

Probe into the management of laboratory equipment in colleges and universities

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Abstract: experimental equipment is the material basis and guarantee for teaching and scientific research in university laboratories. Through the establishment of experimental equipment management system, overall planning is implemented. Measures such as sharing equipment resources, making experimental equipment files, timely maintenance of experimental equipment, and improving the overall quality of experimental managers can be effectively improved.

1. Introduction

Laboratories in colleges and universities are important links that can't be ignored in the management of colleges and universities. The construction, management and use of laboratories occupy a very important position in the teaching. Strengthening laboratory management, especially strengthening the management of laboratory instruments and equipment, and giving full play to their efficiency and investment benefits are important guarantees for the smooth development and completion of teaching and scientific research in colleges and universities.

However, there are still many problems in the operation and management of laboratory instruments and equipment in many colleges and universities^{[1]-[3]}, mainly manifested in the management is not standardized, the overall quality of the management team is not high, the maintenance and maintenance of large precision instruments is not in place, the use rate is not high^{[4],[5]}. Some large precision instruments are not really used after they are purchased. This reflects the actual use of experimental equipment in colleges and universities from one aspect^[6]. Therefore, it is urgent to explore the management methods of laboratory equipment in colleges and universities and improve the efficiency of equipment utilization.

2. Main problems existing in the operation and management of laboratory instruments and equipment in colleges and universities

2.1 Lack of overall planning for laboratory construction

At present, most of the laboratory construction in colleges and universities is set up by subject specialty. Some colleges and universities, even if the basic laboratory is managed uniformly, are divided into many sub-laboratories according to different subjects and specialties^[7]. Therefore, in order to meet their own teaching needs to apply for purchased equipment and equipment in the sub-laboratory will be duplicated problems. There are also some colleges and universities because of the lack of integration between specialties, there is a phenomenon that different departments have the same specialty, leading to the repeated purchase of equipment between these specialized laboratories.

2.2 The cultural quality of the experimental personnel is relatively low.

On the one hand, after the long-term flow and optimal allocation of personnel in schools, teachers with high academic qualifications and professional titles are reluctant to become full-time laboratory personnel. On the other hand, some university leaders do not realize the importance of laboratory construction, and regard laboratories as a solution to the problem of introducing talents to their families and children, leading to laboratories. The structure of personnel's academic title is obviously low, and the cultural quality is poor. In addition, large-scale precious instruments and equipment

require operators to have a deep theoretical knowledge of relevant disciplines, so that the work of laboratory technology and management personnel is no longer a simple repetitive work, but a creative mental work, higher requirements for the educational background and knowledge structure of laboratory personnel, leading to the existing laboratory equipment management. Most of the personnel can not meet the requirements of teaching and scientific research, and can not effectively improve the utilization efficiency of experimental equipment.

2.3 The laboratory rules and regulations are not perfect.

Some university laboratories lack rules and regulations on the management of instruments and equipment, or the current rules and regulations are only framework, not refined, lack of operability. In addition, some of the experimental equipment has not been used for a long time to damage, scrapped. At present, the problems in the management of experimental equipment are mainly embodied in the incomplete or even no records of equipment use, the imperfect experimental data and the lack of equipment and equipment files, which directly affect the statistical results of the use of equipment, thus affecting the maintenance, purchase and purchase of equipment and equipment decisions.

2.4 Experimental instruments and equipment are open and shared low.

For a long time, most of the laboratories in Colleges and universities have been open and managed in a standardized and low level of informationization. The laboratories in Colleges and universities are self-governed, and the opening ability of equipment and equipment is not strong, such as borrowing, paid use and so on. In addition, some colleges and universities do not have an evaluation index system for the use and maintenance of instruments and equipment, and do not carry out an effective assessment of the use and maintenance of instruments and equipment. Thus affecting the maintenance and updating of the equipment.

3. Reasons for the difficulty of effective operation of laboratory equipment in Colleges and Universities

3.1 Subjective reasons (human factors)

The main reasons for the failure of laboratory equipment in Colleges and universities are as follows.

(1) Whether the leaders attach importance to experimental teaching and experimental equipment management is an important condition for the effective operation of laboratory equipment in Colleges and universities.

(2) The quality of the management team of experimental equipment and equipment is not high. Many experimental equipment managers lack the basic knowledge of equipment, information technology, network technology and so on.

(3) Some laboratory staff are not strong in sense of responsibility and enthusiasm for work, resulting in many laboratory equipment used by man-made damage, or peacetime can not be well maintained and maintenance, has not reached the useful life of scrapped in advance.

(4) In order to facilitate their own scientific research, individual university teachers take the instruments and equipment shared by the laboratory as their own, which results in other teachers and students who need to use the instruments and equipment not to use them.

3.2 Objective reasons (financial factors)

Many colleges and universities have the problem of shortage of funds. Every year, the cost of laboratory construction and maintenance is very limited. The cost of purchasing and maintaining equipment is even more insufficient, which greatly limits the development of laboratories. In addition, some colleges and universities, especially "985" colleges and universities have a special group of funds for the purchase of experimental equipment, but there is no budget to maintain the normal operation of experimental equipment, resulting in a lot of instruments can not be used properly after the purchase due to lack of follow-up operation and maintenance costs.

4. Measures to strengthen the management of laboratory instruments and equipment and improve the utilization efficiency of experimental equipment in Colleges and Universities

At present, the society's demand for the quantity and quality of personnel training in higher education is constantly improving, which makes higher education in China face new development opportunities and challenges. Laboratory work has become an important basic work in the cultivation of talents in Colleges and universities. It is an important part of the overall work in Colleges and universities. After the preconditions are satisfied, there are still many factors affecting the efficiency of the use of laboratory instruments and equipment. It is proved that sufficient and suitable selection is the preliminary work for the normal use of laboratory instruments and equipment, and paying attention to the management and development of equipment after purchase is the key to bring the benefits of laboratory instruments and equipment into play.

4.1 Full demonstration before equipment acquisition

The purchase of equipment by various institutes will inevitably lead to the dispersion and duplication of equipment. Insufficient pre-purchase demonstration of experimental equipment sometimes results in the failure of some purchased instruments to operate properly because they do not meet the requirements. Before purchasing instruments and equipment, experts should be organized to examine and demonstrate. In the process of decision-making, the relationship between advanced and practical should be correctly handled. The advanced nature of equipment should not be blindly pursued, but should be decided according to the actual needs and economic conditions of teaching and scientific research experiments.

4.2 Establish a large-scale instrument and equipment sharing platform.

We should establish a platform for sharing large-scale instruments and equipment, increase the degree of opening and sharing, give full play to the role of various large-scale precision instruments and equipment in teaching, scientific research and social services, optimize the allocation of resources for large-scale precision instruments, and realize the sharing of resources throughout the school and society.

4.3 Establish and improve the management system of laboratory equipment.

On the basis of implementing the relevant regulations such as the Regulations for Laboratory Work in Colleges and Universities and the Measures for the Management of Instruments and Equipment in Colleges and Universities, each university should, according to its own actual situation, formulate in detail some detailed rules for the management of laboratories and experimental equipment. First of all, from the purchase of equipment and equipment, the establishment of purchase, approval, marten) procurement, acceptance procedures, and then refine the equipment and equipment registration system, including the custodian, spare parts, instructions, the number of storage sites, equipment operation, use and changes, etc., but also refine the acquisition, borrowing. Procedures for use, damage, maintenance, compensation, and scrapping. In addition, the larger equipment to develop a special operating manual, from the use of operations to daily maintenance to regular maintenance, maintenance and other systems should be clear.

4.4 Strengthen experimental teaching and management team building.

Establishing a team of experiment and management with reasonable structure, exquisite business, high level of experiment management and relative stability is related to the normalization of operation and management of experimental instruments and equipment and the construction and development of laboratory itself.

(1) to optimize the structure of experimental teaching and management team, we should form a gradient in terms of education, age and professional title.

(2) Maintain the stability of experimental teaching and management team as far as possible to ensure the stability and continuity of laboratory work.

(3) Improve the quality of experimental teaching and management team through study, training,

investigation and other methods, enhance the sense of responsibility of laboratory staff, give full play to their initiative, enthusiasm and creativity.

(4) Formulate strict reward and punishment mechanism, establish laboratory personnel inspection, assessment, evaluation and other measures, and effectively implement. Remove those who fail to pass the standard, have a weak sense of responsibility and have been taught repeatedly from the laboratory.

5. Conclusion

The management of laboratory equipment and equipment and the operation of laboratory equipment play an important role in the smooth development of experimental teaching and scientific research in Colleges and universities. Therefore, colleges and universities should strive to strengthen the management of laboratory equipment and equipment, improve the utilization efficiency of laboratory equipment and investment efficiency in order to promote teaching. To carry out scientific research work smoothly.

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