development are also integral, encouraging nurses to stay current with advancements in medical knowledge and technology. This comprehensive and forward-looking approach ensures that nursing graduates are versatile, culturally sensitive, and capable of meeting the complex demands of the Free Trade Port's international healthcare landscape.

4.2. Construction of Industry-Education Integration Collaborative Mechanism

Establishing an effective collaborative mechanism between educational institutions and healthcare enterprises is essential for advancing international nursing English education. A key component of this mechanism is the joint formulation of nursing English competency standards by universities and medical organizations. This collaboration ensures that competency benchmarks accurately reflect the practical language demands faced by nurses in international clinical settings, guiding curriculum development, teaching goals, and student assessments to better prepare graduates for global healthcare roles.

Medical institutions play a vital role in both curriculum design and practical training evaluation, ensuring that nursing English education remains closely connected to clinical practice. In curriculum design, healthcare providers collaborate with universities to integrate real-world nursing scenarios, such as patient communication, emergency response, and interdisciplinary teamwork, into course content. Their input helps identify the specific language skills and competencies most needed in international nursing environments, enhancing the relevance and applicability of teaching materials.

In practical training evaluation, medical institutions provide authentic clinical settings for internships and simulation exercises, allowing students to apply their language skills in realistic contexts. Experienced medical professionals assess students' performance with a focus on communication clarity, accuracy in medical documentation, and cultural sensitivity during patient interactions. This hands-on evaluation bridges the gap between theoretical knowledge and clinical application, while offering valuable feedback for ongoing curriculum refinement. By deeply involving medical institutions in these processes, nursing English education can be continuously improved to meet the evolving requirements of the international healthcare sector in the Hainan Free Trade Port.

4.3. Curriculum System Reform

With the accelerated internationalization of healthcare services in the Hainan Free Trade Port, the nursing English curriculum requires comprehensive reform beyond superficial adjustments. The curriculum should be systematically redesigned around several core modules that integrate essential medical knowledge with practical language skills, ensuring graduates are well-prepared for international clinical environments.

The first core module, Medical Basic English, provides students with a solid foundation in specialized medical vocabulary, including anatomy, physiology, pharmacology, and pathophysiology. Mastery of this terminology is essential for understanding clinical documentation, patient conditions, and treatment plans in English-speaking contexts. This foundation equips students with the necessary linguistic tools to participate effectively in multidisciplinary healthcare teams.

The second critical module, Nursing Communication English, emphasizes the development of practical communicative competencies. Moving away from rote memorization, this module employs interactive teaching methods such as role-playing, simulated patient encounters, and scenario-based exercises. These activities train students in patient interviewing, health education, counseling, informed consent, and interprofessional collaboration. By engaging with authentic materials, students learn to communicate medical information clearly, empathetically, and accurately, which is vital for patient safety and care quality.

Complementing these is the Cross-Cultural Nursing module, which addresses the cultural aspects of healthcare delivery. Nurses working internationally must navigate

diverse patient beliefs, values, and communication styles while upholding professionalism and ethical standards. This module fosters cultural sensitivity and competence, helping students recognize and respect cultural differences, manage conflicts, and provide patient-centered care tailored to individual backgrounds. Case studies involving cross-cultural communication challenges and ethical dilemmas further enhance critical thinking and adaptability in multicultural settings.

In addition, modules such as Medical Writing in English and Multimedia-Assisted Learning enrich the curriculum by improving students' medical documentation skills and leveraging technology for clinical simulations. These modules focus on enhancing writing proficiency for nursing records and using virtual platforms to practice clinical communication and procedures.

The entire curriculum is designed following a task-based, situational, and case-oriented approach, immersing students in real-life nursing contexts. Incorporating authentic clinical scenarios, simulation labs, and problem-solving exercises enables simultaneous application of language and nursing knowledge, effectively bridging theory and practice.

Furthermore, the integration of internationally recognized competency frameworks, particularly the Objective Structured Clinical Examination (OSCE), ensures that course assessments meet global clinical standards. OSCE's structured, scenario-driven format tests students' clinical communication, decision-making, and procedural skills under realistic conditions, preparing them for international certification and employment.

This comprehensive curriculum reform not only elevates educational quality but strategically aligns nursing talent development with the Free Trade Port's goal of building a competitive, internationally competent healthcare workforce. The main curriculum modules and their corresponding teaching designs are summarized in Table 1 below.

Table 1. Core Curriculum Modules and Teaching Design.

Curriculum Module	Training Objectives	Teaching Methods and Activities	Assessment Methods
Medical Basic English	Master professional medical vocabulary and foundational knowledge to support clinical understanding and communication	Vocabulary drills, lectures, medical case analyses	Vocabulary tests, written exams
Nursing Communication English	Develop skills in patient interviewing, health education, teamwork, and emergency communication	Role-playing, simulated patient scenarios, case discussions	OSCE simulations, oral expression evaluations
Cross-Cultural Nursing	Enhance cultural sensitivity and develop intercultural nursing communication and ethical awareness	Case studies, multicultural simulations, classroom discussions	Case reports, class participation assessments
Medical Writing	Improve standard English nursing documentation and report writing skills	Writing exercises, model text analysis, peer reviews	Nursing record writing, report submissions
Multimedia-Assisted Learning	Use videos and virtual simulation platforms to strengthen clinical	Video lessons, virtual patient interactions, simulation training	Operation logs, practical performance ratings

communication and procedural
skills

4.4. Practical Teaching Reform

To cultivate nursing students' practical abilities and bridge the gap between theory and clinical application, practical teaching methods must undergo significant reform. A key innovation is the implementation of virtual simulation platforms that replicate the entire OSCE process, allowing students to experience authentic clinical scenarios in a controlled, risk-free environment. These platforms provide immersive, interactive experiences where students can practice clinical communication, critical thinking, and procedural skills repeatedly with immediate feedback, enhancing their competence and confidence before engaging in real-world patient care.

In addition, establishing a comprehensive international medical communication case library is vital for exposing students to diverse, real-world communication challenges in global healthcare settings. This repository includes recorded dialogues, transcripts, and analyses of nurse-patient interactions, interdisciplinary consultations, and culturally sensitive situations. Through guided study and practice of these cases, students develop a deeper understanding of the nuances in medical communication, improving their adaptability and language proficiency across various clinical contexts.

Furthermore, given the multilingual nature of many healthcare environments, practical training should incorporate multi-language communication scenarios. These training modules simulate situations where nurses must navigate language barriers, switching between English and other languages commonly encountered in clinical practice. This approach enhances students' flexibility, cultural competence, and problem-solving abilities, better preparing them for the realities of international nursing work. Together, these practical teaching reforms ensure that graduates are equipped with the necessary language skills, cultural sensitivity, and clinical competence to thrive in diverse, dynamic healthcare settings worldwide [9].

4.5. Faculty Development and International Exchange Mechanism

The cultivation of a high-quality faculty team with both academic expertise and practical clinical experience is essential for advancing international nursing English education. Emphasizing the development of dual-qualified teachers—those who possess strong theoretical knowledge as well as hands-on clinical skills—ensures that instruction remains relevant and grounded in real-world nursing practice. Training programs, workshops, and clinical internships are necessary to enhance faculty members' professional competencies, pedagogical methods, and cross-cultural communication abilities. Such faculty development initiatives enable instructors to effectively integrate theory with practice and guide students in meeting international standards [10].

In addition, establishing robust international collaboration and exchange mechanisms with overseas nursing schools and medical institutions plays a crucial role in enriching the educational environment. Partnerships can involve co-developing curricula, organizing student and faculty exchange programs, and facilitating joint research and practical training projects. These initiatives promote the sharing of global best practices, enhance cross-cultural understanding, and provide valuable exposure to diverse healthcare systems. By fostering continuous academic and clinical exchanges, the program ensures that both faculty and students stay abreast of international advancements, thereby strengthening the overall quality and competitiveness of nursing English education in the Hainan Free Trade Port.

5. Typical Case Study and Replicable Operational Mechanisms of Industry-Education Integration

5.1. Typical Case of Industry-Education Integration

The collaboration between Hainan Vocational University of Science and Technology (HVUST) International Nursing College and Hainan Provincial People's Hospital represents a significant model of industry-education integration within the Hainan Free Trade Port. This partnership is aimed at cultivating internationally competitive nursing professionals equipped with proficient English communication skills and clinical competencies aligned with global healthcare standards.

The joint training base integrates the academic strengths of HVUST in theoretical nursing education and language instruction with the clinical resources and expertise of Hainan Provincial People's Hospital. The hospital provides authentic patient care environments, clinical scenarios, and expert guidance from practicing clinicians, enabling students to engage in supervised clinical practice closely aligned with international nursing English requirements.

Key features of the partnership include the co-development of a bilingual curriculum that integrates medical English and clinical nursing content, establishment of supervised internship programs within hospital wards with exposure to international patient care, and collaborative faculty development initiatives aimed at fostering dual-qualified teaching teams. The training base regularly conducts workshops and simulation exercises modeled on internationally recognized standards such as the Objective Structured Clinical Examination (OSCE), enhancing students' practical skills and assessment readiness.

The cooperative mechanism facilitates dynamic feedback loops between university educators and clinical supervisors, enabling continuous refinement of teaching materials and practicum design based on real-time clinical needs and student performance. Graduates from this program demonstrate improved proficiency in nursing English communication, cultural competence, and clinical decision-making, contributing to meeting the workforce demands of Hainan's expanding international healthcare sector.

Challenges encountered during implementation include coordinating academic schedules with hospital operational demands and ensuring sufficient faculty expertise across both linguistic and clinical domains. These challenges have been addressed through flexible training arrangements, joint faculty training programs, and strengthened coordination mechanisms.

Overall, the HVUST-Hainan Provincial People's Hospital collaborative training base exemplifies an effective industry-education integration model. Its experience offers valuable insights and replicable practices for other institutions aiming to enhance international nursing English education through close cooperation between academia and clinical practice, supporting the development of a skilled nursing workforce for the Hainan Free Trade Port.

5.2. Replicable Operational Mechanisms of Industry-Education Integration

Through practical exploration of industry-education integration, several operational mechanisms have been identified with significant replicability and reference value for similar institutions aiming to innovate international nursing English talent cultivation:

1. Joint Development of Standards and Curriculum

Collaborative formulation of nursing education standards, particularly targeting international nursing English requirements, aligning curriculum content with clinical demands and global trends.

Systematic curriculum design incorporating medical basics, nursing communication, and cross-cultural nursing modules.

2. Co-construction of Training Bases and Practical Platforms

Establishment of clinical training bases leveraging hospital resources to provide authentic clinical environments for student internships, reinforcing theory-practice integration.

Introduction of internationally recognized assessment methods such as OSCE to standardize practical teaching.

3. Dual-Qualified Faculty Development and Exchange

Promotion of joint teacher training and exchanges to enhance both academic teaching and clinical supervision competencies.

Collaborative teaching teams comprising academic instructors and clinical practitioners.

4. Dynamic Feedback and Continuous Quality Improvement

Implementation of multi-channel communication mechanisms among educators, clinical supervisors, and students to adjust teaching content and methods responsively.

Regular evaluation and refinement of training programs.

5. Flexible Scheduling and Resource Sharing

Adoption of flexible internship scheduling to reconcile clinical practice with academic timelines.

Efficient sharing of educational and clinical resources between institutions.

These mechanisms not only support the sustainability and effectiveness of the current collaboration but also provide a viable framework for other nursing education programs seeking to integrate industry and education, especially within the context of international nursing English competency development.

6. Advantages and Challenges of the Industry-Education Integration Model

The industry-education integration model for international nursing English talent cultivation offers significant advantages that address many longstanding issues in traditional nursing education. Primarily, this model enhances the practicality of training by closely aligning educational objectives with real-world clinical and industry demands. Through collaborative curriculum development, joint practical training bases, and faculty exchanges, students acquire not only theoretical knowledge but also critical hands-on experience and communication skills necessary to operate effectively in international healthcare environments. This comprehensive approach substantially improves students' international competitiveness and readiness for diverse clinical settings, which is essential in the context of Hainan Free Trade Port's rapidly globalizing medical sector.

However, the implementation of such an integrated model also faces considerable challenges. A major obstacle is the shortage of qualified dual-skilled faculty who possess both advanced nursing expertise and strong language teaching abilities. This gap complicates efforts to deliver high-quality, interdisciplinary instruction. Additionally, coordinating schedules and resources between educational institutions and healthcare providers often proves difficult, given their differing operational priorities and timelines. Limitations in teaching materials and infrastructure, especially those tailored to international nursing English, further hinder effective training delivery. Despite these challenges, the industry-education integration model presents clear improvements over traditional approaches by fostering closer collaboration with clinical practice, promoting continuous curriculum updating based on real-time feedback, and enhancing the relevance and applicability of nursing education.

In comparison to conventional nursing education, which often suffers from theory-practice separation and outdated curricula, this innovative model emphasizes dynamic interaction between academia and industry. It not only bridges the gap between classroom learning and clinical application but also encourages the development of culturally competent, linguistically proficient nursing professionals equipped for global health challenges. To fully realize its potential, ongoing efforts are needed to strengthen faculty development, improve resource allocation, and streamline cooperation mechanisms. Nonetheless, the model marks a progressive step toward cultivating nursing

talents that meet the evolving demands of international healthcare, particularly within the strategic framework of the Hainan Free Trade Port.

7. Conclusion and Outlook

This study explored the demand for international nursing English competencies under the unique context of the Hainan Free Trade Port and proposed an innovative industry-education integration model for talent cultivation. Through analyzing the development trends of the medical and healthcare industry, clarifying the requirements of clinical and enterprise partners, and examining the current educational practices, the research identified critical gaps in nursing English proficiency and highlighted the need for a systematic reform in curriculum design and practical training. The proposed model emphasizes collaborative curriculum development, practical training bases, dual-qualified faculty cultivation, and dynamic feedback mechanisms, which collectively enhance students' language skills, clinical competencies, and cultural adaptability. The case study of the partnership between Hainan Vocational University of Science and Technology and Hainan Provincial People's Hospital exemplifies the practical application and positive outcomes of this approach.

Looking ahead, further efforts are required to address existing challenges such as faculty shortages and resource limitations, and to promote wider industry-academia cooperation. Policy support and continuous evaluation will be essential to sustain and scale this model. Future research could focus on longitudinal assessments of student outcomes and the integration of emerging educational technologies to further improve training effectiveness.

Overall, the industry-education integration approach under the Hainan Free Trade Port context provides a valuable framework for cultivating internationally competent nursing professionals, supporting the region's goal of building a globally competitive healthcare workforce.

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