

# Reform and Innovation of Medical Laboratory Construction in Universities

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**Abstract:** From the perspective of social employment situation, the employment situation of medical graduates has always been relatively impressive, which has also promoted the medical profession of colleges and universities to get more attention. As far as universities are concerned, medicine is a highly comprehensive and practical subject, and its professional goal is to send outstanding medical technical personnel to the society and strengthen my country's medical service team. Under the background of quality education, combined with the actual needs of the society for medical staff, medical majors in colleges and universities should pay more attention to cultivating students' practical ability. Medical laboratories are important teaching for students to gain professional practice operations, improve professional technical capabilities, and improve professional practical experience. Therefore, the construction, reform and innovation of medical laboratories have become particularly important, which can promote the improvement of the quality of medical professional teaching while creating high-quality teaching conditions for students.

**Keywords:** Colleges and Universities; Medical Specialty; Laboratory Construction; Reform; Innovation

With the socio-economic transformation and industrial structure optimization and adjustment, the current society has higher standards for talents in various fields, and the practical ability and comprehensive literacy ability of talents are more important. Application-oriented talents are therefore more recognized and favored by the industry. Medical practitioners are supposed to save the dying and heal the wounded and serve the patients, but they must also demonstrate standardized operation ability and professionalism. Medical laboratories in colleges and universities are the main channel for the integration of medical theory and practice, and are the learning venues for students to carry out practical operations and hone their hands-on skills. The quality of laboratory construction and management is crucial to the cultivation of medical talents. However, there are still some problems in the laboratories of most universities, such as insufficient laboratory utilization and excessive waste of resources. It is urgent for universities to reform and innovate as soon as possible.

## 1. Problems in the construction of medical laboratories in universities

### 1.1 Laboratory equipment is outdated

The construction of medical professional laboratories in colleges and universities needs to invest a lot of financial support. However, some colleges and universities do not pay much attention to the construction of medical professional laboratories due to limited funds and insufficient school concepts. This results in laboratory equipment that is often too old and backward. It does not meet the needs of rapidly developing medical disciplines. Some colleges and universities have introduced some new experimental equipment, but since their old equipment has not reached the end of life, they continue to use them in order to avoid waste of resources. They do not realize that this is also a kind of idle waste of new equipment. Due to the backwardness of laboratory construction and equipment, and the lack of a certain sense of innovation in experimental teaching by teachers, students are restricted in medical practice and lack of corresponding medical practice experience, which affects the actual teaching quality of medical professions.

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## **1.2 The construction structure of the laboratory is unreasonable**

Under the traditional teaching mode of colleges and universities, the waste of resources of medical laboratories is also reflected in the division of medical disciplines. According to basic medicine, it is also divided into physiology, pharmacology and pathology, but each is equipped with experiments for large-scale animal experiments. Rooms, but their number is insufficient and independent of each other. With the expansion of the enrollment and scale of colleges and universities, the problem of lack of laboratories has become more and more obvious. However, in fact, there are very few devices that can be used in each laboratory. Some laboratories may only use two or three times per academic year. This has also caused unreasonable and wasteful laboratory resources<sup>[1]</sup>.

## **2. Reform and innovation measures for the construction of medical professional laboratories in universities**

### **2.1 Strengthen the construction and management of the laboratory**

The laboratory is an important carrier for the implementation of practical teaching in medical majors in colleges and universities. Colleges and universities should change the concept of only focusing on theoretical knowledge teaching in medical majors, strengthen the importance of laboratory construction and management, maximize the teaching function of laboratories, and improve the quality of practical teaching. The laboratory obtains a complete return on investment, so that it is committed to serving the medical research and teaching work of colleges and universities, and helping colleges and universities obtain long-term construction and development of medical disciplines.

### **2.2 Increase investment in laboratory construction**

In order to improve the efficiency and role of medical professional laboratories, so that students can gain substantial professional skills growth through hands-on operation, colleges and universities should actively increase investment in laboratory construction, so that students have more and better opportunities to participate in practical learning. Realize the training of applied technology talents, help students increase the gold content of future employment, and promote the medical profession of colleges and universities to gain a good influence in the education field and the society.

### **2.3 Clarify the laboratory management system and improve laboratory management standards**

In order to strengthen the construction and management of laboratories, colleges and universities should make scientific optimization and adjustment of laboratories, and build laboratories that can be comprehensively applied to multi-specialty courses based on similar disciplines and similar experimental methods, and increase the degree of cross-border between relevant medical disciplines. With the help of advantageous key disciplines to promote the construction of laboratories in other related disciplines, so as to effectively improve the comprehensiveness and applicability of medical professional laboratories<sup>[2]</sup>. The laboratory established in this way can achieve the goal of unified management, avoid the repeated purchase of some experimental equipment and equipment, and effectively realize the sharing of experimental resources and save the input of teaching resources. At the same time, colleges and universities should strengthen the daily management of laboratories to build a complete laboratory management system, safe use system, etc. The use of laboratories must be responsible for people, and use information management methods to realize human resources, laboratory equipment and consumables, Orderly management of experimental projects.

### **2.4 Strengthen the construction of laboratory teaching staff**

Medical professional laboratories in colleges and universities are the main base for cultivating applied medical talents and an important place for colleges and universities to carry out teaching and research. A team of teachers with strong professional ability and solid business foundation are needed to stabilize the construction and management of laboratories of high-quality medical personnel with strong practical ability. Therefore, laboratory teachers not only need a rich medical theoretical foundation, but also should have advanced teaching concepts, strong practical capabilities and a positive scientific research spirit. As a teacher, we must change the traditional educational thinking that emphasizes theory and ignores practice, boldly exert creative thinking in experimental teaching, actively innovate experimental teaching methods and improve relevant teaching content. At the same time, colleges and universities should carry out professional vocational training according to the work needs of laboratory teachers, regularly organize teachers to the clinical frontline to carry out learning, observation, participate in some academic lectures, skills training, etc., qualified colleges and universities should arrange teachers to go

to famous domestic medical institutions, colleges and universities with strong medical professional education level study and observe, encourage teachers to participate in project research on some important experimental topics, so that they can continuously improve their self-teaching ability and level through learning<sup>[3]</sup>. Teachers who are not suitable for experimental teaching should actively communicate with them, transfer them to other jobs, and actively optimize the structure of the teaching staff of experimental teaching. In addition, it is necessary to hire some high-level, highly educated teachers to enrich the team building, so as to encourage other teachers to carry out teaching and research work and improve the overall level of laboratory teaching.

## 2.5 Actively construct multimedia teaching laboratories

In the context of the information age, the advancement of information technology has promoted the continuous upgrading of educational models. In recent years, multimedia teaching has been widely promoted and applied in universities with its strong advantages. For example, traditional anatomy mainly uses some auxiliary teaching methods such as specimens, models, and wall charts to carry out learning. Direct communication between teachers and students is the advantage of traditional teaching, but there are also certain drawbacks. If you apply multimedia teaching technology and adopt animation mode to show the principle of anatomy, you can visualize the structure of various organs of the human body more intuitively. Teachers can explain and express more clearly, and students can get more rational medical cognition from it., To increase interest in medical anatomy, and obtain good experimental teaching effects.

## 2.6 Establish an open teaching laboratory

Establishing open laboratories for medical majors in colleges and universities, transforming the main body of teaching from teachers to students, realizing the transformation and development of education, allowing students to complete the whole process of experimental teaching through independent topic selection, independent thinking, and independent experimentation, creating more displays for students practicing opportunities for self and innovative thinking, which in turn fully stimulates students' autonomous learning consciousness. Therefore, colleges and universities can reasonably allocate free time in the laboratory to students to implement open experimental activities according to the resource allocation and class planning of the laboratory. Students can choose topics, design experiments, arrange class hours, formulate steps, and prepare equipment. Carrying out experiments, summarizing and reporting a series of links to exercise self-organizational planning ability, hands-on operation ability, statement analysis ability, etc., so as to improve the student's learning subjectivity, and cultivate good learning that is good at thinking, diligent in operation, exploring and seeking knowledge habit. Teachers can guide students to transition from simple experimental projects to stages with a certain degree of difficulty, allowing students to combine their medical professional knowledge, professional skills and experimental methods to gradually complete some comprehensive experiments, allowing students to combine experimental teaching and scientific research projects combined, in-depth mastery and application of medical knowledge to solve experimental problems, stimulate their motivation and enthusiasm for learning, students are more active in experimental teaching, which is more conducive to improving students' comprehensive ability and professional quality.

## 3. Conclusion

All in all, medicine is a complex chemistry subject with strong practicality and professionalism. The construction and management of teaching laboratories are related to the sustainable development of medical professions in universities. The future society's demand for medical students must be applied talents. The training of students' technical ability and practical operation experience must be drawn from a large number of experimental teaching activities. The construction and management of the laboratory directly affects the professional learning and career development of students. Actively change laboratory teaching. It is the inescapable teaching task of colleges and universities to carry out the necessary reform and innovation of the laboratory.

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