

# Strengthen Laboratory Construction and Cultivate Students' Innovation Ability

Hongjun Wang

Shandong Transport Vocational College Shandong Weifang 261000

**Abstract:** On the basis of quality education reform, more and more attention has been paid to students' practical ability. As an education base for cultivating social applied talents, colleges and universities bear important social responsibilities. Laboratory of colleges and universities for students to practice and innovation provides a powerful place, should implement the policy of deepening reform in education, to strengthen the laboratory construction, optimizing the experimental facility structure, configuration of perfect experimental resources, make good use of laboratory functions, in the course of experiment teaching in cultivating students' comprehensive quality and ability, to improve their practical skills, Output application-oriented professional talents for the society to achieve the goal of modern education. This paper focuses on the deficiency of laboratory construction, and puts forward several strategies to improve the laboratory construction, in order to achieve the teaching goal of improving students' innovation ability, for reference.

**Keywords:** Laboratory construction; Practice; Innovation ability; Problem; Countermeasures

Colleges and universities in the school infrastructure, to fully realize the knowledge migration, meets the demand of the education teaching, and considering the students practice effectiveness, the theoretical knowledge, as well as the implementation of numerous scientific research project, will be the establishment of experimental grounds for specialized courses, the basic facilities and function of the laboratory there is also a difference, but ultimately is the purpose of the subject construction and development. Under the background of modern education, attaches great importance to the cultivation of students' practical ability, and the key function of the laboratory in teaching in colleges and universities, give play to the role of laboratory, training students' practical skills, exercise in the process of experimental design and implementation of the creative thinking, strengthen the beginning ability, realize the teaching under the background of new curriculum reform requirements, so the laboratory construction is the foundation of achieving this goal. However, there are still many deficiencies in the experimental infrastructure construction of colleges and universities in China.

## 1. Current situation of laboratory construction

With the pace of social development and information construction, colleges and universities, on the basis of government financial support, have increased investment in the construction of discipline laboratories, and achieved outstanding results in the improvement of equipment and the establishment of experimental functions. University laboratories have high scientific research level, teaching services matching local characteristic industries, and diversified practical functions, which not only provide a solid guarantee for the development of university scientific research, but also promote local economic level to a certain extent and play an important role in all aspects<sup>[1]</sup>.

## 2. The existing problems in laboratory construction

### 2.1 Laboratory construction is complicated and the construction battle line is prolonged

Discipline laboratory construction involves multiple complex processes such as basic investment, structural design and construction approval, which requires communication with multiple departments. At the same time, supervision also needs to implement multi-link procedures. These processes extend the construction progress of the laboratory to a certain extent. It may take 3-5 years to complete the initial construction phase<sup>[2]</sup>.

### 2.2 The laboratory has a single function and lacks characteristics

Discipline laboratory construction cycle is long, and at the same time have previously built in early laboratory use cycle is longer, the renewal of the knowledge to be synchronous with the time development, professional teaching materials each year to a certain degree of change, has to ensure that the characteristics of the subject knowledge to keep advancing with The Times, the old equipment is often in the past and set the teaching requirements, Has been unable to meet the practical skills of students in the current era. Combined with early university infrastructure construction lack of certain funds support, managers tend to be in accordance with the actual situation when purchasing equipment to measure, and eventually choose a more cost-effective equipment, but these devices are usually belong to low-end equipment, operating flexibility, poor and single function, does not do to the future laboratory development

considerations, the overall characteristics of comprehensive laboratory, Lack of professional field characteristics.

### **2.3 The opening of specialized laboratories is insufficient**

University laboratory construction has a typical phenomenon of “high opening and low going” in terms of funds. Excessive investment in infrastructure equipment in the early stage leads to insufficient funds for subsequent staffing and laboratory maintenance and management, which brings certain difficulties to teaching practice in the later stage [3]. First is the lack of certain laboratory professional and technical personnel, the second is the lack of experimental equipment, software and hardware facilities shortage phenomenon caused a serious shortage of professional personnel and management personnel, schools from discipline personnel take part in the implementation of lab management, management of the basis of laboratory construction and laboratory equipment maintenance, Due to the lack of professional management ability of the laboratory, the functions and advantages of the laboratory can not be effectively played. Problems of equipment and personnel lead to a decline in the utilization rate of the laboratory, and students’ experimental needs cannot be met, so the improvement of their creative ability faces certain challenges.

## **3. To strengthen the construction of specialized laboratory solutions**

### **3.1 The basic construction purpose is to train students’ practical and innovative ability**

The function of the laboratory should be to provide a practical operation place for students to test and consolidate theoretical knowledge, and at the same time exercise students’ thinking and exploration ability in the process of experiment, so as to discover new knowledge that is theoretical but above the basic, and improve students’ innovation ability. In the process of laboratory construction, colleges and universities should uphold the purpose of cultivating students’ innovation ability, actively improve the construction ideas and improve the relevant experimental equipment. The experimental teaching system of automobile NUMERICAL control technology specialty can be refined, and the functional laboratory can be set up from the three aspects of basic knowledge, professional knowledge and comprehensive knowledge, and the innovative experiment plan can be included in the teaching syllabus in the experimental teaching to improve the innovative experimental teaching objectives.

### **3.2 Improve laboratory functions based on the future development of disciplines and students**

Discipline characteristic should be highlighted in the laboratory construction, formed with local characteristics of practice education base, give full play to the advantages of science laboratory, and the development direction of future experiments at the same time, the integrated disciplines scientific research system, and a long-term view, using the laboratory at the forefront of technology and function of diversification, promote scientific enterprise growing, Let students make breakthroughs in professional technology and practical skills, and promote their future development in the field of technology application [4]. Developing automobile numerical control technology theory and knowledge, operation in the numerical control machine tools, automotive applications and digital control technology in the automotive industry in areas such as open the student’s cognition, to master relevant skills, able to skillfully on the theory of professional practice, knowledge transformation and migration ability to ascend, the formation of inspire their creativity.

### **3.3 Innovate laboratory teaching mode to help cultivate students’ creativity**

When purchasing related laboratory instrument equipment, comprehensive factors should be considered, and the investment in hardware and software configuration and reasonable planning, to ensure that everything, effectively improve the experimental resources utilization, the professional and technical personnel and management personnel in the laboratory and in the distribution system, scientific arrangement in the perfect laboratory equipment management personnel, reasonable division of responsibilities, Open laboratory is realized to share hardware equipment and practice resources. Integration of information technology at the same time, to merge with lab function, achieve both professional, science and technology, intelligent and diversified experimental teaching mode, to provide advanced students, frontier, expansion of the space for the practice of the words, stimulate students’ imagination and creativity, and to mobilize the enthusiasm for learning professional knowledge, in the process of learning and to cultivate their innovation ability .

## **4. Conclusion**

To sum up, scientific planning, combined with the development of The Times and the integration of advanced technical forces are the important work of laboratory construction in colleges and universities. Only by improving the construction of laboratory hardware and software on the basis of advanced and diversified experimental equipment can a more scientific, characteristic and pioneering experimental teaching system be established. At the same time, relevant infrastructure should be improved to achieve the effect of open experiment, so that students can master experimental skills in experimental operation and enhance their creativity in the process of exploring new knowledge, so as to truly prepare for the educational purpose of cultivating applied talents in colleges and universities.

## **References:**

---

- [1] Yang Huixia. Strengthening Laboratory Construction to Cultivate Students’ Innovative Spirit and Practical Ability [J].2022(6).
- [2] Wu Haibo. Research on University Laboratory Construction oriented to The Cultivation of Students’ Innovation Ability [J].2022(5).
- [3] Chen Weiqiang, Ke Zhuowa. Strengthening laboratory opening and Improving students’ innovation ability [J].2022(8).
- [4] Liao Qingmin, Qin Gangnian. Establishing open Laboratory to Improve students’ practical ability and innovation ability [J].2022(4).