Construction of Digital Network Platform for Laboratory Safety and Management in Colleges and Universities

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Abstract: With the increasing demand for professional talents, in the current teaching process of higher education institutions, more attention is paid to the scientific nature of experimental teaching in higher education institutions. Coupled with the continuous development of information technology, the safety management of laboratory in higher education institutions tends to be more digital network platform. How to strengthen the construction of digital network platform for laboratory safety and management in Colleges and universities is a problem worthy of consideration. This paper studies and discusses how to build digital network platform, and puts forward corresponding management suggestions.

1. Introduction

Compared with junior high school and senior high school, many subjects involved in Colleges and universities need specific experiments to prove the corresponding conclusions, in order to effectively guarantee the rigor of knowledge. In the actual teaching process, we will find that, because each subject experiment has its own characteristics and dangers, it is difficult to implement unified management in the actual operation process, and it is difficult to effectively guarantee the effect of laboratory safety management in Colleges and universities. Due to the influence of experimental conditions, experimental items, experimental environment and other objective factors, the difficulty of laboratory management is increased. Therefore, in the current stage of the development of laboratory safety management in colleges and universities, information technology can be combined to build a corresponding digital network platform to enhance the pertinence, feasibility and operability of its management projects. Effectively solve the problems of the dispersion and randomness of laboratory safety management in colleges and universities.

2. Problems in the safety management of laboratories in colleges and universities

In the process of the safety management of laboratory in colleges and universities, due to the experimental requirements of different disciplines, experimental conditions, experimental content and experimental equipment, and other objective factors. Therefore, in the experimental management work, it is difficult to comprehensively strengthen the experimental management of each project, which makes it difficult to implement the corresponding experimental safety management work. More importantly, in the actual experimental safety management work, the content involved in all aspects is not only to strengthen the work of storing the experimental waste in the experiments. In the actual process of experimental safety management, we should take into account the impact of the experimental environment, and do a good job in radiation prevention, biological epidemic prevention and other aspects of work [1]. It is the diversity of experimental conditions that increases the difficulty of laboratory safety management to a certain extent, and puts forward higher requirements for laboratory safety management in Colleges and universities, in addition to strengthening laboratory safety management. It is also necessary to strengthen the safety management of experimental personnel, but it is difficult to cover all aspects due to the influence of experimental conditions.

In the specific experimental operation process, involving more and more complex personnel. Due to the wide distribution of the corresponding experimental contents, it is necessary for the

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corresponding experimental operators to have sufficient safety awareness and to be able to standardize the operation in the specific operation process. At the same time, for the corresponding laboratory safety management personnel, we should not only strengthen the study of professional knowledge, but also be able to clearly understand the characteristics of laboratory consumables and instrument safety management in different disciplines. Then in the actual work process, we can deal with various emergencies, in order to strengthen the laboratory safety management from a professional perspective. Therefore, in the actual laboratory safety management work, colleges and universities have recruited a lot of talents, and it is precisely because the team of laboratory managers is too large and the involved personnel are more complicated. In the actual work process, it is difficult to comprehensively strengthen the laboratory safety management. In the process of specific experimental operation, students and teachers have different safety awareness and theoretical level of each experimental operator, and the differences among students of various majors have undoubtedly increased the difficulty of laboratory safety management in colleges and universities.

3. The necessity of digitalization of laboratory safety management

3.1 Real-time environmental monitoring

The safety management of laboratory in colleges and universities and the construction of a digital network platform can effectively enhance the quality and effectiveness of laboratory safety management. At the same time, it can combine the specific experimental environment and experimental conditions to monitor the safety indicators needed in the experimental process in real time, and effectively strengthen the real-time detection of various aspects such as temperature, humidity and harmful substance concentration in the laboratory. At the same time, with the help of the digital network platform, in the implementation of the monitoring link, it can be combined with various temperature sensors, humidity sensors, infrared sensors, human sensors and other devices. To realize automatic environmental monitoring, dynamic monitoring of experimental environment can be achieved on the basis of saving manpower and material resources [2]. Through the computer to carry out the corresponding data analysis work, once abnormal is found, it can be combined with the corresponding network platform to do a good job of processing work in time, effectively guarantee the effect of laboratory safety management. In the process of real-time monitoring, we can combine the specific experimental environment to create appropriate experimental conditions and ensure the accuracy of the experimental results.

3.2 Information is updated regularly

Based on the laboratory safety management work under the digital network platform, the laboratory information evaluation standard can be formulated comprehensively in the actual work process, combining with the corresponding experimental environment, experimental conditions, experimental facilities and other aspects. On this basis, laboratory information should be continuously improved to strengthen laboratory safety management scientifically and reasonably. In this process, combined with specific experimental projects, appropriate experimental equipment and equipment are selected to effectively strengthen the safety management of the laboratory. At the same time, it can be combined with actual laboratory projects to optimize the process of experimental safety management, so as to enhance the pertinence of its safety management. For example, in the construction process of the digital network platform, the corresponding time threshold can be set, and the corresponding experimental management personnel can be required to continuously improve the safety management system of the laboratory in combination with specific experimental requirements and requirements. Through comprehensive evaluation, it will issue a deactivation alarm to unqualified laboratories, and at the same time, it can continuously improve the laboratory rectification work in combination with existing laboratory information.

3.3 Laboratory management

In the process of laboratory safety management, an information-based network platform can be constructed to realize real-time recording and updating of the use of experimental instruments. In the specific work, it can be combined with experimental needs to strengthen the supervision and management of the source and destination of laboratory items. In particular, the supervision of some dangerous goods and equipment. In the laboratory safety management work, it is difficult to comprehensively strengthen the comprehensive management of experimental articles and equipment in the actual work process due to the limitation of many factors such as human resources and material resources. By building a digital network platform, we can learn the use of dangerous goods in real time. At the same time, we can combine the Internet of Things technology to strengthen the maintenance and comprehensive evaluation of experimental equipment and instruments, so as to update experimental items and equipment in real time. Digital laboratory management mode can effectively strengthen the management of laboratory staff. By setting up the corresponding personnel access control, it can effectively strengthen the management of laboratory staff and strictly prohibit non-professional personnel from entering the laboratory. At the same time, it can effectively ensure that the corresponding laboratory operators can clear the matters needing attention and specific work content of laboratory safety management. Through real-time monitoring, it can effectively strengthen the assessment of the quality of the experimental managers, in order to ensure the standardization and effectiveness of their work.

4. Construction of Digital Network Platform

4.1 Information Input Terminal

In the process of building a digital laboratory safety management system, we should first strengthen the construction of information input terminal. In the process of laboratory safety management, in order to effectively guarantee the quality and effect of its work, the corresponding staff members are required to have sufficient safety management awareness and professional knowledge. With the help of information input terminal, the identity of laboratory staff can be effectively verified [3]. In order to effectively strengthen the detection of the laboratory environment, the information input terminal can effectively summarize the implementation of the laboratory safety management work to monitor the environment in the laboratory in real time. In many aspects, such as personnel and articles, to ensure the stability of equipment and equipment, and to effectively strengthen the safe management of dangerous drugs.

4.2 Terminal master node

In the process of constructing a digital university experiment, it is also necessary to establish corresponding terminal group nodes to strengthen the security management of the server and terminal communication equipment. In turn, the corresponding data information can be effectively stored and the information processing technology can be used to perform preliminary processing, and the corresponding data information is sent to the terminal. In the construction process of this part, it is necessary to clarify the significance and purpose of the creation of the terminal master node. In order to ensure the effectiveness of its work, it is required to have a strong ability of error response and recovery in the actual work process. In order to effectively strengthen the effect of laboratory safety management, when constructing the corresponding digital network platform, we should also strengthen the establishment and maintenance of the terminal master node, which can effectively guarantee the quality and accuracy of information transmission while doing a good job of sending and receiving information.

4.3 Internal network

In the process of building the internal network, it is necessary to strengthen the construction of gateway, routing and other hardware facilities. In order to ensure the quality and effect of information transmission, corresponding communication protocols can be set up to strengthen the

communication work of each node in the laboratory network.

4.4 Data base

In the process of digital laboratory safety management, a large amount of data information is involved. In order to effectively strengthen the real-time detection of experimental conditions in the laboratory environment, multiple sub-databases can be constructed. The corresponding data information is classified and backed up to improve the effect of laboratory safety management. The construction of database can be divided into five parts. In addition to strengthening the basic terminal information log database, security system, database, curriculum resources database, personnel information database, accident emergency database and other aspects. At the same time, it is necessary to strengthen experimental teaching, safety education, emergency plan, and emergency contact information database, taking into account the adverse effects of various objective factors on laboratory safety management. At the same time, it can effectively avoid the errors caused by his objective factors on the safety management of the laboratory. By co-constructing the corresponding database, it is possible to effectively strengthen the corresponding data information management, and at the same time combine the experimental instruments, the problems that may occur in the experimental links of the equipment, and do a good job of early warning and emergency treatment.

4.5 Server

The main purpose of establishing a server is to strengthen the laboratory safety evaluation calculation work in combination with specific experimental conditions and other content. In the construction of the server, in order to ensure the effect of the district work, in order to give full play to the role of the server, the corresponding laboratory security management personnel are required to make full use of their professional knowledge. And can be combined with specific engineering projects to achieve data transfer and storage of external servers and terminal master nodes [4]. In computational evaluation, once the data with large discrepancies are found, or the information input by personnel and the information in database are found to have large errors, the information prohibited from entering is released to the terminal master node, so as to effectively strengthen the safety management of the laboratory. With the help of external servers, we can combine the Internet and browsers to set the access rights of the database, and strictly prohibit the entry of non-internal personnel and professionals. For the control server, in the actual work process, it can transfer the information acquired by the terminal master node to the user. In order to effectively strengthen the dynamic management of laboratory safety, so as to minimize all risks and strengthen laboratory safety management.

4.6 User

To construct the corresponding data network platform in laboratory safety management, it is necessary to strengthen the user management of the whole network system and strengthen the management of laboratory and network, so as to provide the corresponding guarantee for laboratory safety management. This requires the corresponding network administrators to strengthen the network management of the laboratory in the process of work, and at the same time, to strengthen the network security management of the laboratory by combining the corresponding network data information. At the same time, it is necessary to strengthen the detection and maintenance of laboratory sensors and other equipment. Once unsafe accidents occur, corresponding emergency measures can be taken at the first time. The corresponding college administrators need to combine the experimental project observations and experimental equipment and other aspects. To establish a laboratory safety management system, through regular testing and spot checks, targeted assessment, and strengthen laboratory safety management [5]. This requires teachers and students to effectively unite to create a harmonious and sTable experimental environment, while at the same time asking questions and confusing this interactive link. In order to enable students to clarify the flow of experimental operations, and to reserve experiments in advance, review in advance, so as to effectively protect the effectiveness of laboratory safety management.

5. Conclusion

In short, in the process of constructing the digital network platform of colleges and universities, the corresponding management personnel are required to comprehensively consider the influence of various objective factors such as experimental equipment, instruments and projects. Combined with specific experimental projects to build the corresponding digital network platform, on the basis of ensuring laboratory safety, it can carry out regular testing and maintenance, and do a good job of experimental early warning. At the same time, it can effectively overcome the influence of many objective factors, and constantly strengthen the laboratory management.

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