

Research on the "Three Teachings" Collaborative Education Model of Maritime English under the Background of Vocational Education Digitalization

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Abstract: In the wave of digitalization, vocational education is undergoing profound changes. As a key link in cultivating high-quality maritime talents, the "Three Teachings" (teachers, teaching materials, teaching methods) collaborative education model of maritime English education is facing new opportunities and challenges under the background of vocational education digitalization. This paper deeply analyzes the current situation of the "Three Teachings" collaborative education of maritime English, reveals the existing problems, and puts forward targeted solutions combined with the advantages of vocational education digitalization. It aims to build an efficient maritime English education system, improve the comprehensive quality of maritime professionals, so as to adapt to the international and digital development needs of the maritime industry.

Keywords: Vocational Education Digitalization, Maritime English, Three Teachings Collaboration, Education Model.

1. Introduction

With the acceleration of the global economic integration process, the maritime industry, as an important pillar of international trade, is becoming increasingly internationalized. This puts forward higher requirements for the English proficiency of maritime professionals. They not only need to have a solid language foundation, but also be able to skillfully use English to communicate and handle business in complex maritime work scenarios. At the same time, digital technologies represented by big data, artificial intelligence, and virtual reality are widely used in the field of education, promoting the transformation of vocational education towards digitalization and intelligence. In January 2019, the State Council issued the "National Vocational Education Reform Implementation Plan" (referred to as the "20 Vocational Education Articles"), which requires vocational education to improve the quality of talent training through the "Three Teachings Reform" of teachers, teaching materials, and teaching methods. [1] The application of digital technology in the reform of "Three Teachings" (teachers, teaching materials, teaching methods) is the only way for the high-quality development of vocational colleges. [2] In this context, how maritime English education can take advantage of the digitalization of vocational education to optimize the "Three Teachings" collaborative education model has become an urgent problem to be solved. The research on the "Three Teachings" collaborative education model of maritime English is helpful to improve the teaching quality of maritime English, cultivate more compound talents who can adapt to the development needs of the maritime industry in the new era, and provide a strong talent support for China to move from a maritime power to a maritime power.

2. Overview of the Background of Vocational Education Digitalization

2.1. Policy Promotion and Strategic Layout

Since the 18th National Congress of the Communist Party of China, the country has attached great importance to

education digitalization and issued a series of policies to promote the digital transformation of vocational education. In 2022, the Ministry of Education promoted the implementation of the education digitalization strategic action, and clearly proposed to build a national smart education public service platform, aiming to integrate high-quality educational resources and improve the quality and efficiency of educational services (Ministry of Education, 2022) [3]. In 2023, it further emphasized the need to strengthen the empowerment of big data in education and teaching, enhance the ability of effective public educational services, and strengthen the internationalization of digital education. These policies have laid a solid policy foundation for the digital transformation of vocational education and pointed out the direction for the reform and development of maritime English education in the digital context. Under the guidance of policies, vocational colleges around the country have increased their investment in education digitalization and actively explored the application of digital teaching models in maritime English teaching, such as developing maritime English online courses and building virtual simulation training platforms.

2.2. Technology Development and Application Status

At present, digital technology is increasingly widely used in the field of vocational education. Take artificial intelligence as an example, it can realize the accurate analysis of students' learning behaviors, provide teachers with personalized teaching suggestions, help teachers better understand students' learning needs and progress, and thus adjust teaching strategies. In maritime English teaching, the artificial intelligence-assisted teaching system can intelligently push targeted learning materials, such as grammar explanations and vocabulary exercises, according to students' answers to improve their learning effects. Big data technology can collect, sort out and analyze massive teaching data to provide data support for teaching decisions. By analyzing data such as students' academic performance, learning duration, and participation in classroom interactions,

schools can understand the problems existing in the teaching process, and then optimize the curriculum settings and improve teaching methods. Virtual reality (VR) and augmented reality (AR) technologies also play an important role in maritime English practical teaching. With VR technology, students can experience real maritime scenarios such as ship navigation and maritime rescue immersively, conduct English communication and business operations in a simulated environment, and improve their practical application ability. According to relevant statistics, more than 60% of maritime vocational colleges have introduced digital technologies to varying degrees for teaching, and this proportion is still increasing year by year (China Vocational and Technical Education Association, 2023) [4].

2.3. The Impact of Vocational Education Digitalization on Maritime English Education

2.3.1. Enrichment and Update of Teaching Resources

The digitalization of vocational education has greatly enriched maritime English teaching resources. The National Vocational Education Smart Education Platform has gathered a large number of teaching resources related to maritime English, including online quality courses, virtual simulation training resources, and professional teaching resource databases. These resources cover all aspects of maritime English, from basic vocabulary and grammar to complex maritime business English, from theoretical knowledge explanation to practical operation scenario simulation, providing a variety of choices for teachers' teaching and students' learning. Compared with traditional teaching materials, digital resources have the advantage of fast update speed. The maritime industry is developing rapidly, with new technologies, regulations and businesses emerging constantly. Digital teaching resources can timely reflect these changes to ensure that the knowledge students learn keeps pace with the actual needs of the industry. For example, the latest maritime safety regulations and ship technical standards issued by the International Maritime Organization can be quickly integrated into online courses and teaching materials, allowing students to learn about industry trends at the first time.

2.3.2. Innovation and Reform of Teaching Models

Digital technology has promoted profound changes in maritime English teaching models. The traditional single teaching model, which is mainly based on teachers' lectures, is gradually transforming into a diversified and personalized teaching model. Online - offline hybrid teaching has become the mainstream. Teachers can use online teaching platforms, such as China University MOOC and Smart Vocational Education, to release teaching videos, learning tasks and test questions, and students can carry out independent learning according to their own time and progress. In classroom teaching, teachers can interact with students in real time through interactive teaching tools, such as Rain Classroom and Chaoxing Learning Link, to understand students' learning situation and answer their questions. In addition, project - based learning, situational teaching and other teaching methods are better implemented with the help of digital technology. Teachers can use virtual reality technology to create various maritime work scenarios, allowing students to complete project tasks in simulated scenarios, and improving students' English application ability and ability to solve

practical problems. For example, when teaching ship maintenance in maritime English, teachers can simulate ship maintenance scenarios through VR technology, allowing students to play the roles of maintenance personnel and technical support personnel, communicate in English, and formulate maintenance plans.

2.3.3. Transformation of Learning Methods and Personalized Development

For students, the digitalization of vocational education provides them with a more flexible and convenient learning method. Students can access learning resources through mobile phones, computers and other terminal devices anytime and anywhere, breaking the limitations of time and space. At the same time, the digital learning platform can analyze students' learning habits and knowledge mastery according to their learning data, such as learning duration, answer accuracy, and course completion progress, and provide students with personalized learning suggestions and resource recommendations. For example, if the learning platform finds that students are weak in maritime English listening, it will automatically push more learning materials related to listening, such as English broadcasts and dialogue simulations. This personalized learning method helps to stimulate students' learning interest, improve learning efficiency, meet the learning needs of different students, and promote their personalized development.

3. Current Situation of the "Three Teachings" Collaborative Education Model of Maritime English

3.1. Current Situation of Teacher Team Construction

3.1.1. Teacher Structure and Professional Background

At present, the structure of the maritime English teacher team is diversified. Some teachers graduated from the major of English language and literature. They have a solid foundation and rich experience in English language teaching and can provide students with high - quality English language knowledge teaching, such as grammar explanation and vocabulary teaching. However, due to the lack of maritime professional background knowledge, they may have certain difficulties in explaining maritime professional English content and it is difficult to deeply elaborate the combination of maritime business and English knowledge. Another part of the teachers are from maritime majors. They are very familiar with maritime professional knowledge and business processes and can vividly explain professional terms and operating procedures in the maritime field, but they are relatively weak in English teaching methods and language skill training and may not be able to effectively improve students' comprehensive English application ability. A small number of teachers have double degrees in English and maritime majors or have obtained double professional knowledge through later training, but such teachers account for a small proportion of the entire teacher team. Take a maritime vocational college as an example, among its 10 maritime English teachers, 60% have an English major background, 30% have a maritime major background, and only 10% have a double major background.

3.1.2. Digital Teaching Ability

With the advancement of vocational education digitalization, the digital teaching ability of maritime English

teachers has gradually received attention. Many colleges and universities have improved teachers' digital teaching level by organizing them to participate in digital teaching training and carrying out teaching informatization competitions. Some teachers have been able to skillfully use online teaching platforms for curriculum design, teaching resource release and teaching process management, such as using Chaoxing Learning Link to create maritime English courses, upload teaching courseware, videos, audios and other resources, assign homework and tests, and monitor students' learning progress and participation through the platform. In the teaching process, some teachers can also use digital teaching tools to assist teaching, such as using intelligent teaching software for speech recognition and correction to help students improve the accuracy of their spoken English pronunciation. However, a considerable number of teachers only apply digital technology on the surface, have a fear of difficulty, and cannot give full play to the advantages of digital technology in teaching. For example, when using virtual reality technology for teaching, some teachers simply play pre-made virtual scene videos and cannot flexibly design interactive links according to teaching goals and students' needs, resulting in poor teaching effects.

3.2. Current Situation of Teaching Material Construction

3.2.1. Types and Characteristics of Existing Teaching Materials

At present, there are many types of maritime English teaching materials, covering different levels and uses. In terms of levels, there are basic maritime English textbooks suitable for higher vocational colleges and advanced maritime English textbooks for undergraduate colleges; In terms of use, there are maritime English reading textbooks aimed at cultivating students' reading ability, maritime English speaking and listening textbooks focusing on listening and speaking training, and examination textbooks for maritime professional examinations. These teaching materials have their own characteristics in content arrangement. They generally include English content in maritime basic knowledge, ship operation, maritime safety, maritime regulations and other aspects, with corresponding exercises and case studies. Some excellent maritime English textbooks also focus on integrating actual maritime work scenarios to improve students' learning interest and application ability. For example, a maritime English speaking textbook sets up a number of dialogues in real ship work scenarios, such as dialogues on ship bridge duty and port berthing operations, allowing students to be familiar with the practical application of maritime English in simulated dialogues. In terms of teaching material forms, in addition to traditional paper textbooks, there are also some digital textbooks, such as electronic textbooks and multimedia textbooks. Electronic textbooks have the characteristics of being easy to carry and update, and students can consult and learn through electronic devices anytime and anywhere. Multimedia textbooks integrate various media resources such as text, pictures, audio and video, making the teaching content more vivid and helpful for students' understanding and memory.

3.2.2. Integration of Teaching Materials and Digital Resources

Some maritime English textbooks have begun to try to integrate with digital resources to adapt to the development trend of vocational education digitalization. Some textbooks

are matched with online learning platforms or mobile applications. Students can obtain digital resources related to textbook content by scanning the QR code on the textbook or logging in to the designated platform, such as extended reading materials, listening practice audio, and virtual simulation experiments. These digital resources enrich the content of teaching materials and provide students with more diversified learning approaches. However, the integration of teaching materials and digital resources is not deep enough at present, and there are some problems. On the one hand, the quality of digital resources is uneven, and some resources have outdated content and single forms, which cannot meet students' learning needs. On the other hand, the connection between teaching materials and digital resources is not close, and there is a disconnect. Students may feel confused during use and do not know how to organically combine textbook learning with digital resource learning. For example, although a large number of listening practice resources are provided on the online learning platform supporting a maritime English textbook, these resources do not completely match the listening chapters in the textbook, making it difficult for students to learn with a clear target.

3.3. Current Situation of Application of Teaching Methods

3.3.1. Continuity and Improvement of Traditional Teaching Methods

Mr. Ye Shengtao once said that there are methods in teaching, but there is no fixed method, and the key is to find the right method. In maritime English teaching, traditional teaching methods such as lecture method and translation method are still widely used. The lecture method can systematically impart knowledge to students. Teachers can let students have a comprehensive understanding of knowledge by explaining the grammar rules, vocabulary usage and text content of maritime English. The translation method plays a certain role in helping students understand complex maritime English sentences and paragraphs. By translating English sentences into Chinese, students can better grasp the meaning and structure of the sentences. With the update of teaching concepts, these traditional teaching methods are also constantly improving. For example, in the lecture method, teachers are no longer simply knowledge inculcators, but pay more attention to interaction with students, stimulating students' learning initiative by asking questions and guiding students to think. In the application of the translation method, teachers are no longer limited to word-for-word translation, but pay more attention to cultivating students' translation skills and understanding of English language thinking, guiding students to translate in a way that conforms to English expression habits on the basis of understanding the original text.

3.3.2. Exploration of New Teaching Methods Driven by Digitalization

With the development of vocational education digitalization, some new teaching methods have been explored and applied in maritime English teaching. The situational teaching method is better implemented with the help of digital technology. Teachers use virtual reality, multimedia and other technologies to create various maritime English application scenarios, allowing students to conduct language communication and practical operations in simulated scenarios, and improving students' English application ability and ability to solve practical problems. For

example, create a scene where an emergency occurs during ship navigation through virtual reality technology, let students play the role of crew members, communicate and coordinate in English, and formulate solutions. The project - based learning method has also been gradually promoted in maritime English teaching. Teachers decompose the teaching content into several projects, and students complete the project tasks in groups, applying maritime English knowledge and skills to solve practical problems in the process of project implementation. When completing the "berthing and unberthing operation" project, students need to consult a lot of maritime English materials, discuss and communicate with group members in English, and write English dialogue content, so as to comprehensively improve their comprehensive English application ability. In addition, the cooperative learning method has been expanded through online learning platforms. Students can form learning groups with students from different regions regardless of time and space constraints to complete learning tasks together, such as discussing a maritime English topic on an online forum and cooperating to complete an English research report.

4. Problems Existing in the "Three Teachings" Collaborative Education Model of Maritime English

4.1. Teacher Level

4.1.1. Insufficient Integration of Interdisciplinary Knowledge

Maritime English teaching requires teachers to have dual reserves of English language knowledge and maritime professional knowledge and be able to organically integrate the two. However, as mentioned earlier, most teachers currently have a single professional background. Teachers with an English major background lack maritime professional knowledge, and teachers with a maritime major background have relatively weak English teaching ability. This makes it difficult for teachers to deeply integrate English knowledge with maritime professional knowledge in the teaching process and cannot provide students with comprehensive and systematic teaching. When explaining professional terms in maritime English, English major teachers may only simply explain the meaning of the words, but cannot deeply elaborate their application scenarios and practical significance in maritime business; Maritime professional teachers may not be accurate and systematic in explaining English grammar and language expression, which affects students' mastery of English knowledge. This problem of insufficient integration of interdisciplinary knowledge makes it difficult for students to establish a complete knowledge system in the learning process, which is not conducive to the cultivation of students' comprehensive ability.

4.1.2. Poor Effect of Digital Teaching Training

Although colleges and universities actively organize teachers to participate in digital teaching training, the training effect is not ideal. On the one hand, the training content is often not targeted and does not fully consider the characteristics of maritime English teaching and the actual needs of teachers. Most of the training courses are general introductions to digital teaching technologies, such as how to use online teaching platforms and how to make simple teaching courseware, but there is little content on how to combine digital technologies with maritime English teaching

content and how to use digital tools to solve practical problems in maritime English teaching. On the other hand, the training method is single, mainly based on theoretical lectures, lacking practical operation and case analysis. Teachers only passively accept knowledge during the training and have no chance to experience and practice the application of digital teaching in person, resulting in difficulty in applying the learned digital technologies in actual teaching. In addition, the follow - up tracking and guidance of the training are insufficient, and teachers cannot solve the problems encountered in a timely manner after the training, which affects their enthusiasm and confidence in applying digital teaching technologies.

4.2. Teaching Material Level

4.2.1. Lagging Update of Teaching Material Content

The maritime industry is a constantly developing and changing industry with new technologies, regulations and businesses emerging constantly. However, the content of some maritime English teaching materials is updated slowly and cannot timely reflect the latest developments and trends of the industry. Some teaching materials still use old maritime technical terms and business processes, which are different from those used in actual work, leading to a disconnect between the knowledge learned by students and the actual needs of the industry. After the International Maritime Organization updated the regulations on ship emission control areas, some teaching materials failed to incorporate relevant content in a timely manner, and students lacked understanding of this important industry regulatory change in the learning process. The lag in the update of teaching material content is also reflected in the lack of attention to emerging maritime fields. For example, with the rise of concepts such as intelligent ships and green shipping, the relevant English teaching content is rarely involved in teaching materials, which cannot meet students' learning needs for emerging knowledge.

4.2.2. Imperfect Construction of Digital Teaching Materials

Although digital teaching materials have been applied in maritime English teaching to a certain extent, there are still many imperfections in the current construction of digital teaching materials. First of all, the form of digital teaching materials is relatively single. Most of them are simply converted from paper teaching materials into electronic documents or e - books, lacking the integration of multimedia elements and the design of interactive functions. This form of digital teaching materials cannot give full play to the advantages of digital technology and is difficult to attract students' learning interest. Secondly, the quality control system of digital teaching materials is not sound, and there are problems such as incorrect content and messy typesetting. Due to the relatively low threshold for making digital teaching materials, some teaching materials lack strict review and proofreading in the production process, resulting in uneven quality of teaching materials. In addition, the copyright protection of digital teaching materials is also prominent. Some teaching materials have piracy and infringement, which affects the enthusiasm of teaching material developers and is not conducive to the healthy development of the digital teaching material market.

4.3. Teaching Method Level

4.3.1. Lack of Systematicness in the Application of Teaching Methods

In maritime English teaching, although a variety of teaching methods are applied, the application of teaching methods lacks systematicness, with randomness and blindness. Teachers often choose teaching methods according to their own teaching habits and experience, without fully considering teaching goals, teaching content and students' actual situation. When explaining some theoretical maritime English knowledge, teachers may still use the traditional lecture method instead of combining situational teaching method or project - based learning method to help students better understand and apply knowledge. In the teaching process, the connection between different teaching methods is not smooth and does not form an organic whole, resulting in poor teaching effects. For example, in a maritime English speaking class, teachers may first use the situational teaching method to create a dialogue situation for students to practice speaking, but after the practice, they do not timely summarize and feedback on students' performance, nor further guide students to use the learned speaking knowledge for expanded training, but directly enter the next teaching link, which greatly reduces students' learning effect.

4.3.2. In - depth Integration of Online and Offline Teaching

Online - offline hybrid teaching is an important development trend of maritime English teaching under the background of vocational education digitalization, but at present, the integration of online and offline teaching is not in - depth. On the one hand, some teachers have an unclear positioning of online and offline teaching, simply regarding online teaching as a supplement to offline teaching, and only assigning some online learning tasks outside classroom teaching, such as asking students to watch teaching videos and complete online tests, without giving full play to the advantages of online teaching to achieve the organic combination of online and offline teaching. On the other hand, online and offline teaching lack effective coordination and unification in teaching content, teaching progress and teaching evaluation. The content of online teaching and offline teaching may be repeated or disconnected, and the teaching progress is inconsistent, which makes students confused in the learning process. In terms of teaching evaluation, the weight setting of online learning results and offline learning results is unreasonable, and the evaluation standards are not uniform, which affects the fairness and accuracy of teaching evaluation. For example, the online teaching part of a maritime English course mainly focuses on theoretical knowledge explanation, while the offline teaching focuses on practical operation and classroom interaction, but there is a lack of effective connection and transition between them, making it difficult for students to organically combine the knowledge learned online with offline practice and unable to form a complete learning experience.

5. Solutions to the "Three Teachings" Collaborative Education Model of Maritime English

5.1. Teacher Development Strategies

5.1.1. Construction of Interdisciplinary Training System

To solve the problem of insufficient integration of

interdisciplinary knowledge among teachers, a sound interdisciplinary training system should be built. Colleges and universities can cooperate with maritime enterprises and industry associations to formulate training programs jointly. For teachers with an English major background, arrange them to participate in maritime professional knowledge training courses, covering ship structure and equipment, maritime business processes, maritime regulations, etc. Through theoretical learning, on - site visits to ships and ports, and participation in enterprise practice projects, they can have an in - depth understanding of maritime industry knowledge. For teachers with a maritime major background, carry out training to improve English teaching methods and language skills, invite English education experts to give lectures and training, organize teachers to participate in English teaching seminars, observe excellent English teaching demonstration courses, etc., to learn advanced English teaching concepts and methods and improve English teaching ability. For example, a maritime vocational college cooperated with local shipping enterprises to provide a three - month enterprise practice training for teachers with an English major background. Teachers went to sea with ships in the enterprise, personally experienced the maritime work process, learned the practical application of maritime professional terms, and achieved good results. At the same time, colleges and universities should encourage teachers to learn independently, provide corresponding learning resources and support, such as setting up interdisciplinary learning scholarships, and reward teachers who perform well in interdisciplinary learning to encourage them to continuously improve their interdisciplinary knowledge literacy.

5.1.2. Optimization of the Path to Improve Digital Teaching Ability

Optimize the path to improve digital teaching ability and improve training effectiveness. In the design of training content, it is necessary to closely combine the actual needs of maritime English teaching, and increase targeted content such as case analysis of the specific application of digital teaching tools in maritime English teaching and the design and development of maritime English digital courses. For example, training on how to use speech recognition software for maritime English speaking training and how to create online interactive courses with maritime characteristics. In terms of training methods, adopt diversified forms, including online - offline hybrid training, workshops, and practical operation training. Online training provides independent learning resources for digital teaching knowledge, while offline workshops organize teachers to conduct practical operations and case discussions, and invite experienced teachers to share successful digital teaching experiences. In practical operation training, provide teachers with a practice platform to allow them to apply the learned digital technologies in a simulated teaching environment, such as using virtual reality equipment to design maritime English teaching scenarios and using online teaching platforms to carry out complete teaching activities, and arrange professionals to provide on - site guidance. In addition, establish a follow - up service mechanism after training, regularly conduct return visits and guidance on teachers' application of digital teaching, timely solve problems encountered by teachers in actual teaching, and consolidate training results. At the same time, incorporate teachers' digital teaching ability into the performance appraisal system, and reward teachers who actively apply digital technologies in

teaching and achieve good teaching results to improve teachers' enthusiasm for participating in digital teaching ability improvement training.

5.2. Teaching Material Construction Strategies

5.2.1. Establishment of Dynamic Update Mechanism

Establish a dynamic update mechanism for maritime English textbook content to ensure that the textbook content keeps pace with the development of the industry. Set up a textbook content update team composed of maritime English teachers, maritime professional experts, and front-line personnel of maritime enterprises to pay attention to the latest regulations, policies and industry standards issued by the International Maritime Organization, as well as new developments and trends in maritime technology on a regular basis. For example, hold a team meeting every six months to review and update the textbook content. Timely integrate new maritime technical terms, business processes, regulations and policies into the textbook and replace outdated content. At the same time, use digital technology to realize partial dynamic updates of textbook content. Develop electronic textbooks with dynamic update functions, and timely push the latest industry information and learning materials through online platforms, so that students can obtain the latest knowledge at the first time. In addition, encourage teachers to independently compile supplementary teaching materials according to industry trends and actual teaching needs as a useful supplement to textbooks and distribute them to students.

5.2.2. Measures to Improve the Quality of Digital Teaching Materials

A series of measures should be taken to improve the quality of digital teaching materials. In terms of teaching material design, focus on the integration of multimedia elements and the development of interactive functions. Invite professional multimedia design teams to participate in the production of digital teaching materials, and organically integrate various media resources such as text, pictures, audio, video and animation to make the teaching content more vivid and attractive. For example, when explaining the operation of ship equipment in maritime English, insert videos and animations of equipment operation to allow students to understand the operation process more intuitively. At the same time, add interactive functions, such as setting up online tests, discussion areas, and role-playing links, to stimulate students' learning interest and participation. Establish a strict quality review mechanism for digital teaching materials, and set up a review team composed of educational experts, maritime professionals, and English teachers to conduct a comprehensive review of the content accuracy, typesetting standardization, and effectiveness of interactive functions of digital teaching materials. Only digital teaching materials that pass the review can be put into use to ensure the quality of teaching materials. Strengthen the copyright protection of digital teaching materials, and prevent piracy and infringement through technical means, such as encryption technology and digital watermarking. At the same time, improve the copyright awareness of teaching material developers, strengthen copyright management, protect the legitimate rights and interests of teaching material developers, and promote the healthy development of the digital teaching material market.

5.3. Strategies for Improving Teaching Methods

5.3.1. Systematic Teaching Method Design

The revolutionary impact of digitalization on education and teaching is mainly reflected in the structural reform of classroom teaching [5], which changes the roles and status of four elements: teachers, students, teaching content and teaching media [6]. Design a systematic maritime English teaching method, and reasonably select and combine teaching methods according to teaching objectives, teaching content and student characteristics. When the teaching goal is clearly to cultivate students' comprehensive application ability of maritime English, for maritime English knowledge with strong theoretical nature, such as maritime English grammar and maritime professional terms, the combination of lecture method and situational teaching method can be adopted. First, systematically impart knowledge through the lecture method, and then use virtual reality technology to create relevant maritime work scenarios, allowing students to communicate and practice in the scenarios to deepen their understanding and memory of knowledge. For teaching content with strong practicality, such as maritime English speaking training and maritime English writing training, the combination of project-based learning method and cooperative learning method is adopted. Teachers design the teaching content into specific projects, such as simulating English correspondence writing projects in maritime transportation business and English speaking communication projects in ship navigation. Students complete project tasks in groups. In the process of project implementation, students improve their comprehensive application ability of maritime English through accessing materials, discussing and communicating, and practical operation. At the same time, pay attention to the connection and transition between different teaching methods. After the completion of project-based learning, timely summarize and evaluate students' project results, guide students to reflect on the problems encountered in the project implementation process and solutions, and summarize and sublimate the experience and knowledge gained in project-based learning to lay a foundation for subsequent learning.

5.3.2. Deep Integration of Online and Offline Teaching

Promote the in-depth integration of online and offline teaching, and clarify the positioning and functions of online and offline teaching. Online teaching should focus on knowledge imparting and guidance for independent learning. Teachers release learning tasks such as teaching videos, learning materials and online tests through online teaching platforms, allowing students to carry out independent learning according to their own time and progress. At the same time, use the interactive functions of the online platform, such as online discussion areas and Q & A areas, to timely answer questions encountered by students in the process of independent learning and guide students to interact and communicate. Offline teaching focuses on practical operation, classroom interaction and personalized guidance. In classroom teaching, teachers organize group discussions, role-playing, case analysis and other activities to enable students to apply the knowledge learned online to actual scenarios, and improve students' practical ability and problem-solving ability. At the same time, teachers can provide targeted personalized guidance according to students' classroom performance and learning situation to help students make up for knowledge gaps and improve learning effects. In terms of

teaching content and teaching progress, realize the unified coordination of online and offline. When designing teaching content, teachers should fully consider the characteristics of online and offline teaching, reasonably allocate teaching content to online and offline teaching links, and avoid content repetition and disconnection. Formulate a unified teaching schedule to ensure that online and offline teaching progress is consistent, allowing students to learn in an orderly manner. In terms of teaching evaluation, establish an integrated online and offline evaluation system, and comprehensively and objectively evaluate students' learning effects by considering students' online learning results, offline classroom performance, homework completion, project results and other factors. For example, online learning results account for 40% of the total score, including the viewing time of learning videos, the results of online tests, and the activity of participating in online discussions; Offline learning results account for 60% of the total score, including classroom performance, homework completion quality, and project completion. In this way, students are encouraged to actively participate in online and offline learning and improve their learning effects.

6. Conclusion and Outlook

Under the background of vocational education digitalization, the construction and improvement of the "Three Teachings" collaborative education model of maritime English is of great significance for cultivating high - quality maritime professionals. Looking forward to the future, with the continuous in - depth development of vocational education digitalization, maritime English education will face more opportunities and challenges. In terms of technology application, emerging technologies such as artificial intelligence, virtual reality and blockchain will be further integrated into maritime English teaching, providing stronger support for the innovation of teaching models, the development of teaching resources and the reform of teaching evaluation. For example, artificial intelligence technology can realize real - time monitoring and intelligent tutoring of students' learning process, and provide personalized learning suggestions and resource recommendations according to students' learning situation; Blockchain technology can ensure the security and credibility of teaching data and realize the traceability and certification of learning achievements. In terms of teacher development, the construction of interdisciplinary and double - qualified teacher teams will become the focus. Teachers should not only have solid English and maritime professional knowledge, but also be proficient in digital teaching technology and have the ability of innovative teaching. Colleges and universities should strengthen cooperation with enterprises, and build a high - quality maritime English teacher team through teacher

enterprise practice and part - time teacher introduction. In terms of teaching material construction, digital and intelligent teaching materials will become the mainstream. The content of teaching materials will pay more attention to close integration with the actual needs of the industry, and realize dynamic update and personalized customization. At the same time, the internationalization level of teaching materials will continue to improve to meet the needs of maritime students to participate in international competition. In terms of teaching methods, student - centered personalized and diversified teaching methods will be more widely used, and the teaching model integrating online and offline will become more mature and perfect, focusing on cultivating students' independent learning ability, innovative thinking ability and practical application ability. In short, maritime English education needs to keep up with the pace of vocational education digitalization, continue to promote the innovation and development of the "Three Teachings" collaborative education model, cultivate more excellent international talents for China's maritime cause, and help China transform from a maritime country to a maritime power.

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