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Research on the Innovation of Maritime English Teaching Mode in the Big Data Environment

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Abstract: With the rapid development of the global shipping industry, maritime English teaching faces new challenges. This paper focuses on the innovation of the college maritime English teaching mode in the big data environment, and explores innovative strategies such as flipped classrooms, VR/AR technology-driven situational simulations, personalized learning path design, and multi -dimensional evaluation systems. The research shows that these big-data-based teaching modes can effectively improve students' language application ability, situational response ability, and cross-cultural communication ability, providing a new path for cultivating high-quality maritime talents.

Keywords: Big Data; College Maritime English; Teaching Mode.

1. Introduction

As one of the core courses of the navigation technology major, the teaching quality of maritime English is directly related to students' future competitiveness in the international shipping market. However, traditional maritime English teaching often has problems such as single teaching resources, outdated teaching methods, and difficulty in meeting students' personalized needs. The rise of big data technology provides a new opportunity for the innovation of the maritime English teaching mode. Based on the analysis of massive data, it is possible to accurately locate students' learning difficulties, optimize teaching content, and achieve personalized teaching, thus significantly improving the teaching effect. Therefore, exploring the innovation of the maritime English teaching mode in the big data environment is of great significance for improving teaching quality and cultivating high-quality talents who can adapt to the future development of the shipping industry.

2. The Necessity of Innovating the College Maritime English Teaching Mode in the Big Data Environment

Today, with the rapid development of the global shipping industry, innovating the college maritime English teaching mode in the big data environment has become an urgent task. Although the traditional teaching mode has laid a solid foundation, in the face of the rapidly changing navigation technology and international maritime rules, its limitations are becoming increasingly prominent. Maritime English requires students not only to master language skills but also to possess practical application ability and cross - cultural communication ability [1]. However, the current teaching methods are difficult to meet these diverse needs, resulting in problems such as students' insufficient practical ability and lack of innovative thinking. The emergence of big data technology provides new possibilities for solving these problems. It can accurately capture students' learning trajectories, provide data support for personalized teaching, and effectively improve the teaching effect. At the same time, big data analysis helps educators better grasp the changing trends of industry needs, adjust curriculum settings and teaching content in a timely manner, and ensure that teaching is closely integrated with actual work needs. In addition, in the context of the increasingly complex global shipping industry, it is crucial to cultivate students' response and decision - making abilities. Big - data - driven simulation training and situational teaching provide students with a near - real learning environment, greatly improving their practical skills. Therefore, innovating the college maritime English teaching mode in the big data environment is not only an inevitable trend of the times but also an important way to improve teaching quality, cultivate high - quality maritime talents, and enhance international competitiveness.

3. Innovation Strategies for the Maritime English Teaching Mode in the Big Data Environment

(1) Flipped Classroom: An Innovative Maritime English Learning Mode Based on Big Data

In the big data environment, the flipped classroom model has brought a revolutionary change to maritime English teaching. This innovative strategy makes full use of the advantages of big data technology. By deeply analyzing students' learning behaviors, preferences, and progress, it accurately designs a more personalized and efficient teaching plan [2]. In the flipped classroom, the role of students has undergone a fundamental change, from passive knowledge recipients to active learning participants. Before class, students use carefully designed online resources, such as video lectures, interactive exercises, and virtual simulations, to independently learn the basic knowledge and vocabulary of maritime English. This preview mode not only allows students to learn at their own pace and comprehension ability but also cultivates their autonomous learning ability and time management skills. And classroom time is fully utilized for more valuable activities, such as in - depth discussions, question - answering sessions, case analyses, and practical drills. For example, when discussing maritime safety English, students can analyze real - life shipwreck accident reports and simulate emergency communications using the knowledge they have learned. Teachers play the role of guides and facilitators in this process. By designing interactive sessions, organizing group discussions, etc., they stimulate students'

critical thinking and creativity. Big data analysis enables teachers to grasp the learning status of each student in real - time and adjust teaching strategies in a timely manner. This flipped classroom model not only improves learning efficiency but also enhances the interaction between teachers and students and among students, creating a more active and productive learning atmosphere.

(2) VR/AR Technology - Driven Maritime Situational Simulation and Practical Training

In the innovation of big -data - driven maritime English teaching, the situational simulation and practical drills integrating virtual reality (VR) and augmented reality (AR) technologies have become a revolutionary teaching method. Through big data analysis, this innovative strategy accurately constructs complex maritime situations with a high sense of realism and challenge. For example, based on historical navigation data and meteorological information, the system can generate scenarios involving extreme weather, equipment failures, and multi - national ship cooperation. In such a virtual environment, students need to use the maritime English knowledge they have learned to interact with virtual characters, make decisions, and communicate effectively. This immersive learning experience greatly improves students' language application ability and situational response ability. At the same time, the application of VR and AR technologies breaks through the limitations of traditional classrooms, allowing students to practice repeatedly in a safe environment and accumulate "practical" experience. This virtual training covers not only language skills but also multiple dimensions such as maritime professional knowledge, cross - cultural communication, and emergency response ability. For example, in the simulation of an international port customs clearance scenario, students need to deal with language barriers, cultural differences, and complex procedural requirements at the same time. Through data analysis, teachers can accurately track the performance of each student in different situations and provide targeted guidance. This comprehensive training enables students to adapt to the actual working environment more quickly after graduation and improves their employment competitiveness.

(3) Big - Data - Empowered Personalized Maritime English Learning Path Design

In the big data era, the design of personalized learning paths has injected new vitality into maritime English teaching. This innovative strategy makes full use of the powerful analytical capabilities of big data technology to tailor a unique learning path for each student. Through in - depth mining and analysis of multi-dimensional data such as students' learning behaviors, performance, hobbies, etc., the system can accurately understand each student's learning ability, knowledge reserve, and potential advantages. Based on these insights, educators can develop an optimal learning path and curriculum plan for each student [3]. For example, for students who have a good command of maritime terms but are poor in oral expression, the system will recommend more oral practice resources and situational dialogue training; while for students who are particularly interested in maritime history, it may recommend some English reading materials related to maritime culture to stimulate their learning interest. This personalized learning experience not only improves learning efficiency but also greatly enhances students' learning motivation and self-confidence. In addition, the design of personalized learning paths also takes into account students' career development goals. For students planning to engage in international shipping, the system will add relevant professional English content; while for students interested in entering the field of maritime management, it will strengthen the learning of business English and management English. This forward-looking planning makes students' English learning more targeted and practical.

(4) Multi - Dimensional Evaluation: Big-Data - Supported Maritime English Ability Assessment

In the big data environment, the teaching evaluation system of maritime English is undergoing a profound transformation, constructing a comprehensive and multi - dimensional evaluation framework. This new evaluation system uses big data analysis technology to comprehensively capture and analyze students' learning performance, including not only traditional test scores but also multiple aspects such as learning attitude, classroom participation, teamwork, and practical application ability [4]. For example, the system can record the frequency and duration of students' use of the online learning platform, analyze their performance in virtual situational drills, and even evaluate their contribution in group discussions. This comprehensive data collection provides educators with a more abundant and objective evaluation basis. More importantly, this evaluation system is no longer limited to a simple judgment of learning results but pays more attention to an in - depth analysis of the learning process. Through the mining and analysis of massive data, the system can identify each student's learning mode, advantageous areas, and potential problems. This insight provides valuable guidance for personalized teaching. For example, if it is found that a certain student performs well in listening comprehension but has difficulties in oral expression, teachers can adjust teaching strategies accordingly to help the student overcome the shortcoming. In short, the reform of the big - data - driven evaluation system improves the accuracy and comprehensiveness of evaluation, providing strong support for personalized teaching and student development.

4. Conclusion

The application of big data technology has brought unprecedented opportunities for the innovation of the college maritime English teaching mode. Through the implementation of innovative strategies such as flipped classrooms, VR/AR technology-driven situational simulations, personalized learning path design, and multi - dimensional evaluation systems, the teaching quality of maritime English can be effectively improved, and students' international perspective and cross - cultural communication ability can be cultivated. In the future, with the continuous development and deepening application of big data technology, the innovation of the maritime English teaching mode will be more diversified and intelligent, laying a solid foundation for cultivating more maritime talents who meet international standards.

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