

Application and Exploration of Mechanical Experiment Teaching Based on "6S" Management Concept

Shuwei Lv^{a*}, Mei Yang^b, Shenao Guan^c

School of Mechanical Engineering, Ji Lin Engineering Normal University, Changchun, China

^aLv0529@126.com, ^byangmei120277@163.com, ^cgsa17750827993@163.com

*corresponding author

Abstract: In order to better serve the construction and development of new engineering disciplines, promote the achievement of engineering education professional certification, cultivate students' good professional quality, and integrate the "6S" management concept into the daily management of mechanical laboratories, it can not only improve teaching quality, but also gradually improve students' Professional literacy to improve the market competitiveness of mechanical talents. The connotation of "6S" management, the problems existing in mechanical laboratories, and the application and exploration of "6S" management in mechanical laboratories were discussed, aiming to explore a modern management mode suitable for experimental teaching of mechanical basics in colleges and universities.

Keywords: Mechanical laboratory management, "6S" management system, Experimental teaching, Student professional quality

1. Introduction

The laboratory is the main channel for the mechanical major to improve the level of students' practice and innovation, and it is also an important indicator to measure the teaching level of local colleges and universities. Strengthening laboratory management is of great significance to the overall teaching activities of the school to achieve the goal of talent training [1, 2]. In recent years, with the continuous development of applied undergraduate colleges and universities, the teaching and scientific research role of mechanical laboratories has become more and more important, the introduction of advanced instruments and equipment, the continuous expansion of experimental teaching level, the number of experimental projects and the number of people entering the laboratory. The laboratory space is also relatively tight; and because students lack systematic experimental skill training, lack of standardized behaviors and good work quality, they pose severe challenges to the daily management of the laboratory and the management of teaching and scientific research [3]. In order to better solve this development situation, learn from the "6S" management method commonly used by enterprises. The long-term significance of introducing and implementing "6S" management in the teaching process of colleges and universities is to allow students to learn "6S" knowledge, establish "6S" concepts, and practice "6S" management in their student days, thereby saving time for education and training in production site management, Shorten the adaptation period and transition period from the school to the enterprise, and then realize the seamless connection of the role transition from students to employees. In order to better apply the "6S" management method to the training of talents in colleges and universities, and to do a good job of its research in experimental teaching and its importance, this article uses this as a starting point to carry out its application and exploration.

2. Introduction to "6S" Management

"6S" management is a management model, originated in Japan, is an upgrade of "5S" management, 6S is finishing (SEIRI), rectification (SEITON), cleaning (SEISO), cleaning (SEIKETSU), literacy (SHITSUKE), safety (SECURITY) [4-5]. "6S" management is an effective management concept and method for modern enterprises for production factors such as personnel, materials, machines, methods, etc. By standardizing the site and existing objects, it creates a clean and comfortable working environment and cultivates good employees. Work habits and literacy, thereby improving production

efficiency, ensuring product quality, and ensuring production safety [6].

"6S" is related to each other, and sorting, rectification, and cleaning are specific contents; cleaning means institutionalizing and standardizing the above 3S implementation practices, and implementing and maintaining the results; literacy means training each employee to develop a good Habits and follow the rules to do things, it is easy to carry out 6S, but long-term maintenance must rely on the improvement of literacy; safety is the foundation, we must respect life and prevent violations. Its content structure is shown in Fig. 1.

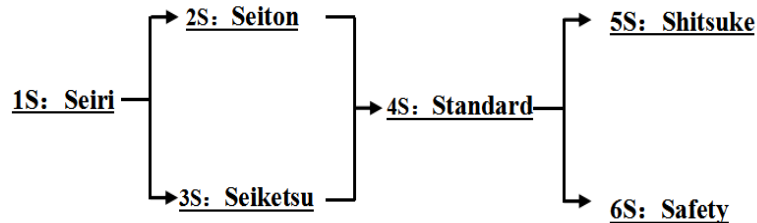


Figure 1: "6S" management content structure diagram

The implementation of the "6S" management idea in the laboratories of colleges and universities, taking the opportunity of experimental teaching as an opportunity to establish a good laboratory, is especially important for the cultivation of students' advanced management awareness and the formation of good professional qualities [7]. The implementation of "6S" management in the laboratory is not only conducive to creating a safe and orderly experimental environment, but also conducive to the management of open laboratories. Students can better learn knowledge and master skills in such an experimental environment. To enable students to do "6S" management work, its purpose is not only the management of the laboratory, the most important thing is to gradually change the students' thoughts and behaviors during the monotonous learning or experiment process, and cultivate students' good professional qualities.

Due to its excellent management effect, 6S management activities have been introduced in all walks of life. As an organization that cultivates talents, colleges and universities have many similarities with enterprises in terms of organizational structure, and this method can also be used for management. If the school laboratory can effectively implement the 6S management, it will be able to create a good atmosphere in which everyone actively participates and observes the regulations in all things. With this atmosphere, it is conducive to the on-site management of the laboratory [8].

3. Problems in the Mechanical Laboratories

In recent years, colleges and universities have increased their investment in the introduction of many mechanical experimental instruments and equipment, which has brought certain difficulties to the management of experimental teaching. Moreover, most college students today are only children. Parents are cared for or even spoiled. They have poor self-management skills, lack of sense of competition, and lack of sense of social responsibility. Without proper guidance, it is difficult to form good professional qualities [5, 6]. According to the content of each element of "6S", the problems in the basic machinery laboratory are summarized as follows:

(1) Problems with 1S sorting: scrapped instruments and equipment were not processed in time; the equipment used on the test bench was placed in disorder; the tools in the tool cabinet were placed in disorder. Even the equipment and tools used cannot be neatly arranged as required.

(2) 2S rectification problems: There are no obvious signs of tools and samples in the experiment, and it is difficult for students to recognize them without knowing them; the placement of tools on the experimental table is unreasonable, it is not easy to pick up or even land.

(3) 3S cleaning and 4S cleaning problems: unorganized stacking of laboratory supplies and articles; only the surface is cleaned during cleaning; the garbage discarded by students in the drawer of the experimental table; the laboratory only cleans at the end of the experiment, and there is no the cleaning was not complete under the supervision of the teacher.

(4) 5S literacy issues: students do not attach importance to the experiment, their attitude is not rigorous, they will touch the equipment and equipment that are not related to this experiment at will, and they will not complete the experiment according to the teacher's requirements. Some students lack self-learning awareness, lack of discipline, poor hands-on ability, sloppy work, weak sense of

responsibility, and poor awareness of safe operation. They often bring their own items that are not related to the experiment, and even scribble on the laboratory bench, and have a sense of hygiene. Poor, do not understand experimental principles and operating procedures, etc. The lack of a rigorous and scientific attitude when doing experiments can easily cause damage to the equipment. After the experiment, the equipment is not returned and placed as required, and the equipment use records are not filled in, resulting in a disorderly and disorderly experiment environment, a waste of teaching resources, and the experiment cannot be completed in time, the quality of experimental teaching is difficult to guarantee.

(5) 6S safety issues: students have a weak sense of safety during the experiment and do not abide by the rules of the experiment. Students in the independent internship operation have relatively weak security awareness and insufficient precautions.

In short, many problems are often exposed during the experiment, which shows that our experiment management is inadequate and needs to be continuously improved. It not only focuses on the education of knowledge and skills, but also pays attention to the cultivation of students' professional qualities.

4. Application of "6S" Management in Mechanical Laboratories

"6S" management is a revolution, the core of which is "let the standard become a habit, let the habit become the standard". Through standardized management, the degree of standardization is achieved. The core and essence of "6S" management is "Quality." Some seemingly trivial and superficial things such as order, cleaning, placement, classification, and hygiene, but reflect human quality. As the core of "6S" management, we must strive to improve students' professional quality through continuous and effective improvement activities. , To develop the habit and style of strictly abide by the rules and regulations, this is the true meaning of the "6S" activities.

In order to continuously improve the management level of the mechanical laboratories, carry out high-quality experimental teaching, serve the construction and development of new engineering, promote the professional certification of engineering education, and cultivate students' good professional qualities. The most effective method is to start from the actual training site, analyze the status quo, and make timely corrections to the problems. Therefore, to explore the application of the "6S" management concept in the daily management of the laboratory, the specific measures are as follows:

(1) Learn and understand the "6S" management concept

Focus on solving the need to integrate the "6S" management concept in the daily management of mechanical laboratories, and carry out full-staff learning through school publicity and special report meetings; organize teachers to visit school-enterprise cooperative enterprises and brother schools; start with direct sensory understanding, Change ideology and concepts, and gradually form a modern management concept.

In the actual teaching process, the school should reflect the "6S" concept in a number of tasks such as the laboratory system, teachers' experimental teaching concepts, and laboratory operation procedures, so that students can have a potential understanding of the "6S" professional philosophy in a subtle way. On this basis, teachers can explain the importance of the "6S" management philosophy and the performance of its impact on students' professional skills, so that students can correctly understand the "6S" management philosophy and understand the importance of the "6S" professional philosophy for their future career development. In this way, the "6S" vocational philosophy is established to provide support for experimental teaching under the "6S" vocational philosophy.

(2) Mining of internal problems

Through on-site visits to mechanical laboratories and questionnaire surveys of teachers and students engaged in experimental teaching, understand the problems in mechanical basic experimental laboratories, and classify the problems found according to the elements of "6S" and the order in which the problems are to be solved.

(3) Construction of standard system

The experimental teaching "6S" standards and management rules are formulated according to the actual laboratory of the mechanical foundation. For example, visualize management and formulate signage.

The establishment of a "6S" experimental teaching system is a basic measure to ensure that the "6S" management concept can be effectively implemented. In the process of mechanical experiment teaching in colleges and universities, the scientific system can not only play a guiding role in experimental teaching, but also exert a restraining effect. Its restraining objects include both teachers and students. Under the "6S" experimental teaching system, teachers must ensure that their experimental teaching behavior meets the requirements in order to ensure the effectiveness of teaching. And students must ensure that the experimental operation behavior meets the experimental requirements, to be able to complete the experimental learning, and truly learn something. Therefore, in the course of practical education, formulating a "6S" experimental teaching system is a basic measure to ensure the effective implementation of "6S" management concepts.

(4) Implement 6S experimental teaching responsibilities

In the experimental teaching behavior of colleges and universities, teachers are the main teaching instructors. Whether their teaching behavior is scientific will have the most direct impact on the teaching effect. Therefore, if you want to improve the application effect of "6S" management concepts in experimental education, you must implement "6S". The responsibility of experimental teaching is to realize the influence on teachers' teaching philosophy and teaching behavior, and lay the foundation for the effective development of experimental teaching. In the actual teaching process, the school should require teachers' teaching behaviors according to the different requirements of different majors for experimental teaching, and link them to the teachers' basic work performance through the implementation of responsibilities to provide "6S" experimental teaching. The best teachers are supported.

(5) Implementation and continuous improvement of the system:

Reform the traditional mechanical contact laboratory management concept, strictly implement the "6S" standards and management rules of each laboratory. The "6S" assessment is linked to the teacher's annual assessment and the students' experimental results. Aiming at the improved experimental environment, we constantly find problems and correct them in time to achieve continuous improvement.

The implementation of the "6S" management concept in mechanical experiments conforms to the development requirements of talent quality education in colleges and universities, and cultivates good behavior habits of students in a subtle way to promote the improvement of students' comprehensive quality. 6S management is not a one-time thing, it needs to be carried out persistently, it is a development process of continuous perseverance, continuous exploration and continuous improvement [10]. Only by mobilizing everyone, everyone involved, and participating in the implementation of "6S" can we put the work into practice, create a neat and efficient laboratory environment, and promote the formation of good habits.

The formulation of a scientific "6S" assessment mechanism is also an important measure to promote the 6S management concept in the experimental teaching of higher vocational education. In the actual teaching process, teachers can work out a "6S" assessment mechanism based on the "6S" management concept. The assessment content includes experiment operation, experiment sorting, and experiment cleaning. The assessment scores of each semester will affect the students' grades this semester. When students graduate and enter the job-appointment process, students with excellent "6S" assessment mechanism can be recommended by the school to the company first, so as to achieve a tripartite win-win situation of enterprise talent absorption, student career development and school talent training. Under this model, students' attention to the "6S" concept will be significantly increased, and in the experiment, try to ensure that their behavior is standardized and scientific, which plays an important role in improving their professional quality.

5. Conclusions

In order to better serve the construction and development of new engineering subjects, promote the attainment of engineering education professional certification, and cultivate students' good professional qualities, standardized management of mechanical basic laboratories is imminent. Drawing on the enterprise's "6S" management concept and incorporating the "6S" management concept into the daily management of the mechanical laboratories, it can not only improve the teaching quality, but also gradually improve the professional quality of students and increase the market competitiveness of mechanical talents.

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