

Research on Safety Management and Risk Control in Navigation Technology Training

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Abstract: Practical training in maritime technology is an important part of cultivating maritime professionals, and it is of great significance for enhancing students' practical operational abilities and their ability to adapt to future maritime work. However, there are many uncertain safety hazards in the training of maritime technology majors, such as equipment misoperation, improper operation, critical operational errors, etc. These risks not only threaten the life safety of students, but also affect the quality of professional training and education. Therefore, strengthening the research on safety management and risk control in maritime technology training is of urgent practical significance for ensuring training safety, improving training efficiency, and cultivating qualified maritime talents.

Keywords: Navigation technology; Safety management; Risk Management

Introduction:

Currently, safety management in maritime technology training faces many challenges, such as incomplete safety management systems, insufficient risk identification and assessment capabilities, and inadequate emergency response mechanisms. These issues have made it difficult to effectively control safety risks in the practical process, bringing great uncertainty and hidden dangers to the training work. Therefore, this study will focus on safety management and risk control in maritime technology professional training. Through in-depth analysis and research, practical and feasible improvement measures and suggestions will be proposed to provide theoretical support and practical guidance for improving the safety and efficiency of maritime technology training.

1. Overview of Training Management in Navigation Technology Major

As an important component of the maritime education system, the management level of maritime technology training directly affects the improvement of students' practical abilities and the cultivation of maritime safety awareness. Training management covers the entire process from training plan formulation, resource allocation, process monitoring to effectiveness evaluation, aiming to ensure the smooth progress of professional training activities and the effective achievement of training objectives through systematic management methods.

During the training process, implementing strict safety management and risk control is one of the core tasks. By establishing a sound safety management system, strengthening safety education and training for teachers and students, enhancing the ability to respond to emergencies, and effectively preventing and reducing the occurrence of training accidents. The evaluation of practical training effectiveness is a key link in testing the effectiveness of practical training management. By collecting student feedback, analyzing practical training data, evaluating practical training results, timely discovering and solving problems in practical training management, continuously optimizing practical training plans and management processes, and continuously improving the quality and level of maritime technology practical training.

2. Weaknesses in safety management during maritime technology training

2.1 Lack of safety awareness

Safety awareness is the cornerstone of safety management in maritime technology training. However, some of the trainees and instructors participating in the training have weak safety awareness and lack sufficient prediction and prevention of potential safety

hazards. This is reflected in the neglect of safety operating procedures, improper wearing of personal protective equipment, and low participation in emergency drills. The lack of safety awareness directly leads to an increase in safety risks during the training process.

2.2 The risk management mechanism is not sound

An effective risk management mechanism is an important guarantee for preventing and controlling safety accidents. However, in practical operation, the risk management mechanism of some training units is not yet sound, lacking a systematic risk assessment, monitoring, and response mechanism. This leads to untimely and inaccurate identification of potential risks, making it difficult to effectively develop targeted risk control measures. At the same time, after a risk event occurs, there is a lack of effective emergency response mechanisms, making it difficult to quickly control the development of the situation and reduce losses.

2.3 Improper maintenance of training facilities and equipment

The status of training facilities and equipment directly affects the safety and effectiveness of training activities. However, some training units have deficiencies in the maintenance of facilities and equipment, such as untimely regular inspections and inadequate repairs. This may not only lead to frequent equipment failures, affecting the progress of training, but also may cause safety accidents due to equipment failure. In addition, the lag in updating and replacing old equipment is also a major safety hazard that cannot meet the needs of modern maritime technology.

2.4 Insufficient safety education and training

Safety education and training are important ways to enhance the safety awareness and operational skills of participants. However, some training units currently have shortcomings in safety education and training, such as incomplete training content, single training methods, and lack of training effectiveness evaluation. This makes it difficult for participants to fully grasp safety knowledge and operational skills, and to effectively respond to safety risks during the training process. At the same time, the lack of continuous safety education can easily lead to the relaxation of students' safety awareness and increase the probability of safety accidents [2].

3. Suggestions and measures for safety management and risk control in maritime technology

3.1 Strengthen safety education and training, enhance personnel safety awareness and skills

Establish a sound safety education and training system for maritime technology training, ensuring that every student and faculty member participating in the training can receive comprehensive and systematic safety education. The training content should cover multiple aspects such as maritime safety regulations, emergency response procedures, personal protective equipment use, and ship equipment operation standards, in order to enhance students' safety awareness and ability to respond to emergencies. Safety education should not be a one-time activity, but should be integrated throughout the entire training process. Therefore, it is recommended to implement a regular refresher training system to ensure that students can continuously consolidate and update their safety knowledge. At the same time, in conjunction with the assessment mechanism, the mastery of safety knowledge among students should be evaluated. For students who fail the assessment, they should be required to participate in supplementary training until they meet the requirements.

In order to enhance the pertinence and effectiveness of safety education, it is recommended to introduce the case analysis teaching method. By analyzing typical maritime accident cases both domestically and internationally, students can gain a deeper understanding of the causes, processes, and consequences of accidents, in order to learn from them and increase their vigilance. At the same time, guide students to have in-depth discussions and reflections on the case, and cultivate their ability to think independently and solve problems.

3.2 Improve the safety management system and establish a risk prevention and control system

Based on the characteristics of maritime technology training, a detailed safety management system should be developed to clarify the safety management requirements, division of responsibilities, emergency response procedures, etc. for training activities. The content of the system should be specific, highly operable, and easy for students and faculty to follow and implement in practical work.

Before the start of practical training activities, a comprehensive identification and assessment of potential safety risks should be conducted. By using tools such as risk matrix and event tree, potential risks are classified, sorted, and quantitatively analyzed to determine risk levels and priorities. Based on the risk assessment results, develop corresponding risk control measures and emergency plans. To ensure the effective implementation of safety management systems, regular and irregular safety inspection and supervision mechanisms should be established. Through on-site inspections, equipment testing, and data review, comprehensively understand and evaluate the safety management of practical training activities. For the problems and hidden dangers discovered, they should be rectified in a timely manner and the implementation of rectification should be tracked to ensure that the problems are thoroughly resolved.

3.3 Promote the application of advanced technology and enhance the level of intelligent safety management

In maritime technology training, modern equipment should be actively introduced to improve the technological content and safety level of training activities. By simulating a real sailing environment, students can master the operation methods and skills of modern navigation equipment, and enhance their ability to cope with complex sea conditions. By combining big data and artificial intelligence technology, intelligent management and risk prevention of maritime technology training activities can be achieved. Meanwhile, utilizing artificial intelligence technology to assist in risk identification and assessment work can improve the accuracy and timeliness of risk prevention and control.

Build an information-based platform for maritime technology training to achieve information-based management of training activities. By publishing information on security management systems, training materials, emergency plans, etc. through the platform, it is convenient for students and faculty to access and learn at any time. At the same time, utilizing the platform to collect feedback and suggestions from students, continuously optimizing training programs and management processes, and improving the quality and effectiveness of training activities.

3.4 Strengthen international exchanges and cooperation to jointly address maritime safety risks

Navigation technology has global characteristics, therefore strengthening international exchanges and cooperation is of great significance for improving the safety management level of navigation technology training. It is recommended to actively participate in international maritime safety organization activities, understand the latest international maritime safety regulations, standards, and best practice cases, and provide reference and guidance for China's maritime technology training safety management. Strengthen cooperation and exchange with foreign maritime colleges and institutions, and promote cooperation and development of international maritime technology training projects. By exchanging teachers and students and jointly developing practical courses, we aim to promote the internationalization and diversified development of maritime technology training. At the same time, by drawing on advanced safety management experience and methods in maritime technology training abroad, we will continuously improve the safety management level of maritime technology training in China. To effectively address these risks, it is recommended to strengthen cooperation and coordination with the International Maritime Organization, maritime management agencies of various countries, and jointly develop cross-border maritime safety standards and emergency response mechanisms. Improve the ability and efficiency to respond to cross-border maritime safety risks through information sharing, joint exercises, and other means.

By implementing these measures, students' safety awareness and ability to respond to emergencies can be comprehensively improved, providing strong support for cultivating high-quality maritime technical talents.

4. Conclusion

Safety management and risk control are not only the key to ensuring the safety of trainees' lives and preventing property losses, but also an important cornerstone for improving the quality of maritime technology training and cultivating high-quality maritime talents. This study emphasizes the necessity of establishing a sound safety management system, developing detailed risk assessment and control measures, strengthening safety education and training for training personnel, and introducing advanced safety monitoring technology. Practice has shown that the effective implementation of these measures can significantly reduce safety risks during the training process and improve training efficiency and effectiveness.

With the continuous development of maritime technology and the increasingly complex training environment, safety management and risk control will face more challenges. Therefore, continuous exploration and innovation of safety management and risk control methods, closely integrating them with the practical needs of maritime technology training, will be an important direction to ensure the sustainable development of the maritime industry.

References:

- [1] Ningbo. Research and Practice on the Reform of Navigation Technology Training Teaching Based on Navigation Simulators [J]. *Science and Technology Information*, 2020, 18 (1): 2
- [2] Yang Xinbiao. Reflections on Improving the Teaching and Management of Navigation Experimental Training [J]. *Tianjin Navigation*, 2022 (3): 67-69

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