Empowering maritime English teaching practice through the integration of online and offline learning with virtual reality technology

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Abstract: The maritime system is an important component of the comprehensive transportation system, which plays an important role in maintaining water traffic safety and protecting the cleanliness of water environments in China. As an important means of communication and exchange in the maritime field, maritime English holds significant importance for the development of maritime affairs. In order to further strengthen the construction of a maritime power, it is necessary to comprehensively improve the quality and efficiency of maritime English education. In order to address the challenges faced by current maritime English education, relevant personnel should use virtual reality technology to build an integrated online and offline teaching system, achieving comprehensive expansion of maritime English teaching. Therefore, based on specific cases and analysis of relevant concepts, this article will explore the path of integrating online and offline teaching of maritime English using virtual reality technology from the fields of personalized learning, situational learning, structured learning, etc., in order to provide effective teaching experience and practical reference for maritime English teachers and to provide a continuous supply of high-quality composite maritime talents for China.

Keywords: virtual reality technology; maritime English; online and offline integration; blended teaching

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Introduction

The development of any field cannot be separated from the growth and development of talents. As an important component of the comprehensive transportation system, the cross-language communication ability of maritime talents is particularly crucial in the maritime field. Only when maritime talents possess strong language exchange and communication skills can the safety of maritime personnel and ships be ensured. Therefore, against this backdrop, Cheng Ping believes that maritime English should be taken as the backbone course for cultivating maritime talents' English proficiency, and its teaching mode should be gradually improved. Traditional maritime English classroom teaching faces the problems of not meeting students' English learning needs and lacking strong interactivity. Therefore, by reasonably utilizing virtual reality technology to address these issues, we can achieve improvement in students' learning quality. Therefore, this article will combine virtual reality technology, based on the actual needs of students, to actively explore the construction strategy of an online and offline combined maritime English teaching mode.

1.Exposition of relevant concepts

1.1 Maritime English

Maritime English is a type of professional English that differs from traditional English teaching. It is not merely limited to simple language communication, but encompasses a system of professional terminology application in scenarios such as marine engineering and maritime inquiries. The definition of maritime English can be divided into two aspects: broad and narrow. In a narrow sense, maritime English is a language that must be mastered by professionals engaged in fields related to ship engineering and maritime transportation. In a broad sense, maritime English not only involves ship engineering and maritime transportation but also extends to financial and legal fields such as maritime law and international trade. Its scope is wide and content is complex, but fundamentally, it involves communicating in English about issues and matters related to maritime professions.

According to the concept of maritime English, it has the following language characteristics: firstly, it has a wide range of professional vocabulary. Maritime activities involve multiple fields and have extremely high requirements

for accuracy and safety. The incorrect use of a word may have a serious impact on the activities. Therefore, maritime English particularly emphasizes the accuracy of use and the standardization of expression. Secondly, there are many long and difficult sentences. In the communication and exchange of maritime English and maritime activities, depending on the different expression habits at home and abroad, seafarers need to flexibly change their language expression methods according to the actual needs of the situation. Therefore, long and difficult sentences may be widely used in maritime activities. Thirdly, there are a large number of polysemous phenomena. Due to the fact that maritime English covers many aspects such as navigation, logistics, finance, and law, there are significant differences in the interpretation and use of the same term in different fields. For example, "Charter" may refer to "chartering a ship" in maritime trade, while in the legal field it refers to "constitution". Therefore, seafarers need to reasonably distinguish the actual meaning of polysemous words based on the actual situation. Fourthly, the pronunciation is different. Unlike commonly used English, maritime English has a different pronunciation in French. For example, "Mayday" in common English refers to Mayday, while in maritime English it can be regarded as a distress signal.

1.2 Virtual reality technology

Virtual reality technology is one of the important representatives in China's scientific and technological field, which specifically includes computer, electronic information, and simulation technology. Its basic implementation relies on computer technology and integrates high-tech means such as 3D graphics, multimedia technology, and simulation technology to create a realistic virtual world with multiple sensory experiences such as 3D vision, touch, and smell for users, allowing them to be in the virtual world and feel like they are there. Applying virtual reality technology to the field of education has the following advantages compared to traditional classroom teaching models: firstly, it breaks through the limitations of time and space. The traditional teaching mode is limited to the classroom and constrained by fixed time and location, while virtual reality technology allows students to enter virtual learning situations anytime and anywhere, greatly expanding the spatial and temporal dimensions of learning; Secondly, it has a greater sense of realism. The traditional teaching mode leads to students being unable to concentrate on theoretical learning for a long time. Instead, virtual reality technology can create a real situation for students to learn and apply knowledge content in real situations, avoiding the attention shift caused by long-term learning. Finally, put students at the center. In the context of the new curriculum reform, teachers are required to adhere to the subject status of students in classroom learning, and the use of virtual reality technology can effectively play the center position of learners, allowing students to experience actual communication situations from a first person perspective in real situations, helping students internalize and transfer knowledge points, and achieve the best learning effect.

2.Pathways for Integrating Online and Offline Maritime English Teaching through Virtual Reality Technology

2.1 Personalized learning

Traditional maritime English teaching often adopts a one-size-fits-all approach, ignoring the differences in students' English learning and comprehension abilities. However, the rational use of virtual reality technology can achieve "promoting the transformation of education and services towards personalization, precision, and intelligence through full-scene integration." The specific path is as follows:

Taking the study of "Standard Maritime Terminology" as an example, teachers assign preview tasks based on the teaching content. Students carry out preview and consolidation around the teaching tasks assigned by the teacher. During the preview process, due to differences in students' learning abilities, they will inevitably have doubts about different issues. Teachers can require students to upload their doubts to the online teaching platform, and provide one-on-one single-channel teaching services for students. In the teaching services, teachers provide targeted online teaching for students based on their doubts. For example, student A cannot fully grasp the relevant content related to the interpretation of meteorological reports and cannot use various symbols in meteorological reports according to

changes in actual scenarios. Therefore, teachers can reasonably utilize virtual reality technology, collect Internet resources, and immediately generate maritime meteorological scenarios for students, allowing them to comprehensively analyze meteorological conditions in an immersive experience and correctly understand the meanings of relevant terms and symbols in real practice. In addition, besides targeted online teaching services, teachers can also utilize a combination of online and offline methods to build multiple service paths. For example, if student A has problems with the interpretation of meteorological reports, the teacher uses the online teaching platform to help students solve these doubts. Similarly, if student B has problems with the learning of ship communication equipment operation and communication, the teacher also uses the online teaching platform to help students solve these doubts. Meanwhile, offline, the teacher can explain knowledge about ship communication equipment operation and communication to student A and knowledge about meteorological report interpretation to student B. Through targeted teaching services and a combination of online and offline multi-to-multi teaching services, an effective online and offline integrated teaching model can be established to achieve common progress for students.

Additionally, based on the actual needs of students, teachers should create personalized virtual reality teaching resources. Teachers can extensively collect Internet resources through big data technology, accurately grasp the keywords of students' learning needs, and search for online VR resources. On this basis, editing and splicing can be carried out to achieve instant answers to questions. Furthermore, teachers can also conduct on-site filming, making rational use of the panoramic cameras provided by the school. They can use these cameras to collect and create virtual reality scene materials anytime and anywhere during daily life and internship learning, and on this basis, produce VR teaching materials, allowing students to truly experience different scenes through VR and improve their English application abilities within these scenes.

2.2 Situational learning

The application of virtual reality technology in maritime English teaching can effectively realize the "student-centered" teaching philosophy. By utilizing virtual reality technology, teachers can combine online and offline learning, create a contextualized learning space for students, and provide learners with an immersive learning experience.

For instance, when learning "Emergency Response for Ships in Distress", teachers first utilize VR resources to impart and explain theoretical foundations. By leveraging virtual reality technology, students can actually identify their learning deficiencies, thereby clarifying the teaching needs of teachers. For example, through real-life scenarios, students discover in practice that they cannot effectively use maritime English to communicate with rescue and emergency personnel. Therefore, after the scenario ends, students upload their learning problems to the online teaching platform, and teachers identify the direction for future VR teaching resource selection. In this process, students play a subjective role, providing teachers with a clear direction for future teaching and offering a design model for VR learning tasks. Subsequently, teachers integrate various VR resources based on students' learning situations, directly creating real language application scenarios for students. These scenarios can be either real-life or gamified. Taking the real-life scenario as an example, teachers can directly utilize virtual reality technology to create a ship distress scenario, where there are rescue personnel from different countries. Students need to use English knowledge reasonably to communicate with rescue personnel from different countries, allowing them to familiarize and adapt to English accents and maritime English expressions from various countries in practice. In offline teaching, teachers can also create gamified scenarios for students using virtual reality technology. These scenarios do not require students to wear VR head-mounted displays. In gamified scenarios, students can independently choose the difficulty level of the game, the nationality and number of rescue personnel, as well as the weather conditions of the scenario, allowing students to experience ship rescue and emergency response from a first-person perspective in the gamified scenario. This enables students to autonomously learn and reinforce their grasp of English knowledge in the

gamified scenario. At the same time, students can use the gamified scenario to launch online challenges, comparing the speed and quality of emergency response to earn points. Teachers provide material rewards to students based on these points. Through the combination of online and offline Maritime English teaching modes, students can effectively improve their English application abilities in real-life situations, achieving a leap from theory to practice, laying the foundation for students to make a leap from virtuality to reality.

2.3 Structured learning

Structured learning refers to the reasonable formulation of teaching objectives, arrangement of learning tasks, explanation of maritime English theoretical knowledge, presentation of learning outcomes, and teacher evaluation based on students' learning situations and abilities, following the principle of gradual progress. Teachers should integrate evaluation throughout the online and offline teaching mode, assess students' English learning situations in real time, adjust teaching strategies in a timely manner, and gradually increase the difficulty of classroom teaching by enhancing the authenticity of scenarios and the difficulty of language application. Through the structured process, students are helped to gradually improve their autonomous learning ability and language communication and application ability. The specific process is as follows:

In terms of determining teaching objectives, teachers should formulate targeted teaching goals for students based on their previous learning situations and the overall learning abilities of their class. For example, if the students in the class have deficiencies in theoretical knowledge, the teacher can design a teaching objective as "Utilizing virtual reality technology, allowing students to deeply understand the application of various maritime English terminology in real-life situations through authentic scenarios, thereby solidly grasping theoretical knowledge." Alternatively, if the students in the class have deficiencies in the practical application of theoretical knowledge, the teacher can design a teaching objective as "Utilizing virtual technology, reasonably applying maritime English theory from a first-person perspective in virtual scenarios, communicating and interacting according to actual situations, and improving the practical application ability of maritime English.".

In arranging learning tasks, teachers should ensure that teaching tasks are closely aligned with teaching objectives, avoiding deviations in teaching direction due to the disconnection between teaching tasks and teaching objectives. At the same time, the teaching tasks designed by teachers cannot be divorced from students' cognitive level and learning ability, nor can they be too simple and lack challenging. Teachers effectively stimulate students' learning motivation through reasonable learning tasks.

In terms of explaining theoretical knowledge of maritime English, teachers should make full use of online and offline resources to help students broaden their theoretical knowledge horizons. Online, teachers can push rich and diverse maritime English learning materials to students according to teaching objectives and learning tasks, while creating VR scenarios for students. For example, when learning about ships, teachers can use the Internet to collect VR resources related to ships, allowing students to freely visit the interior and component structure of ships from a first-person perspective through VR resources online, accompanied by English audio, so that students can quickly understand and master maritime English through intuitive experience, and efficiently learn English knowledge related to ship emergency rescue, search and rescue, etc. Offline, teachers can utilize the simulation experiment teaching center within the school to lead students to apply maritime English in real-life scenarios in groups. Teachers can guide students to carry out role-playing activities, allowing students to play relevant roles in maritime activities, restoring language communication scenarios as much as possible from a first-person perspective.

In terms of learning achievement display and evaluation, before the end of the class, teachers should conduct a knowledge test based on the learning progress of students in this class. The knowledge test should include two forms. The first is online knowledge test, where teachers use virtual reality technology to create real-life scenarios based on students' learning progress. Before students wear VR head-mounted devices, teachers should help them clarify the task of this knowledge test, such as communicating with emergency personnel in the scenario to make them aware of

the emergency rescue task, or communicating with traders to make them aware of the trade objectives. Then, teachers monitor students' VR scenarios in real time and make comprehensive evaluations of their communication, language expression, emotional attitudes, etc. The second is offline knowledge test, which is mostly a written test that requires students to fill in correct answers. The design of written test questions requires teachers to extensively collect relevant resources from the Internet, design an online test question bank, and randomly select questions from the online test question bank for the written test. By integrating online and offline evaluation designs, a comprehensive evaluation of students' theoretical mastery and application can be made, providing comprehensive feedback for students' learning. In addition, teachers should also collect and organize students' classroom learning situations, including students' classroom interaction, classroom sign-in, etc., so that students can comprehensively reflect on and summarize their learning situation, thereby clarifying their future direction of maritime English learning.

3.Summary

In summary, to achieve our goal of becoming a maritime powerhouse, it is imperative to expedite the advancement of programs aimed at cultivating international maritime talents. Language serves as the foundation for talent exchange and communication, hence enhancing the English communication skills of maritime talents is a crucial aspect of fostering such international talents. Given the current challenges in maritime English teaching, teachers must innovatively utilize virtual reality technology to empower both online and offline maritime English teaching models. This paper, grounded in virtual reality technology, explores three approaches: personalized learning, contextualized learning, and structured learning. It provides effective empirical references and practical support for maritime English educators, assisting them in constructing an educational model that integrates "VR+OMO+maritime English." This approach effectively enriches the classroom experience and enhances the resilience of the educational system. Looking ahead, as globalization deepens, the significance of maritime English education will become increasingly prominent. By leveraging virtual reality technology to empower both online and offline maritime English teaching models, we can achieve the sharing of teaching resources and services, ultimately elevating the quality of maritime English education in China.

References：

[1] Li Tianjiao,Xi Yongtao.Evaluation of Chinese Seafarers'Maritime English Communication Ability[J].Journal of Shanghai Maritime University,2024,45(02):97-103+118.

[2] Wei Peng.Reflections and Explorations on Maritime English Education in the Context of Building a Strong Maritime Power[J].Pearl River Water Transport,2022,(16):91-94.

[3] Guo Xingrong.Research on Constructing an Online and Offline Integrated Teaching Model for Maritime English Empowered by Virtual Reality Technology[J].Foreign Language Journal,2023(1):97-104.

[4] Zhong Huiyue.AR Technology Empowers English Classrooms,Smart Education Boosts Subject Development-Teaching Design for Unit 5 Animals in Danger(Story)[J].China Information Technology Education, 2025(5):11-13.