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Research on Talent Training Mode of Integration of Production and Education in Maritime Technology Industry College from the Perspective of Intelligentization

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Abstract

This paper analyzes the present situation and trend of navigation technology industry, points out that intelligence, greening and high efficiency are the main directions of its future development, and puts forward the necessity of talent training mode of integration of production and education (Hereinafter referred to as IPE), aiming at cultivating high-quality navigation talents with both theoretical and practical abilities. This paper expounds the construction strategy of this model in detail, including the goal of talent training with clear international vision, innovative spirit and practical ability; Reform the curriculum system, add courses related to intelligent technology and build modular courses; Build a practical teaching system, deepen school-enterprise cooperation and establish a training base; Strengthen the teaching staff, introduce experts and organize teachers to participate in enterprise practice. At the same time, the article discusses the implementation path and safeguard measures of the IPE under the background of intelligence, such as establishing the cooperation mechanism between schools and enterprises, integrating resource development courses, etc., and constructs a comprehensive safeguard system from the aspects of policy, funds, materials and teachers to support the continuous optimization and development of the model. The research results provide theoretical and practical guidance for the Institute of Maritime Technology Industry, which is of great significance for promoting industrial development.

Keywords

Maritime Technology Industry College; Intelligentization; Talent Training; Integration of Production and Education.

1. Introduction

The implementation of intelligent technologies has transformed conventional navigation methods and has presented fresh developmental prospects for the navigation sector. Nonetheless, this shift introduces new demands on the talent requirements within the navigation technology industry. To foster top-tier professionals capable of addressing the challenges of the smart navigation era, the Institute of Navigation Technology and Industry must continuously seek out innovative approaches to education and training.

As a novel approach to talent cultivation, the integration of production and education (referred to hereafter as IPE) seeks to achieve shared resources and mutual benefits by deeply merging educational and industrial efforts, working together to nurture high-caliber individuals equipped with both theoretical knowledge and practical skills [1-2]. From an intelligent perspective, it is especially crucial for the Institute of Navigation Technology to adopt the IPE model for talent development. This approach not only aids students in understanding and

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mastering intelligent navigation technologies but also enhances their practical and innovative capabilities, thereby better aligning with the future developmental needs of the navigation technology sector.

2. Present Situation and Development Trend of Navigation Technology Industry

In recent years, with the sustained growth of global economy and the prosperity of international trade, the navigation technology industry has developed rapidly. As the main means of marine transportation, ships have made remarkable progress in construction technology, navigation technology, communication technology and safety technology.

In shipbuilding, the application of new materials, advanced technology and intelligent technology makes the ship stronger, lighter and more efficient. At the same time, in order to meet the requirements of environmental protection and energy saving, more and more ships begin to adopt green power systems, such as liquefied natural gas (LNG) and other clean energy sources. In terms of navigation technology, with the continuous improvement and accuracy improvement of satellite navigation system, ships can achieve more accurate positioning and navigation. In addition, the introduction of automation and intelligent technology makes the handling of ships more convenient and safe [3]. In terms of communication technology, the development of maritime satellite communication, maritime broadband and other technologies provides more stable and high-speed communication services for ships. This not only ensures the smooth communication between the ship and the land, but also provides a richer entertainment life for the crew. In terms of safety technology, the continuous improvement of ship safety early warning system, collision avoidance system and emergency evacuation system has effectively improved the safety of ships during navigation.

In the future, the development of navigation technology industry will mainly show three major trends: intelligence, greening and high efficiency [4-6]. In terms of intelligence, through the application of artificial intelligence and big data, ships will be able to realize automatic operations, such as intelligent algorithms to optimize routes to reduce energy consumption, and use drones and remote sensing technologies to improve navigation safety. In terms of greening, the industry will promote the use of clean energy and the development of emission reduction technologies, including the use of efficient power systems and renewable energy for power supply. Efficiency involves reducing costs and improving transportation efficiency by improving design, technology and logistics, while promoting collaborative innovation and resource integration among industries.

3. Construction of Talent Training Mode of IPE in Institute of Navigation Technology and Industry

3.1. Orientation of talent training objectives

According to the development trend and market demand of navigation technology industry, the goal of talent training under the mode of IPE is to cultivate high-quality navigation talents with solid navigation technology foundation, broad international vision, good professional accomplishment and innovative spirit. These talents should have the ability to work independently and work in teams in an intelligent navigation environment, be able to quickly adapt to technological changes and contribute to the sustainable development and innovation of the navigation technology industry. In order to achieve the above goals, we further refine the specifications of personnel training, as shown in Figure 1:

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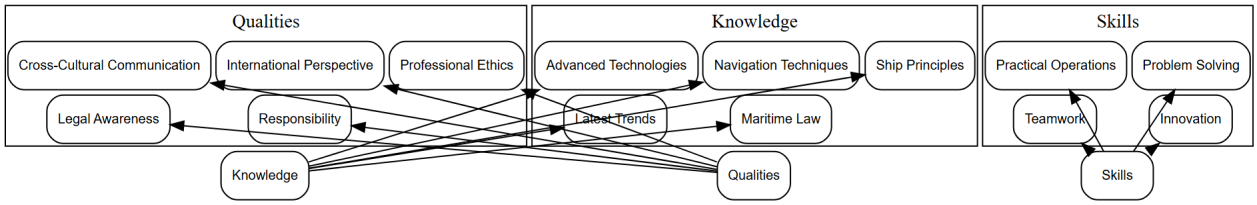

Figure 1. Refinement of personnel training specifications

In terms of knowledge structure, students need to master the basic theory and professional knowledge of navigation technology, such as ship principles, navigation technology and maritime laws and regulations, and pay attention to the latest development of the industry. In terms of ability requirements, through the integration of production and teaching, students should have the ability of practical operation, problem solving, teamwork and innovation, and can use what they have learned to solve practical problems and continuously improve themselves. In terms of quality training, we should attach importance to professional quality and humanistic quality. Students should have good professional ethics, responsibility and legal awareness, as well as international vision and cross-cultural communication ability to adapt to the international development of maritime technology industry.

3.2. Curriculum system and teaching content reform

The college needs to optimize the curriculum system and add courses related to artificial intelligence, big data and cloud computing, so that students can master these advanced technologies; At the same time, strengthen practical teaching, increase the proportion of experimental and practical links, and ensure that students can deepen their theoretical knowledge and improve their skills in practical operation; In addition, a modular curriculum system will be built, and curriculum modules will be set according to different fields and job requirements, so that students can choose according to their personal interests and career planning, thus improving the pertinence and effectiveness of teaching [7].

The college is committed to updating the teaching content to adapt to the rapid development of navigation technology. This includes introducing the latest technological achievements, ensuring the synchronization of students' learning and industry, and paying attention to interdisciplinary integration to cultivate students' interdisciplinary thinking and comprehensive ability. At the same time, the college also strengthens professional quality education, including professional ethics, professional norms and teamwork, in order to comprehensively improve students' comprehensive quality.

3.3. Construction of practical teaching system

Amidst global economic integration and the swift advancement of the maritime economy, the demand for high-quality technical and skilled personnel within the navigation technology industry is on the rise. To keep pace with these changes, the Institute of Navigation Technology must develop a talent cultivation model that blends educational practices with industrial engagement. This approach seeks to enhance collaboration between academic institutions and businesses, establish training bases, and boost students' practical and innovative skills through the development of a hands-on teaching system. The strategy for building this practical teaching system is illustrated in Figure 2.

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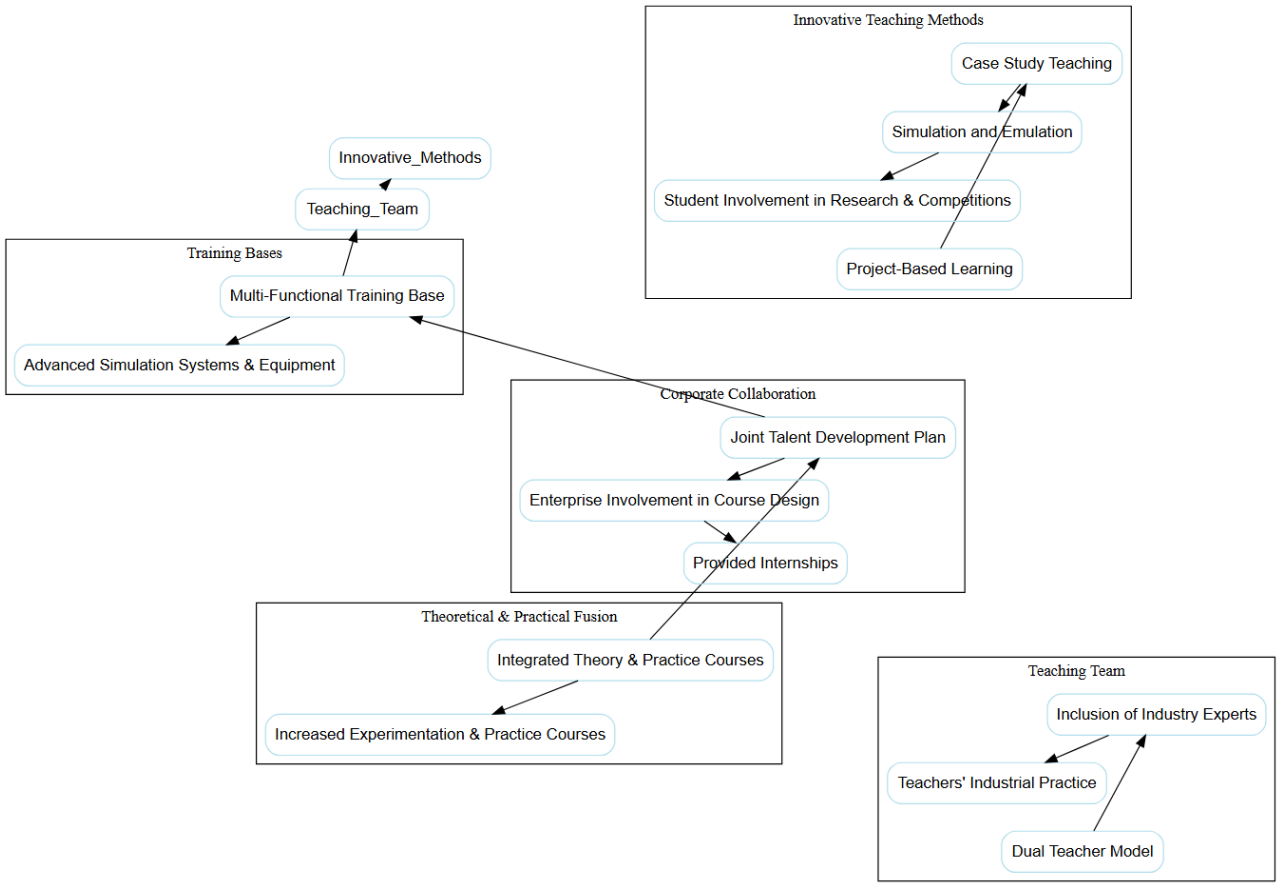

Figure 2. Construction strategy of practical teaching system

The college will reconstruct the curriculum system, closely integrate theory and practice, increase the proportion of experimental and practical courses, and ensure that students practice while learning; Deepen school-enterprise cooperation, work out talent training plans with enterprises in navigation, shipbuilding and other industries, and enterprises participate in curriculum design and provide internship opportunities; Establish a multi-functional training base, equipped with advanced simulation systems and equipment to simulate the real working environment; Establish a double-qualified teacher team, introduce industry experts and organize teachers to practice in enterprises [8]; Innovate teaching methods, adopt project-based teaching, case-based teaching and simulation, encourage students to participate in scientific research and technical competitions, and comprehensively improve their innovative ability and team spirit.

3.4. Construction of teaching staff

The Institute of Navigation Technology Industry requires the establishment of an effective talent cultivation model that integrates educational principles with industrial practice, geared towards fostering high-quality navigation specialists who possess robust professional knowledge and practical skills. This model places a strong emphasis on the development of the teaching faculty. By enhancing the capabilities of "dual-qualified" instructors, the professional standards and practical teaching efficacy of the educators are elevated, facilitating a seamless alignment between educational content and industry requirements.

First of all, through cooperation with enterprises, we will introduce industry experts to enrich the teaching team and use their practical experience to improve students' practical operation and problem-solving ability. Secondly, teachers are regularly organized to participate in seminars and trainings on navigation technology at home and abroad, so as to update teaching

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contents and methods and improve professional quality. In addition, through the school-enterprise cooperation platform, teachers can practice and communicate in enterprises to enhance their practical teaching ability [9]. At the same time, establish an incentive mechanism to reward teachers who have performed well in the IPE to stimulate their enthusiasm. Finally, improve the teacher evaluation system and comprehensively evaluate teachers' teaching quality, research results and the contribution of practical teaching and integration of production and teaching.

4. Implementation and Guarantee of Talent Training Mode

4.1. Implementation path

First of all, in the aspect of school-enterprise cooperation mechanism, establish the criteria for selecting partners, sign agreements with leading enterprises, clarify the rights and obligations of both parties, and set up a school-enterprise cooperation Committee to supervise the progress of cooperation; Secondly, in terms of practical instruction, we should develop a comprehensive practical teaching system that spans the entirety of the talent cultivation process. This includes setting up practice bases within companies and encouraging educators to engage in corporate projects to enrich their teaching experiences. Lastly, concerning the integration of teaching resources, we should fully utilize resources from both educational institutions and industries to create collaborative courses that cater to the needs of businesses. Establishing a teaching quality monitoring system will ensure that the standards and effectiveness of instruction are maintained through regular inspections, evaluations, and surveys of student satisfaction [10]. A clear implementation pathway, encompassing the establishment of school-enterprise cooperation mechanisms and the development of practical teaching methods, is depicted in Figure 3.

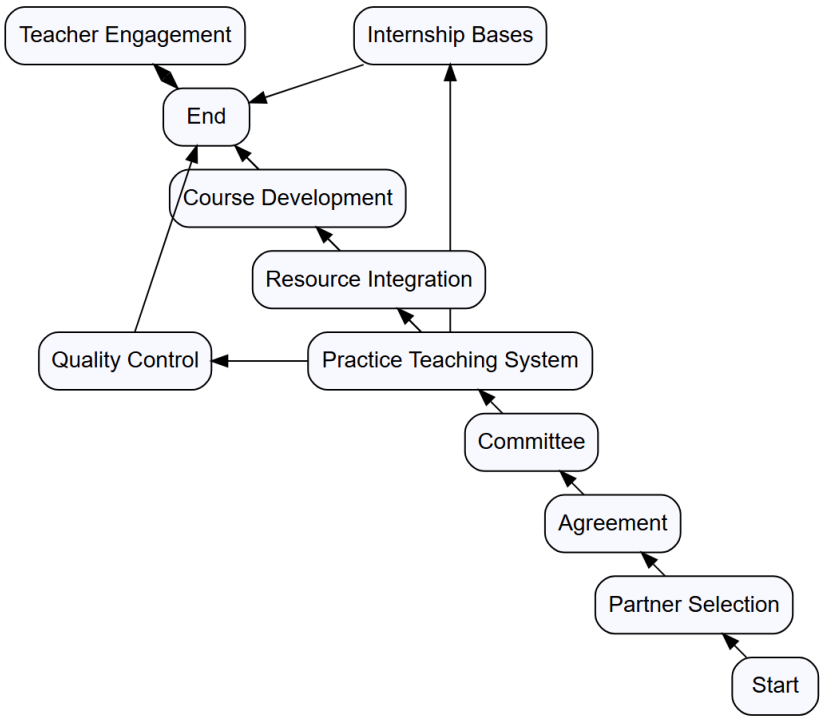

Figure 3. Implementation path

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4.2. Safeguard measure

Establish a comprehensive safety system, introduce motivational policies at the policy level, and foster deeper collaboration between educational institutions and businesses. Optimize teaching management to ensure that all activities are conducted according to established guidelines. In terms of financial and material resources, designate specific funds for the purpose of enhancing school-enterprise partnerships and practical teaching. Additionally, increase investment in experimental and instructional facilities to solidify the groundwork for practical education. In the construction of teachers, we will focus on introducing and cultivating high-quality teachers with both industry experience and teaching ability, and carry out a plan to improve teachers' ability, regularly arrange industry training and enterprise practice, and comprehensively improve the strength of teachers. The above measures aim to provide all-round support for the landing of the talent training mode of IPE from the four dimensions of policy, capital, materials and teachers, and ensure the effective implementation and continuous optimization of the mode.

5. Conclusion

Under the background of intelligence, the navigation technology industry is undergoing revolutionary changes, which puts forward higher requirements for talents' theoretical knowledge, practical skills, innovation ability and international vision. Therefore, the Institute of Navigation Technology Industry needs to optimize the curriculum system, strengthen practical teaching, deepen school-enterprise cooperation and strengthen the teaching staff through the integration mode of production and education, so as to realize the seamless connection between education and industrial demand and improve students' comprehensive quality and professional ability. This model emphasizes the importance of implementation path and safeguard measures to ensure the effectiveness and continuous optimization of personnel training. Therefore, the integration mode of production and education has become an important choice for the Institute of Maritime Technology to adapt to the new trend of the industry and promote the sustainable development and innovation of the industry.

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