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Innovative Paths for Talent Cultivation Models of Navigation Technology Majors in Higher Vocational Colleges under the Background of Educational Digital Transformation

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Abstract: The digital transformation of education has become an important opportunity for the development of higher vocational colleges, driving the reform and innovation of talent cultivation models in higher vocational colleges. Under the background of the digital transformation of education, to realize the innovation of the talent cultivation model for the navigation technology major in higher vocational colleges, efforts should be made to cultivate teachers' digital literacy, accelerate the integration of digital technology and courses, actively promote digital technologies such as virtual reality technology, and accelerate the construction of digital learning resources.

Keywords: Digital transformation of education; Higher vocational colleges; Navigation technology major; Talent cultivation model.

1. Introduction

In the report of the 20th National Party Congress, a series of cutting-edge concepts such as "Digital China", "digital economy", "digitalization of education", and "national cultural digitalization strategy" are clearly mentioned, making "digitalization" the focus of heated discussions in all sectors of society. The digital transformation of education is not only an inevitable trend of the progress of the times but also a focus of extensive attention in the academic community. General Secretary Xi Jinping specially emphasized in the report of the 20th National Party Congress: "We should promote the digitalization of education and be committed to building a learning society and a large learning country where all people can learn throughout their lives." This strategic deployment has defined the core position of educational digitalization in building a powerful country in education and also provided a solid guarantee for realizing the modernization of education in our country.

In this context, the Ministry of Education and maritime-related management departments actively respond to the call of the times and have included promoting the upgrading and transformation of educational digitalization into their annual work priorities one after another. They have also intensively introduced a series of preferential policies aimed at promoting the development of educational digitalization. As an important front for vocational education, higher vocational colleges must actively embrace changes and take on responsibilities. They should regard promoting the digital transformation of vocational education as the top priority of college reform and development and continuously explore and innovate talent cultivation models. Under the background of the in-depth implementation of the strategy of strengthening the country through the sea, the major of navigation technology has ushered in unprecedented development opportunities. For higher vocational colleges, the talent cultivation of navigation majors should closely revolve around the core issue of educational digital transformation. Taking this as an opportunity, they should deepen reform and innovation and continuously improve the quality of talent cultivation to contribute more high-quality and highly skilled navigation talents to the construction of a powerful maritime country.

2. Digital Transformation of Navigation Technology Major: An Inevitable Wave of Times Development

Under the active exploration and strategic layout in the global maritime field, advanced digital technologies, with their excellent performance advantages, quickly penetrate and reshape the maritime industry, leading the new era trend of "fully digital navigation". This change not only marks the leap of the maritime field from the traditional navigation era to the "digital + navigation era", but also highlights the key role and unlimited potential of digital technologies in navigation technology professional education.

The informatization process of navigation technology professional education is steadily moving from the "Internet + navigation education" stage to a deeper level of "digital + navigation education", showing distinct characteristics of evolving towards a higher-order trend. This transformation, as an inevitable product of the globalization of the world's maritime economy, profound changes in technical architecture, and explosive growth of knowledge, not only promotes the vigorous development of informatization construction in China's navigation technology professional education, but also becomes an important milestone in the modernization process of maritime education.

The connotation of digital transformation of navigation technology major is far more than the digital upgrade of teaching tools and teaching methods. It more deeply touches on the comprehensive innovation of multiple dimensions such as educational concepts, teaching models, curriculum settings, and evaluation systems. With the continuous innovation of

emerging information core technologies such as cloud computing, big data, the Internet of Things, social networks, and artificial intelligence, the development and system construction of digital navigation technology major in China have a more solid theoretical foundation and strong technical support.

In this context, China's maritime administration department clearly put forward the vocational education development concept of wisdom leading and empowering value addition in the "Special Plan for Vocational Education Development of Jiangsu Province's '14th Five-Year' Comprehensive Transportation System", and focused on deploying a number of key tasks including building a provincial-level transportation vocational education big data platform, strengthening the construction and application of teaching resources, and deepening the innovation of informatized teaching models. This series of measures undoubtedly injects strong impetus into the digital transformation of navigation technology major, demonstrating its inevitable trend of conforming to the development trend of vocational education and leading the future of maritime education.

Therefore, the cultivation of maritime professionals must fully grasp the opportunities brought by informatization and digitalization, actively create a digital teaching environment and learning environment, promote the professional growth of maritime professional teachers and the all-round development of students, and jointly welcome the arrival of a new era of maritime education

3. Digital Transformation of Education: A Powerful Engine for Innovation in the Cultivation of Navigation Technology Professionals

(1) Teaching Optimization: Forging Excellent Quality of Maritime Education

With the vigorous development of emerging technologies such as cloud computing, big data, the Internet of Things, social networks, and artificial intelligence, the teaching of navigation technology major ushers in a new chapter of digital transformation. These technologies not only play an active role in promoting teaching but also, through digital means such as virtual reality and simulation, build realistic maritime scenes for students, making originally abstract maritime knowledge intuitive, vivid, and easy to understand. In this immersive learning experience, students can master complex skills such as ship maneuvering and navigation positioning more deeply, laying a solid foundation for their future maritime careers. At the same time, diverse learning resources, such as highly interactive teaching software and online courses, also provide teachers with broad space to innovate teaching methods, realize the precise implementation of personalized teaching, and effectively cultivate students' autonomous learning ability. In addition, digital tools can also collect students' learning data in real time, providing a scientific basis for teachers to teach students in accordance with their aptitudes and further improving teaching efficiency and quality.

(2) Practice Empowerment: Tempering the Outstanding Skills of Maritime Elites

Practical ability is the core competitiveness of students majoring in navigation technology. The digital transformation of education has injected new vitality and opportunities into practical teaching. Advanced ship simulation systems enable students to conduct various navigation operation trainings in a virtual environment, including dealing with complex situations such as severe weather and sudden malfunctions. This simulation training that highly restores real scenes allows students to accumulate valuable practical experience in a safe environment and effectively improves their practical operation ability and emergency handling ability. Through repeated practice and actual combat simulation, students are fully prepared for their future maritime career and ensure that they can handle various complex situations with ease in actual work and ensure the safe navigation of ships.

(3) Resource Integration: Opening a New Chapter in the Sharing of Maritime Education Resources

Digital transformation promotes the comprehensive integration and sharing of teaching resources for navigation technology majors. The Internet and digital platforms break geographical restrictions, enabling high-quality teaching resources from different regions and different institutions to come together. As a result, students can access maritime knowledge, advanced experience, and the latest research results from all over the place, greatly broadening their horizons and knowledge. At the same time, resource sharing also effectively avoids the problem of redundant construction and saves valuable educational resource costs. Institutions can learn from each other and draw on advanced teaching experience and management models to jointly promote the overall improvement of the teaching level of navigation technology majors and cultivate more high-quality and compound talents for the maritime industry.

(4) Innovation-driven: Leading the future direction of the development of the maritime industry

Digital transformation provides strong power support for cultivating innovative talents in navigation technology majors. Students learning in a digital environment are more likely to be exposed to cutting-edge technological trends and innovative thinking concepts. They can deeply integrate digital technology and navigation professional knowledge and put forward innovative solutions and ideas. These innovative talents will become the new force and leader in promoting the development of the maritime industry. Through their unremitting efforts and exploration and practice, navigation technology will be pushed to a new height and realm. For example, innovative application cases such as optimizing route planning by using big data analysis and improving ship operation efficiency through intelligent sensors are emerging in an endless stream, injecting new vitality and impetus into the sustainable development of the maritime industry.

(5) International competition: Enhancing the international competitiveness of China's maritime education

In the context of increasingly fierce competition in the global maritime field, digital transformation has become the key to enhancing the international competitiveness of China's maritime education. By introducing advanced digital teaching means and resource systems, China's navigation technology major has successfully cultivated a group of maritime talents with international vision and high-level skills. These talents have shown strong competitiveness and dominant positions in the international maritime market, winning more development opportunities and market shares for China's shipping enterprises. At the same time, digital transformation has also accelerated the pace of China's maritime education in line with international standards, strengthened the establishment of exchanges and cooperation with

international counterparts, and further enhanced China's influence and voice in the international maritime field.

4. Innovative Paths for Talent Cultivation Models in Higher Vocational Colleges under the Background of Educational Digital Transformation - Taking Navigation Technology Major as an Example

(1) Deepening Teachers' Digital Literacy and Promoting the Improvement of Digital Teaching Ability

Under the grand background of educational digital transformation, the talent cultivation of navigation technology major is facing unprecedented opportunities and challenges. Teachers' digital literacy and their digital teaching ability are undoubtedly the core driving force for promoting this transformation process. According to the industry standard of "Teachers' Digital Literacy" officially released by the Ministry of Education, teachers' digital literacy not only covers the ability to efficiently obtain, accurately process, flexibly apply, scientifically manage, and deeply evaluate digital information and resources using digital technologies, but also includes the sense of responsibility and consciousness of using these abilities to solve educational and teaching problems, optimize teaching processes, and promote teaching innovation. [1]

As the educational digitalization process accelerates, higher vocational colleges should actively explore the in-depth integration path of digital technologies and talent cultivation in navigation technology major. In this process, the improvement of teachers' literacy needs to run through all levels of teaching management, teaching activities, scientific research services, and campus life. Specifically, teachers should deeply understand the profound connotations of educational digital transformation and accurately connect the development needs of the digital era to the talent cultivation goals of navigation technology major. On the one hand, efforts should be made to strengthen teachers' digital consciousness and guide them to closely combine digital technologies with modern maritime education innovation practices, promote digital teaching reform, so as to better meet students' development needs and achieve the goal of cultivating high-quality outstanding talents. On the other hand, teachers majoring in navigation technology should bravely break through the shackles of traditional education methods and actively integrate digital technologies into professional construction and teaching practice. In the context of the digital era, the content and requirements of maritime work are changing with each passing day, and the talent cultivation of navigation technology major also needs to keep up with the times and be repositioned. Therefore, improving teachers' digital literacy has become an important task that we cannot avoid.

(2) Accelerate the integration of digital technology and courses to improve the quality of talent cultivation

Theoretically, curriculum integration involves systematic considerations of various elements such as curriculum structure, content, objectives, instructional design, and evaluation. It also means exploring the connections between different educational factors in the teaching process from a holistic, correlative, and dialectical perspective. [2] In higher vocational and technical education, promoting the integration of digital technology and courses is not only an effective way to cultivate high-quality technical and skilled talents needed by society but also a key direction for innovative reform of talent cultivation models. The integration of digital technology and courses will lead to major changes in curriculum objectives, structure, and content. In the context of educational digital transformation, teaching media such as digital technology should not only assist teachers in teaching but also promote students' autonomous learning. It becomes a cognitive tool for students to independently explore scientific knowledge and learning, creating a diversified educational environment for students' learning and development and ensuring that every student can achieve all-round development. The realization of these goals is precisely the essence of the integration of digital technology and courses. In short, the essence of the integration of digital technology and courses lies in changing the traditional teaching structure and constructing an innovative teaching structure that can give play to the leading role of teachers and ensure the dominant position of students. Therefore, in the context of educational digital transformation, to achieve the innovative reform of the talent cultivation model of the navigation technology major in higher vocational and technical education, the top priority is to accelerate the integration of digital technology and courses. The primary goal of integrating digital technology and courses is to optimize the entire teaching process to improve teaching quality and effectiveness. In traditional teaching activities, teachers are the center of teaching, and students passively accept knowledge. After the integration of information technology and courses, students no longer passively accept knowledge but can actively explore and learn knowledge using digital technology. In addition, teachers using various digital technologies for teaching can increase the interest of the teaching process and stimulate students' interest in learning, thereby enhancing teaching effectiveness.

(3) Actively promote digital technologies such as virtual reality technology to strengthen students' learning experience

Driving the modern development of education with digital means, grasping and responding to the opportunities and challenges brought by digital transformation and new economic development, and empowering everyone's digital future is an important proposition for educational development in the new era. [3] In the wave of new digital technologies, higher vocational colleges actively respond to the trend of educational digital transformation whether in teaching methods or in the reform of talent cultivation models. By applying new technologies, higher vocational colleges have continuously improved the quality of talent cultivation in vocational education. For example, in the practical teaching of navigation technology major, most higher vocational colleges that offer this major have adopted virtual reality technology and updated the traditional practical training links. Many higher vocational colleges have established advanced virtual simulation training rooms, significantly improving the practical teaching effect of navigation technology major. The application of virtual reality technology in the field of education marks a major leap in the education cause. It embodies the concepts of constructivism and situational learning, creates an environment for autonomous learning, and transforms students' learning methods from the traditional "teaching promotes learning" to a new learning method of obtaining knowledge and skills through the interaction between students and the information environment. Virtual

reality is a three-dimensional reality technology that realizes information transmission through sensing auxiliary devices such as stereoscopic glasses and sensing gloves. It can naturally input action information (such as head rotation, hand movement, etc.) into the computer and provide a three-dimensional sensory experience through visual, auditory and tactile devices. Virtual reality technology is a comprehensive technology that covers all related natural simulation and realistic experience technologies and methods.

In the practical training of skills education in higher vocational colleges, the application of virtual reality technology is mainly reflected in virtual practical training. This new type of simulation practical training method mainly uses multimedia technology, network technology and simulation technology. Compared with real practical training, virtual practical training has many advantages. It can effectively improve the teaching environment, avoid safety risks, save school-running costs, and stimulate students' interest in learning. After establishing a virtual simulation training room for navigation technology major, higher vocational colleges can innovate practical teaching concepts through virtual reality technology, fully attach importance to students' dominant position, and transform the role of teachers into providers of learning opportunities and cultivators of interests, so as to make students' learning more conscious and active.

(4) Accelerate the construction of digital learning resources and build a new talent cultivation environment.

In today's era, China's maritime education is facing the severe challenge of unbalanced resources. Differences in regional economic development levels lead to huge gaps in software and hardware facilities and teaching staff in maritime education. At the same time, individual students also vary in their possession of digital skills and equipment. This imbalance seriously affects the fairness and quality of maritime education and becomes an obstacle to the cultivation of maritime talents.

To solve this problem, effective measures need to be taken to ensure that students have fair access to digital educational resources. First, the government should increase investment in areas with weak maritime education resources and improve the level of digital infrastructure construction to provide students with necessary digital equipment and network environments. Secondly, schools can carry out distance education and online courses to break geographical restrictions and allow more students to enjoy high-quality maritime education resources. In addition, encourage enterprises and social organizations to participate in the construction and sharing of maritime education resources and provide more learning opportunities and practice platforms for students.

Digital learning has achieved rapid development and been widely used in the field of education. However, the low degree of teaching intelligence and the insufficient digital learning ability of students are the problems that vocational colleges must solve when promoting smart education and also the breakthrough for improving the quality of talent cultivation in navigation technology major in vocational colleges in the new era. [4] Digital learning plays an irreplaceable important role in maritime education and provides a new way for students to master maritime knowledge. Through digital learning platforms, students can access rich maritime learning resources such as course videos, e-books, academic papers, etc. covering aspects such as maritime history, ship principles, and maritime regulations at any time and anywhere. These resources are rich in content and diverse in forms, which can meet the learning needs of different students. In the process of digital learning, students no longer passively accept knowledge. They can actively participate in knowledge construction through independent exploration, cooperative learning and other methods, and choose suitable learning content and methods according to their own interests and abilities to achieve personalized learning goals. At the same time, digital learning also provides students with opportunities for communication and interaction with industry experts and enterprise mentors, enabling them to understand the latest developments and trends in the maritime field in a timely manner and broaden their horizons.

The degree of digitalization of the learning environment has a great impact on the development of the digital literacy level of vocational college students. [5] As an important base for cultivating maritime talents, vocational colleges should actively build a digital talent cultivation environment corresponding to maritime practice. For example, using cloud computing technology, students can access information and services at any time and anywhere without time and space restrictions. With the support of cloud computing technology, learning resources and learning tools can be obtained and used as needed in a timely manner, greatly improving learning efficiency. At the same time, cloud computing technology can also provide personalized learning services for students and recommend suitable learning resources and paths according to students' learning situations and needs. In addition, vocational colleges can also provide students with a more realistic practice environment by building virtual laboratories and simulating maritime scenes, so that they can master maritime skills and improve their comprehensive qualities in practice.

In short, accelerating the construction of digital learning resources and building a new talent cultivation environment is an inevitable choice for China's maritime education in the digital age. Only by constantly making efforts to narrow the gaps between different regions and different students and ensuring that students have fair access to digital educational resources can we cultivate more high-quality maritime talents who meet the needs of the times and make greater contributions to the development of China's maritime industry.

5. Conclusion

With the continuous progress of science and technology, the digital transformation of maritime education has become an inevitable trend. Under the background of educational digital transformation, digital technology can bring many new opportunities for talent cultivation in the navigation technology major of higher vocational colleges. By reasonably applying digital technology, higher vocational colleges can improve teaching quality, innovate learning methods, promote educational equity, enhance learning effectiveness, cultivate comprehensive qualities and build a future learning ecosystem. However, we also need to pay attention to the challenges that may emerge in the process of digital transformation, such as network security and data confidentiality issues, uneven distribution of educational resources, professional improvement of teachers and iteration of educational concepts. Only by actively responding to these challenges can we better achieve the digital transformation of maritime education and lay a solid foundation for the future

development of maritime education.

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