Research on Laboratory Construction and Management of Independent College

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ABSTRACT

Through the analysis of the characteristics of the laboratory construction and management of the independent college, this paper puts forward the goal of opening the laboratory and the combination of school and enterprise as a means to realize the management and construction of the information laboratory, improve the opening rate and utilization rate of the laboratory, and promote the training of the students' practical ability and creativity. Explore the road of laboratory construction and management with the characteristics of independent colleges.

INTRODUCTION

With the development of the world economy, international competition is becoming more and more intense. In the final analysis, this competition is the competition of talents, especially the competition of high-level innovative talents. China's economy is in the key period of the comprehensive transformation and upgrading. In order to promote the rapid and sustainable development of the economy, improve the comprehensive national strength and international competitiveness, a large number of high-level innovative talents are urgently needed. University laboratory is an important place for the practice teaching and scientific research of colleges and universities. It is an important place to carry out comprehensive quality education and cultivate high level innovative talents with knowledge innovation and scientific and technological innovation ability. It has an

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irreplaceable and important role in the quality education of students and the cultivation of innovative ability [1].

As an important part of the development of higher education in China, the independent college is a higher education institution with the aim of cultivating high quality and practical talents with innovative spirit and practical ability. Laboratory as the cradle of high-level innovative talents training has always been an important part of college construction. However, at present, the teaching management mode of the independent college basically follows the management mode of the public colleges and universities. The construction and management of the laboratory are mostly used in the model of the public university. The role of most of the laboratories is only auxiliary teaching, and the planning and scientific allocation of the laboratory resources cannot be carried out, the efficiency of the use of laboratory resources is greatly reduced. Therefore, it is of great significance to strengthen the construction and management of Laboratory Science in Colleges and universities. It is of great significance for the creation of high-quality innovative talents and the realization of the objectives of the independent college.

LABORATORY CONSTRUCTION OF INDEPENDENT COLLEGE

The laboratory has a distinct and unique position in Colleges and universities. It concentrates the main technical equipment and teaching resources of the school, especially some highly sophisticated equipment, which has formed a strong support for teaching, scientific research and technology development, such as [2]. Laboratory construction is an important infrastructure for colleges and universities, as well as an important place for training talents in universities. In recent years, the state has paid great attention to the public higher education and greatly increased the investment of the institutions of higher learning, making the laboratory construction of the public colleges and universities have made great progress. However, because of the characteristics of the single academy, its construction and development cannot get the investment of the state, so the investment in its laboratory construction is lagging behind other public colleges and universities, and it is difficult to jump out of the "Plight" of the lack of funds. Some independent colleges have poor basic conditions, and there are many problems such as the aging of instruments and equipment, the lack of quantity, and the difficulty of improving laboratory environment. At the same time, with the continuous deepening of professional construction, the construction of new professional supporting laboratories is not enough, and the daily maintenance and maintenance of equipment need to be put into the maintenance of funds. Therefore, many laboratories are facing the dilemma of shortage of funds, which is difficult to be solved in short time.

At present, the problem of laboratory construction is the establishment of the experimental project. According to the needs of teaching and scientific research, many experimental projects have been set up in the laboratory, but the rate of experimental selection is always low. There are many reasons for the study. The
experimental project is usually time-consuming, and the experiment content cannot be completed only in class time. If the experiment is repeatable, the students' enthusiasm will be poor. If a one-time experimental project is added, the design and autonomy can be enhanced, but the investment will be increased, the capital of the laboratory cannot be burdened, on the other hand, the burden of the students is heavier, or the experiment is not attached to the experiment. The rate of the experiment is low and the equipment vacancy rate is high. At present, the "double creation" with the main content of "mass entrepreneurship and innovation" has become the benchmark of the times. It is urgent for colleges and universities to cultivate innovative and entrepreneurial talents. In the context of "double creation", it is expected to alleviate this problem to a certain extent. College Students' innovation projects have higher attractiveness to college students. At the same time, combining the construction of the open laboratory and the construction of information laboratory to solve the problem of high vacancy rate of the equipment, and to meet the needs of the enterprises, establish the joint laboratory and practice base of the school and enterprise, make use of the fund cooperation of the social forces to the project, promote the training of the students' practical ability and innovation ability, and improve the students' enthusiasm effectively.

OPEN LABORATORY CONSTRUCTION

Existing Problems in the Current Laboratory

Although the current experimental teaching can verify and deepen the understanding of classroom theoretical knowledge, its own drawbacks restrict the cultivation of innovative talents. This is the restriction of the management of the use of experimental instruments. In the current experimental teaching, experimental teaching is based on confirmatory experiments. Therefore, most of the students do not use these instruments to carry out subsequent study and research after completing the experimental tasks in the classroom. The reason is that the students are not interested in scientific research, the other is the restriction of the equipment management mode, some students are interested in studying the experiment more deeply, but the use of the equipment is arranged according to the teaching plan, and the spare time is basically not used. Even if the students have sufficient time to use the equipment, they do not allow the students to carry out exploratory research on the existing instruments and equipment according to their own ideas, because the modification may cause damage to the equipment and even the discarding of the equipment, which causes the loss of the school property. The management system of such instruments and equipment restricts the cultivation of students' scientific research and innovation ability. On the other hand, the traditional learning consciousness also has some limitations. In traditional teaching, it is generally believed that the training of undergraduates should be based on the requirements of the syllabus, and it does not emphasize the cultivation of the creative ability of the
undergraduates. This kind of ideological consciousness is also common in the teachers, and the ideological consciousness in the student group is deeply rooted, which has deeply influenced the cultivation of the creative ability of the vast majority of undergraduates.

Open Laboratory Measures

The open laboratory is to change the traditional management mode of traditional laboratory, and make the laboratory make use of the resources of existing teachers, instruments and equipment at the same time with the teaching task, so as to solve the problems in the traditional experiment teaching[3]. The open laboratory is designed to further cultivate students' innovative consciousness, innovative spirit, innovation ability and scientific research ability, and make full use of laboratory equipment, materials, instruments and teachers, not only to improve the ability of independent innovation of talents, but also to meet the needs of social economic development to a certain extent.

In the construction of open laboratory, changing ideas is a question of service consciousness[4]. To build an open laboratory, we must change the consciousness of the laboratory for the teaching and experimental service in the planned way, and set up a good sense of serving the school and training the students' ability to practice and innovate. At the same time, we should strengthen the consciousness of the students, and the students have a good sense of good and bad conditions to maintain the laboratory. It is only in the ideological understanding that the open laboratory has a deep understanding, and the construction of the open laboratory can be successfully implemented.

As far as its connotation and function are concerned, laboratory opening can be divided into opening of experimental time, opening of experimental contents and opening of experimental subjects. The opening of experimental time is the premise. The opening of experimental content is the core, and the opening of experimental subjects is a means[5]. The laboratory can be open to students, such as completing comprehensive, designing project experiment and graduation thesis, participating in the research projects of teachers, completing the research projects independently, participating in the experimental projects of the college students' competition, and obtaining the test items of professional certification qualification. The laboratory is open to the students in all directions. It can create a diversified teaching environment and provide the students with a wider practice platform and the space for independent development. It also lays the foundation for the comprehensive training of students' innovative thinking, practical ability, independent learning ability, communication ability and cooperation spirit.

In the open laboratory, because of the uncertainty of the experiment time, the diversity of the experiment items, the variety of the experiment content, the multilevel and multi-specialty of the experiment object, the open mode of the management should also explore the standard and effective methods of experimental
management according to the specific use of the laboratory. In order to guarantee a better laboratory opening order, we should first standardize the management procedures of experimental teaching, and formulate and improve the open management system of laboratories and instruments and equipment. Secondly, we should establish the information management system of the open laboratory, establish the LAN of the laboratory or the campus network to manage, establish the online laboratory, provide the experimental study data and the experiment simulation on the Internet, and add the information management to the management of the open laboratory.

**SCHOOL AND ENTERPRISE JOINT LABORATORY**

Innovative talents should not only be able to innovate in theory, but also have the ability to apply theory to practice and solve practical problems, that is, innovative and applied talents. At present, school education is better than the teaching of basic knowledge and basic theory. Moreover, the practice teaching resources of independent colleges are relatively lack, and it will be very big to fully rely on the establishment of practical teaching sites in schools. The introduction of enterprise resources into the training system of high-level applied talents is a way to solve the problem[6]. In order to realize their respective interests, schools and enterprises can choose suitable models to build joint laboratories according to their own conditions, foundations and needs. At present, the school enterprise joint laboratory can be divided into two modes: teaching research type and production research type according to demand and participation level.

**Model of Teaching and Scientific Research**

This type of laboratory is led by the school, and the school is responsible for the overall direction of the subject, the overall planning and the functional orientation of the laboratory, including the pre-construction research and the selection of the cooperative enterprises[7]. On the one hand, taking teaching and scientific research training as the basis of cooperation, combining the theoretical knowledge of the university teachers with the experience of the enterprise, making full use of the enterprise equipment and capital resources to form a student oriented quality skill promotion plan, the enterprise can get the mature graduates to meet the requirements of the enterprise in a relatively short time. At the same time, this type of laboratory carries out research and development of new technologies and products through financial support from enterprises. Through the provision of R & D funds or R & D equipment to alleviate the shortage of funds in the construction of independent college laboratories, colleges and universities can acquire advanced equipment and technology with lower investment, achieve the goal of sharing patent technology and large equipment resources, and have a great role in promoting talent training and social service.
Production Research Model

In this type of cooperation, a joint laboratory is formed on the basis of its own R & D conditions, which is responsible for the construction and interior decoration of the laboratory, the purchase of instruments and related equipment, the recruitment of R & D personnel and the staff of the laboratory. Schools are mainly responsible for providing venues for enterprises to conduct laboratory construction and attracting outstanding technical personnel from universities to take part in R & D work. The school enterprise joint laboratory built in Colleges and universities can enjoy the scientific research resources of the University, such as a scientific research team with rich experience, a scientific database with a wide range of features, a timely update and so on, as well as advanced large-scale testing instruments. In addition, colleges and universities through the advantages of discipline and the input of the achievements of teachers to promote cooperation between teachers and enterprises, through the exchange of technical personnel with enterprises, to understand the market demand, broaden the research ideas, it makes the research of the teachers closer to the economic development. If the R & D target of the enterprise is consistent with the research results obtained by the universities, the teachers can apply their scientific research results directly to the new product development of the enterprises and improve the conversion rate of scientific research results.

INFORMATION CONSTRUCTION OF LABORATORY MANAGEMENT

In the teaching system of independent colleges, the operation and practice hours of practice link occupy a large proportion. Strengthening laboratory management and improving the efficiency and service quality of laboratory management personnel is the main purpose of laboratory management[8]. The thinking mode of the information internet is a new way of thinking for the construction and management of the laboratory in Colleges and universities. It is in line with the requirements of the development of the times. It meets the needs of the local colleges and universities to train the applied talents and meets the requirements of the reform of the experimental teaching information, it can greatly improve management efficiency and save manpower cost, and is the most effective way to improve laboratory opening and utilization rate.

Laboratory management informatization can change the traditional laboratory manual management mode, and standardize the daily management of laboratories. In the management of laboratory equipment, multi-level management mode can be adopted. Campus administrators can set up user permissions and maintain statistical reports. The hospital administrators can add relevant instruments and equipment to the college platform, arrange equipment heads and inquire various reports. Laboratory administrators can set up instrument information and appointment sheet audit and user training management, and monitor device operation and user reputation management. Through the information management, the operation
monitoring and video and door access are connected, so that the staff of the Department of the laboratory and the staff of the first line of the laboratory can arrange and grasp the information of the opening time and the appointment of the person at the present stage, the teaching of laboratory experiment and the use of the equipment.

The comprehensive management platform of laboratory information plays an indispensable role in further strengthening the "integration" of experimental resources and realizing the overall planning and unified management of laboratory, experimental equipment, experimental teaching and experimental personnel[9]. Through the measurement and analysis of the integrated management platform, according to the laboratory's commitment to experimental teaching hours, equipment utilization ratio and other indicators, according to the principle of similar function, some experimental equipment can be relocated, and the laboratory personnel are redistributed to save experimental rooms and experimenters, which greatly enhance the overall utilization of the laboratory, at the same time, through the sharing of resources and information exchange, it is beneficial to give full play to the functions of laboratory teaching, scientific research, personnel training and local service. It is beneficial to promote the integration and sharing of various resources of the whole school, and avoid the waste of duplication of construction and equipment idle. At the same time, under the model of laboratory information management, the open experiment teaching has become more easy and possible. It also greatly fostered the practical ability and innovation ability of college students, and promoted the comprehensive quality of college students. A large number of open experiments can improve the construction of the experimental team at the same time, strengthen the training of the information management ability of the laboratory managers, exercise a team of experimental teaching management with excellent skills, fine style and hard work, and maximize the efficiency of the experimental resources.

**CONCLUDING REMARKS**

In a word, with the development and popularization of modern information technology, in the process of construction and management of university laboratories, it is necessary to change ideas as soon as possible, and to strengthen the exploration and research of laboratory construction and management. Only by strengthening the management of the laboratory and improving the management level of the laboratory, can we meet the needs of teaching and scientific research, improve the quality of experimental teaching and service efficiency, and cultivate comprehensive talents in accordance with the needs of teaching and scientific research. In the new situation of the development of education, the construction and management of university laboratories must be reformed and innovating so as to meet the requirements of the development of the socialist market economy. The establishment of the corresponding laboratory management system is of great significance for exploring the management system of the laboratory in the new
situation, strengthening the construction of the experimental technical team, improving the overall quality of the staff of the laboratory, and improving the status of the laboratory in the teaching and scientific research work of colleges and universities.

REFERENCES