Construction of Training Platform for Complex Mechanical Equipment Based On Process Monitoring

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Abstract. Combining the status quo of repair practice of large and complex mechanical equipment and the advantages of simulation training application, the exploration and thinking of the construction of mechanical equipment simulation training and assessment platform based on process monitoring are proposed. This platform is conducive to the combination of classroom teaching and professional practice, to cultivate students' practical skills to meet the requirements of professional development.

1. Introduction
Limited by the training environment, the number of equipment and the construction of teaching conditions, the training effect of some large and complex mechanical equipment repair courses is difficult to meet the needs of job development. With the development of simulation technology and virtual methods, the role of simulation training in mechanical equipment repair courses is becoming more and more prominent, the scope is wider and the application is getting deeper. Therefore, the simulation training is applied to the vocational and technical college education and training to make it an effective way to meet the practical needs.

2. Favorable conditions for applying simulation training to vocational and technical colleges

2.1. Create a working environment
The simulation training system constitutes an immersive training environment by realizing the interaction and interaction between students and the simulated working environment. Not only can the teaching content that is not easy to express in the teaching be presented by the simulation environment, but also the system can be used to realize immediate feedback and reinforcement.

2.2. Improve teaching efficiency
The simulation training system develops teaching from a traditional way to a new learning method for students to acquire knowledge and skills through their own interaction with information and environment, creating an independent learning environment so that students can rely less on teachers or others according to teaching goals Under the condition of help, give full play to subjective initiative and improve teaching efficiency.
2.3. Alleviate equipment shortage
The high cost of new mechanical equipment, especially large and complex equipment, has led to the lack of practical equipment in some colleges and even lack of corresponding teaching equipment, making it difficult to implement targeted teaching. The implementation of simulation training can solve the problem that some teaching contents have been difficult to carry out training due to the constraints of equipment, site, environment and other objective factors for a long time, so that the teaching can closely follow the development of equipment and be more targeted.

3. Strengthen the actual needs of simulation training construction
In recent years, in order to promote the reform of vocational and technical education, enhance the adaptability of personnel training and economic and social development, and the degree of matching of job tasks, each major combines actual needs with training objectives and graduation requirements as the guide, focusing on the curriculum system, talent team and majors Conditions to start construction.

At present, starting from the professional requirements after graduation, equipment repair and troubleshooting capabilities are the core capabilities that support job work. In order to achieve the training objective of students with "ability to troubleshoot mechanical equipment", a course of "Repair of Certain Mechanical Equipment" was set up independently. Through the study of this course, students are finally familiar with the principles, methods, requirements and implementation process of repairing this type of equipment, and can use various repair tools and detection devices to predict, analyze and eliminate the failure of the equipment, so as to restore the normality of the equipment performance.

However, the existing equipment support conditions and quantity cannot meet the teaching needs, and it is necessary to build flexible and diverse multimedia resources to improve the teaching quality. At the same time, the existing training environment cannot truly simulate the relatively complicated actual situation, and the training that is close to the job is restricted. In order to better achieve the goal of talent training, there is an urgent need for the construction of mechanical equipment simulation training and assessment platform based on process monitoring.

4. Design Conception of Simulation Training and Assessment Platform
Through the development and application of simulation training and assessment platform, focus on solving the problems of insufficient equipment and incomplete fault setting in practical teaching training and assessment of large-scale mechanical equipment, improve students' repair ability and troubleshooting ability, standardize the operation process and use of special tools At the same time, the accumulated data and data feedback should be used in theoretical teaching to enhance the effect of practical teaching.

The simulation training and assessment platform mainly includes three parts: teacher assessment end, student operation end and server terminal. Among them, the failure test bank is distributed and set up through the teacher assessment terminal, the student operation terminal logs in to start the troubleshooting simulation training and assessment evaluation, and the server terminal stores and records relevant information. The specific composition and operation flow are shown in Figure 1.

4.1. Teacher assessment end
Mainly implement tasks such as topic distribution, implementation process monitoring and performance evaluation.
Topic distribution: Mainly set random or specified settings for case library.
Process monitoring: Mainly monitor the training status (completed or not), and can choose and guide for each aircraft.
Achievement evaluation: Display the performance evaluation standards and operation information records, and give the results based on the above information comparison.
4.2. Student operation terminal
Mainly to achieve topic reception and topic operation training.

Figure 1. Specific composition and operation process
4.3. Server terminal
Mainly realize the process control and response of teachers' assessment and server.

Server terminal: need to store case library information, operation information records and score evaluation information. Among them, the case library information is: sort out typical failures and build failure case libraries; operation information records include problem implementation time (overall time and individual link time, individual analysis information is given) performance evaluation information and operation information records (default times and time The number and information of the selected and missed elections); the performance evaluation information mainly gives a comprehensive evaluation of the operation information records, and gives summary information and feedback to the teachers and students.

5. Conclusion
The above are thoughts on the exploration of simulation training and assessment platform construction based on process monitoring. At the same time, we should also see that some of the key factors related to the training of equipment operation ability can not be effectively achieved through simulation training, but also must be used in combination with actual training in order to really play the use of the simulation training system.

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