

Exploration and Practice of Three-Dimensional Textbook Construction for Higher Vocational Maritime English under the Digital Background

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Abstract: In the current era swept by the digital wave, the teaching of maritime English in higher vocational colleges urgently needs innovation and reform. This paper focuses on the construction of three-dimensional textbooks for higher vocational maritime English under the digital background, deeply discusses its necessity, analyzes the current situation and existing problems, proposes targeted strategies, aiming to provide a useful reference for improving the teaching quality of higher vocational maritime English and cultivating high-quality maritime talents who meet the needs of the times.

Keywords: Digitalization; Higher Vocational Maritime English; Three-dimensional Textbooks; Exploration and Practice.

1. Introduction

The advent of the digital age has brought unprecedented opportunities and challenges to the field of education. The state has continuously increased its promotion of digital education, and a series of relevant policies and documents have been issued. The "Opinions on Strengthening and Improving Vocational Education in the New Era" issued by the Ministry of Education clearly states that it is necessary to "accelerate the informatization of vocational education" and emphasizes the important role of digital technology in educational reform. The "Education Informatization 2.0 Action Plan" also proposes the goal of building a new model of "Internet + vocational education" and encourages the use of modern information technologies such as big data, cloud computing, and AI to promote innovation in education and teaching methods.

In the innovation of vocational education teaching reform, textbooks come first. Textbooks are the carrier of teaching content and the basis of teaching activities. They are an important way to implement moral education. Further reforming and developing supporting teaching resources and carriers can better add value and empower vocational education. In the teaching of higher vocational maritime English, high-quality and high-level textbooks play a positive role for teachers, students, teaching processes, and teaching effects. The limitations of traditional textbooks with outdated content and lack of interactivity and inability to keep up with the steps of the times are increasingly prominent. Constructing a three-dimensional textbook that is in line with the times and full of vitality has become an urgent matter.

2. The Necessity of Constructing Three-Dimensional Textbooks for Higher Vocational Maritime English under the Digital Background

Three-dimensional textbooks are a new form of textbooks that integrate multiple teaching resources based on traditional paper textbooks, use modern information technology, and provide all-round and multi-level support for teaching. On the basis of the original paper textbooks, enrich the matching of

digital resources and realize the combination of online and offline resources, so that teaching design is more in line with the current situation of maritime vocational education, and talent training goals can better conform to the cognitive development laws of higher vocational students.

(1) Meeting the needs of the digital transformation of the maritime industry

In today's era, the maritime industry is undergoing profound and comprehensive digital transformation at an unprecedented speed. A series of advanced technologies, such as high-precision navigation systems, real-time and efficient communication technologies, and intelligent ship management software, have been widely and deeply applied in the maritime field, putting forward higher requirements for maritime personnel. They not only need to have solid professional knowledge and skills but also must be able to skillfully use English to operate and accurately understand these complex digital tools. The operation interfaces, instruction descriptions, and technical documents involved in maritime equipment and tools are mostly presented in English, which contains a large number of professional terms, specific expressions, and industry standard terms. In the advanced Electronic Chart Display and Information System (ECDIS), maritime personnel need to accurately understand terms such as "route planning" and "navigational warnings" in order to effectively design routes and sail safely. At the same time, when communicating with international shipping teams or relevant institutions, mastering language communication skills such as "Ship Reporting Systems" and "Vessel Traffic Services" is also crucial.

Three-dimensional textbooks can effectively integrate a wealth of digital maritime English materials. Through careful selection and arrangement, they can provide students with learning content that is closer to actual work scenarios and the latest industry developments. The construction of maritime English three-dimensional textbooks that meet the needs of the digital transformation of the maritime industry can ensure that students are exposed to the most real and cutting-edge applications of maritime English during the learning process and lay a solid foundation for them to smoothly adapt to the digital work environment of the maritime industry in the future.

(2) Meeting the demands of students' diverse learning styles

In the higher vocational education system, students have significant individual differences in learning preferences, cognitive styles, and learning rhythms. Traditional single teaching models and textbooks are difficult to meet the differentiated learning needs of all students. Digital three-dimensional textbooks cleverly combine multiple learning resources and models, providing students with rich choices. The combination of three-dimensional textbooks and online platform teaching breaks the limitations of time and space. Students can learn at any time and anywhere according to their schedules. Diverse learning content and learning task lists can provide students with feedback in time and help them discover their knowledge loopholes and deficiencies. Virtual scene simulation allows students to feel as if they are in a real maritime work environment, enhancing their practical ability and ability to deal with emergencies. Diversified learning methods enable each student to flexibly choose the learning method that suits them best according to their own needs and characteristics, thereby effectively stimulating their learning enthusiasm and initiative and improving learning effects.

(3) Improving the quality and effectiveness of maritime English teaching

In maritime English teaching, the integration of multimedia elements undoubtedly injects new vitality and vitality into the entire teaching process. Vivid animations can transform abstract language knowledge into intuitive visual presentations, helping students better understand and remember; realistic videos can allow students to experience the actual scenes in maritime work vividly, enhancing their language perception and application abilities; and interactive learning activities break the traditional one-way knowledge transmission model in teaching and encourage students to actively participate, think actively, and practice. When learning to interpret meteorological reports in maritime English, by sending real weather reports through virtual simulation NAVtex and combining interactive question answering and group discussions, students can understand meteorological terms and report formats more deeply and improve their listening and speaking abilities at the same time. This immersive learning environment can comprehensively strengthen students' abilities in listening, speaking, reading, writing, and translation, effectively making up for problems such as lack of real language environments and single teaching forms in traditional teaching methods. Thus, it significantly improves the quality of maritime English teaching and enables students to better master this professional language and be fully prepared for future career development.

3. The Current Situation and Main Problems of Textbook Construction for Higher Vocational Maritime English

(1) Disconnection between textbook content and actual maritime scenes

In most of the current higher vocational maritime English textbooks, there is a problem that the textbook content overly focuses on theoretical elaboration and is not closely connected with real maritime work scenes and operation processes. This disconnection makes students understand knowledge more in an abstract theoretical framework during

the learning process, lacking intuitive feelings and specific cognition of practical applications. In the teaching content involving maritime professional knowledge, textbooks may only simply introduce relevant terms and processes without detailing the language points that may be encountered in various complex situations in actual work. This leads to students feeling helpless when facing real maritime scenes after graduating and entering actual jobs, and it is difficult for them to quickly and accurately transform the learned theoretical knowledge into practical operational abilities.

(2) Unsatisfactory quality and quantity of digital resources

With the rapid development of information technology, some higher vocational maritime English textbooks have begun to try to introduce digital elements to enrich teaching resources and improve teaching effects. However, in this process, many problems have been exposed.

First, the quality of resources is uneven. The video quality of some textbooks is blurry, affecting students' observation and understanding of key details; the audio is not clear, and there are problems such as noise or inappropriate speech speed, which is not conducive to students' listening training. Second, the quantity of digital resources is seriously insufficient. For example, in some textbooks, online practice questions are not only limited in quantity but also lack pertinence and systematization, and cannot fully cover all knowledge points and skill points of maritime English. This makes it difficult for students to obtain sufficient and effective training when using these resources for independent learning and cannot meet their needs for personalized learning and consolidating knowledge.

(3) Lagging textbook updates behind industry dynamic development

The maritime field is an industry where technologies are changing with each passing day and regulations and standards are constantly emerging and being updated. New navigation technologies, communication methods, and environmental protection requirements are constantly emerging, and international maritime regulations and standards are also continuously revised and improved. However, some higher vocational maritime English textbooks are relatively slow in updating. This knowledge lag makes students find a large gap between what they have learned and the actual job requirements when they enter the job after graduation, making it difficult for them to quickly adapt to and respond to industry changes and unable to meet the high standards and strict requirements of actual work.

(4) Teachers' digital literacy and textbook development ability need to be improved

In the current surging digital wave, some higher vocational maritime English teachers seem powerless in mastering digital technologies. They may be proficient in operating common office software in daily teaching, but they know little about advanced software and tools designed specifically for textbook development, let alone being proficient in them. In the practice of textbook development, this has caused a series of problems.

Due to unfamiliarity with technology, teachers may not be able to accurately grasp the rhythm and focus of creating multimedia teaching resources, making it impossible for digital resource content to effectively convey teaching points. When using interactive teaching tools to create challenging exercise modules, due to lack of sufficient experience and skills, teachers may find it difficult to reasonably set difficulty gradients and feedback mechanisms, resulting in a poor

learning experience for students. These deficiencies ultimately lead to the rough design of digital textbooks and incomplete functions, unable to fully meet the diverse learning needs of students.

(5) Insufficient financial and technical support

Creating high-quality three-dimensional textbooks for higher vocational maritime English is like building a magnificent building. It requires sufficient financial investment to purchase various "cornerstones" and "beams", that is, advanced software, sophisticated equipment, and professional technicians. However, according to statistical surveys, some higher vocational colleges are in short supply of resources in this key field. At the same time, the update of hardware equipment is also stagnant due to insufficient funds. Outdated projection equipment cannot present advanced digital resources of textbooks, seriously affecting work efficiency and quality. In addition, without the escort of professional technical experts, once technical difficulties such as system compatibility and data security are encountered in the process of textbook development, it will fall into a deadlock and cannot be properly resolved for a long time, which will slow down or even hinder the overall process of textbook construction.

(6) Lack of scientific and perfect textbook evaluation and feedback mechanism

At present, in the field of three-dimensional textbooks for higher vocational maritime English, evaluation indicators are like lighthouses in the fog, vague and lacking clear guidance. So far, a comprehensive, objective and authoritative evaluation standard has not been formed.

For multimedia content in textbooks, such as video quality, audio quality, and the degree of integration of teaching content and multimedia forms, there are no detailed and quantifiable evaluation criteria. Similarly, in the aspect of textbook interaction design, there are also no clear and definite standards for measuring student participation, tracking learning effects, and evaluating personalized learning support.

Not only that, but the feedback channels during the use of textbooks are usually narrow and unsmooth. Serious problems such as outdated textbook content, disconnection from practical applications, and defects in digital functions found during the use of textbooks are also difficult to quickly and effectively convey these voices to textbook developers. Problems accumulate for a long time and cannot be dealt with and improved in time, seriously affecting the quality and practicability of textbooks, and ultimately harming students' learning effects and future career development.

4. Strategies for Constructing Three-Dimensional Textbooks for Higher Vocational Maritime English under the Digital Background

The content compilation of digital three-dimensional textbooks for higher vocational maritime English needs to follow the laws of education and teaching, meet the requirements of talent training programs and teaching syllabuses, have a strict structure and strong logic, and support the whole process of teaching in an information environment. It should meet the following three requirements: there is a significant difference in visual presentation effect from traditional textbooks; it can intuitively reflect the characteristics of vocational education; it can intuitively

reflect the idea of taking ability cultivation as the main line.

(1) Optimize textbook content oriented by career needs

An important feature that distinguishes vocational education from general education is that it is oriented towards vocational positions and cultivates high-quality technical and skilled talents. In order to make higher vocational maritime English textbooks more practical and targeted, before textbook development, in-depth research on the actual work needs of maritime enterprises should be carried out. Through face-to-face exchanges and in-depth interviews with front-line maritime workers, enterprise managers, and industry experts, comprehensively understand their language skill points in daily work and the special requirements for language use in the field of professional English. Ingeniously integrate the latest maritime technologies such as the latest English operation instructions for bridge equipment, intelligent pilotage business process terms, and tense moments of maritime emergency rescue into various chapters and modules of textbooks. Moreover, it is necessary to focus on cultivating students' ability to use English to communicate effectively and solve practical problems in diverse maritime situations. For example, create response scenarios for maritime emergencies and train students to report accident situations and coordinate rescue operations clearly and accurately in English. Through these efforts, students can quickly adapt to the needs of job positions after graduation and become maritime talents with solid English proficiency and professional qualities.

(2) Build high-quality digital teaching resources centered on teaching needs

New form textbooks are a bridge connecting teaching and learning. The objects they face are teachers and students. They not only need to meet the requirements of knowledge imparting but also need to solve practical problems between teaching and learning, that is, they need to solve the pain points of teachers and students. Taking student development as the center is a common concept of higher education in the world. Teaching is the last step to implement this concept. In the digital age, injecting high-quality digital elements into higher vocational maritime English textbooks is extremely important. This means actively introducing high-definition video materials so that students can clearly observe every detail of maritime operations; providing audio materials with pure and clear sound quality to help students hone their keen listening perception; building highly interactive online learning modules to stimulate students' active participation and active exploration.

(3) Establish a perfect and continuous teaching resource update mechanism based on international industry development

In the process of screening and integrating resources, it is necessary to ensure their accuracy, authority, and timeliness. For key contents such as maritime regulations and technical standards, a strict update mechanism should be established to ensure that the relevant information in textbooks is synchronized with the latest developments in the industry. For example, when the international collision avoidance rules at sea change, they should be quickly incorporated into textbooks and their impacts on maritime business and English communication should be explained in detail. At the same time, using big data and artificial intelligence technologies, provide students with personalized learning recommendations and adaptive practice content, so that each student can obtain the most suitable learning resources and

guidance according to their own learning progress and characteristics.

(4) Strengthen teacher training and team cooperation aiming at improving digital capabilities

In order to improve the ability of higher vocational maritime English teachers in developing digital textbooks, various professional training activities should be organized in a planned and targeted manner. It should not only cover cutting-edge knowledge and practical skills of information technology, such as the application of virtual reality technology and the operation of intelligent teaching platforms, but also pay attention to the update and innovation of teaching design methods, so that teachers can learn how to organically combine digital means with teaching goals and design attractive and efficient teaching plans.

Encourage teachers to break the traditional model of working alone and form a closely cooperative team to jointly participate in the planning, writing, and production process of textbooks. In the team, teachers with different backgrounds and specialties can communicate and inspire each other. Teachers who are good at theoretical research are responsible for ensuring the scientificity and systematization of textbook content. Teachers with rich practical experience can provide real and vivid cases and scenarios. Teachers who are familiar with educational technology focus on ingeniously integrating digital elements into textbooks to achieve the perfect integration of technology and teaching. Through the joint efforts of the team, give full play to the collective wisdom and advantages to create maritime English textbooks that not only conform to teaching laws but also are full of innovative vitality.

(5) Expand funding and technical support channels in the direction of diversified resource integration

In order to promote the high-quality construction of three-dimensional textbooks for higher vocational maritime English, we need to actively expand diversified sources of funding and strong technical support. On the one hand, actively strive for special project grants for research topics established by government departments to support textbook research and development and teaching reform projects in the field of maritime education. At the same time, establish close cooperative relationships with socially responsible enterprises and obtain necessary funds and technical resources through enterprise sponsorship and cooperation. In addition, donation initiatives can also be launched to the community to attract individuals and groups who care about the development of maritime undertakings to contribute to textbook construction.

On the other hand, strengthen in-depth cooperation with professional technology companies. With the rich experience and advanced achievements of technology companies in educational technology research and development, introduce cutting-edge educational technologies and platforms such as intelligent learning management systems and virtual simulation training platforms. Through the application of these technical means, improve the development quality and efficiency of textbooks and create a more high-quality, convenient and efficient learning experience for students.

(6) Improve the textbook evaluation and improvement mechanism with the goal of improving quality

Constructing a comprehensive, detailed, scientific and reasonable textbook evaluation index system is the key to ensuring the quality of three-dimensional textbooks for higher vocational maritime English. This system should cover

multiple dimensions such as the richness and accuracy of textbook content, the rationality and innovation of teaching design, and the advancement and stability of technology application. In terms of content, evaluation indicators should include whether the explanations of professional terms are clear and accurate, whether the selection of actual cases is representative, and whether the exercise questions can effectively test students' learning results. In terms of teaching design, it is necessary to consider whether the arrangement of teaching processes conforms to students' cognitive laws, whether the selection of teaching methods is diversified and inspiring, and whether the design of learning activities can stimulate students' interest and initiative. Through various methods such as questionnaires, classroom observations, and online discussions, an effective mechanism for regularly collecting feedback from students and teachers on the use of textbooks is established, and their opinions and suggestions on textbooks are widely solicited. According to the feedback, quickly organize the textbook writing team to revise and improve the textbook in a targeted manner. For example, if students reflect that the content of a certain chapter is too difficult, the knowledge points should be reorganized and decomposed, and the teaching methods and exercise difficulty should be adjusted; if teachers propose that a certain digital function of the textbook is inconvenient to operate, communicate with technical personnel in time to optimize the system design and user interface. Through continuous improvement and optimization, ensure that textbooks always maintain good applicability and effectiveness and provide strong support and guarantee for students' learning.

5. Conclusion

Under the background of the digital era, the development, application and improvement system construction of three-dimensional textbooks for higher vocational maritime English are in their infancy, which has brought unprecedented opportunities as well as many challenges. Whether it is the improvement of teachers' digital literacy and textbook development ability, the strengthening of financial and technical support, or the improvement of textbook evaluation and feedback mechanisms, each problem needs to be taken seriously, detailed solutions need to be formulated and resolutely implemented and put into practice. Adopting effective strategies and actively putting them into practice is the key to achieving the goal of constructing three-dimensional textbooks for higher vocational maritime English. We need to optimize textbook content oriented by career needs, carefully create high-quality digital teaching resources, strengthen teacher training and team cooperation, actively expand funding and technical support channels, and establish and improve a textbook evaluation and continuous improvement mechanism. Moreover, in the process of practice, we should continuously summarize experience and lessons and adjust strategies and methods in time according to the actual situation.

In the future development path, we should always maintain a keen insight and continuously pay attention to the latest developments in the maritime industry and the diverse needs of students. With the rapid development of maritime technology and the continuous changes in the international shipping market, textbook content needs to be updated in time to ensure that the knowledge students learn is closely connected with actual work. Moreover, different students have differences in learning abilities, interests and hobbies,

and career plans. The design and development of textbooks should fully consider these factors and provide a more personalized learning experience. Only by continuously improving and optimizing three-dimensional textbooks can we lay a solid foundation for cultivating high-quality maritime talents with solid professional knowledge and excellent English proficiency who meet the needs of the times. This is not only an improvement in education quality but also a strong talent support and guarantee for the vigorous development of China's maritime industry.

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