

# Practice of Laboratory Culture Construction in Higher Vocational Colleges

Yifan Chen<sup>1</sup>, Hui Suo<sup>1</sup>

<sup>1</sup> Guangdong Jidian Polytechnic, Guangzhou, Guangdong, 510515, China

**Keywords:** Higher vocational colleges; Laboratory; Culture construction

**Abstract.** The construction of exemplary higher vocational colleges places higher requirements on the construction of laboratory culture, which is an important guarantee for practical teaching and scientific research in higher vocational colleges. This work studied the practice of laboratory culture in higher vocational colleges from aspects of material culture, institutional culture and spiritual culture, which complement each other and are inseparable. The construction of laboratory culture is beneficial to the connotation construction of higher vocational colleges.

## 1. Introduction

What is culture? In a broad sense, culture refers to the various wealth created by humans in various ways during social changes, such as various wealth in the material field and the spiritual field. The connotation and internal logical structure of culture can be divided into three levels: material culture, institutional culture and spiritual culture.

Culture has a clear direction, which can give people a clear direction in their behavior, and at the same time can make guidance under various choices. Through sharing culture, actors can understand the recognition of their own behavior, understand the reasonableness and appropriateness of other's concepts, and understand what others are more willing to respond to, so that they can guide people to choose more beneficial and effective behaviors 1. We can guide people to the highest standards through culturally clear guidance and cultural management.

Years of management practice have shown that if many rules and regulations rely solely on the traditional management mode of supervision, it will be difficult to guarantee the realization of laboratory management goals. Only by transcending the limitations of traditional supervision and management, using culture to shape each teacher and student, allowing teachers and students to internally recognize the value of laboratory culture and inspiring the instinctual consciousness of teachers and students can higher vocational colleges realize the cultural management of the laboratory.

In recent years, China has strengthened investment in vocational education. With the construction of various vocational colleges with demonstration functions, many colleges begin to optimize their educational conditions and vigorously promote the construction of laboratories, causing that the number of laboratories has reached a certain level. The training room has achieved a quantitative expansion in a short period of time; therefore, the current core goal should no longer be the increase of quantity, but should focus on the construction of quality, connotation and culture.

## 2. Practice of Laboratory Culture Construction in Higher Vocational Colleges

What higher vocational education emphasizes is vocational specificity, which focuses on ability training. In practical teaching, the combination of school and business, as well as the combination of theory and practice, should be realized. Laboratory culture in higher vocational colleges should be the culture that embodies the spirit of professionalism. In the construction, it is necessary to create the corporate atmosphere, establish the real corporate environment, create the realistic teaching atmosphere, highlight the "enterprise" characteristics of laboratory culture, integrate entrepreneurship, corporate image, corporate system, and corporate behavior into the school, thus realizing the zero-distance transition from school to enterprise 2.

Vocational laboratory culture includes material culture, institutional culture and spiritual culture.

## 2.1. Laboratory material culture construction

The material culture of the laboratory determines the actual effect of the laboratory function, which is not only the basic condition for the operation, but also an important medium for the laboratory's system, cultural existence and display. The construction of the material culture mainly includes site construction and environment layout.

### 2.1.1 Laboratory site construction

The laboratory site construction mainly includes the layout design of the site. It should be constructed as a "simulated factory" corresponding to the operation of the enterprise as much as possible, which highlights the specialization.

The laboratory layout design chooses the factory model. Setting up the factory model in the teaching field can integrate theoretical research with practical operations and carry out professional training activities under the guidance of the theory. In this mode, the integrated training room not only has the function of classroom and training, but also has the function of service and production, so as to create the enterprise professional atmosphere and environment 3.

The key to the scientific layout design of the equipment in the experimental site should be professional considerations, and all the construction of the training room should be based on the actual background. In combination with a variety of course requirements, independent modules are set up, and streamline, such as "hexagon" and "U" is adopted in equipment arrangement. Scientific equipment layout and teaching mode can provide better support in activities, enabling students to complete better learning under better conditions.

### 2.1.2 Laboratory environment layout

The layout of the laboratory environment should fully reflect characteristics of the corporate culture, and ensure that "the training equipment is consistent with the production equipment, the area division is consistent with the production station, and the interior decoration is consistent with the production workshop".

The construction of laboratory environmental culture plays a guiding role, a cohesive role, a beautifying role, and an encouraging role, which can convey different professional cultures to teachers and students through different elements and cases in graphic professional learning 4. Through artistic decoration of laboratory outdoor space, it can reflect the specialty, knowledge, standardization and artistry of laboratories.

The laboratory environment layout mainly includes the following items:

#### (a) Laboratory introduction

Including the main function and service specialty of the training room, the composition of the training room, the external training (skill appraisal) project, the source of funds, the situation of co-construction with the enterprise, and its characteristics.

#### (b) Training room introduction

Including the construction time, function (training, appraisal, training, development, etc.), area, scale, and characteristics of the training room. A cultural corridor can also be added to introduce the service of the laboratory for teaching and scientific research, experimental teaching and scientific research results, the opening of laboratories and services to the society, the display of the iconic training results obtained by students, etc. Through the cultural corridor, it has a strong appeal and attraction to students, promotes their understanding and love for their major, and makes them actively involved in learning.

#### (c) Laboratory nameplate

Including the name of the training room, the person responsible for security, and the contact phone number.

#### (d) Safety operating procedures for instrument and equipment

To ensure the normal operation of instruments and equipment to prevent accidents during the training and teaching process.

#### (e) Various regulations

Such as the safety management system of the training room, the duties of the administrator, etc.

#### (f) Laboratory safety should be the core requirement for cultural advancement.

In the application of the training room, the safety culture needs to be displayed in various safety equipment and warnings, such as electricity signs, escape signs, etc. In addition, the management room should be equipped with a medicine box and safety facilities for first aid, so that students can be protected in the first time, while strengthening students' sense of security and responsibility 5.

(g) Creating a cultural atmosphere in the laboratory

In a reasonable space, it is necessary to display portraits of famous scientists and famous quotes, use wall charts and paintings to show various cultural atmospheres, and guide students to consciously practice professional standards and operational requirements. It is also necessary to research, plan and establish some signs and works of art with professional cultural atmosphere and artistry in order to gradually form a strong atmosphere of laboratory culture.

2.2. Construction of laboratory institutional culture

The laboratory institutional culture refers to the rules and regulations as well as operating mechanism system formulated for the needs of laboratory development. It is an internal mechanism of laboratory culture and an indispensable guarantee mechanism to maintain the order of laboratories. It is mainly used to regulate laboratory management, such as equipment management, personnel management, environmental management, business management, etc.

The construction of laboratory institutional culture in higher vocational colleges should conform to a reasonable and standardized system according to the professional construction and industrial development 6. The rules and regulations formulated should be objective and feasible. The difficulty of institutional culture construction is to implement the system, which is also the most critical task of institutional culture construction, for this activity is always moving forward and has no end.

The realization of laboratory institutional culture construction goal necessarily requires various management systems, mainly including the student laboratory 6S management mode, experimental teacher responsibilities, laboratory student training rules, equipment management system, low-value materials consumable management system, safety management system and health management system.

The laboratory safety management system is an important part of the cultural construction of the laboratory system, and it plays an important role in cultivating the laboratory safety awareness of teachers and students. At the same time, it also ensures the smooth progress of teaching and scientific research. The laboratory safety management system can be carried out from the following aspects:

First, improving the responsibility system and establishing a management responsibility system in which special personnel are in charge, departments are in coordination, and responsibilities are assigned at different levels.

Second, establishing a long-term management mechanism and strengthening the construction of safety and security capabilities; arranging special budget to ensure safety funds are in place first; timely checking and eliminating potential safety hazards, and establishing a more effective safety accident handling process; implementing a safety information reporting system, strictly enforcing safety work discipline, and ensuring steady progress in safety work.

Third, improving the emergency response mechanism, improving emergency plans at all levels and types, organizing drills in accordance with actual combat requirements, strengthening management and training of emergency teams, strengthening supporting construction of emergency supplies and equipment, and handling emergencies in accordance with regulations and procedures. Forming unified command, responsive, efficient and effective emergency response mechanism to ensure that emergency management responsibilities are in place, the system is sound, the mechanism is perfect, and the operation is efficient.

The construction of laboratory system and culture has made laboratory management have rules to follow as well as punishment for violation, thus achieving combination of rewards and punishments, and clear responsibilities. School administrators can make laboratory management scientific and normative by establishing rules and regulations.

### 2.3. Construction of laboratory spiritual culture

In the construction of laboratory culture, spiritual culture is the most important part. It is necessary to insist "people-oriented" concept, mobilize and give play to the enthusiasm and initiative of laboratory staff, teachers and students, so that it can create a positive learning and scientific research atmosphere as well as a relaxed and harmonious environment. Laboratory cultural activities should be conducted in variety of ways 7.

Professional-related communication activities should be carried out regularly, so that students can improve their professional skills and establish the habit of active inquiry. For example, students actively participate in skills competitions, and the coverage rate reaches 100%. What is more, their competition results are outstanding. There was a total of 483 awards in various vocational skills competitions at various levels nationwide, provinces and municipalities. Among them: in the 2017 national vocational college skills competition, the college ranked 1st in the province and 13th in the country; in 2017, the college won the special contribution award of "2016-2017 Guangdong Vocational College Skills Competition" issued by the provincial department of education.

Establishing an innovation and entrepreneurship workshop can create a spiritual environment suitable for teachers and students to improve their innovative thinking and practical ability 8. For example, the college attaches great importance to the cultivation of students' innovation and entrepreneurship ability. In the past five years, students have won 237 national and provincial awards and 14 provincial projects in innovation and entrepreneurship competitions, including 33 national awards (including 1 special prize and 7 first prizes) and 148 provincial awards (including 9 special prizes and 27 first prizes). The college won 19 projects of "climbing plan" special funding for science and technology innovation cultivation for Guangdong university students, with 440,000 yuan of funding, and ranking the first in 2017 and the second in 2018.

With the development of science and technology, multidisciplinary integration is inevitable. The training room needs to continuously strengthen team building, emphasize the collective power, and encourage cross-disciplinary and inter-professional collaboration to create more scientific and technological achievements 9.

The laboratory safety spiritual culture is an important part of the laboratory spiritual culture. The construction of laboratory safety spiritual culture is mainly carried out in the following three aspects:

First, it should mobilize enthusiasm in all aspects to build a safety publicity and education network. It should pay attention to the role of social and cultural institutions, use various types of media and build propaganda bastions. Through different forms of safety education for teachers and students, they can fully recognize the importance of learning law, safety science and technology as well as safety management knowledge, so as to mobilize their learning enthusiasm and improve safety literacy.

Second, grasping the direction of public opinion and giving full play to the role of public opinion supervision. Public opinion supervision plays an obvious role in rallying people. It has inherent advantages in guiding people, educating people, encouraging people and advocating safety culture. Based on these media information, it can display problems, pool wisdom and help solve problems; it can also prompt people to pay great attention to, take warning from and strengthen prevention, improve the efficiency of safety management, and reduce the incidence of accidents and cases.

Third, popularizing laboratory safety culture knowledge education. The laboratory safety manuals should add safety culture quality education into students' quality education syllabus, and carry out safe classroom activities in schools, which is not only beneficial to the contemporary era but also contribute to the success of next generations.

There are various forms of safety spirit construction in the training room as followings:

#### 2.3.1 Literature and art

Safety literature, safety comics, safety literature: novels, idioms, prose, poetry, etc.

#### 2.3.2 Education and training

Third-level safety education, safety education for all employees, safety education for family members, special operations training, managerial certification, fire emergency training, firefighting

skills drills, fire escape drills, explosion emergency skill drills, and leak emergency skill drills.

### 2.3.3 Cultural activity

At the beginning of the year, the first document is "security documents", the first meeting is "security conference", and the first event is "security mission".

Accident notification activities, accident report meetings, accident sacrifice day activities, safety knowledge contest activities, safety speech contest activities, safety experiment week (month), 100-day safety competition activities, "three no harm" activities, school safety warning meeting, site safety report meeting, safety celebration, safety congratulations, and family message activities.

### 2.3.4 Environmental state

Construction of safety promotion classrooms, posters and motto series, on-site family display boards, and safety signs.

Through carrying out various spiritual and cultural activities, the laboratory can improve the spirit of unity and collaboration between teachers and students in the training room, improve group cohesion, and strengthen the vitality of the training room itself.

## 3. Summary

Laboratory culture is the soul of laboratory management. All aspects of laboratory culture are interrelated and inseparable. Without any part, cultural construction is difficult to achieve the intended goal. Only the cultural construction that integrates spirit, system, and material is complete and can guide the behavior of laboratory users at the value level. Talking about spiritual culture without material culture is a fantasy with no evidence; talking about spiritual culture without institutional culture is a fantasy beyond reality. The various links are also interlinked, and the construction of material culture reflects the spirit people value; the system is the catalyst of spiritual culture, and spiritual culture is the embodiment and carrier of values and codes of conduct.

Through the construction of laboratory culture, it not only enhances the soft power of the training room, shapes the brand image, and improves the quality and efficiency of the laboratory, but also helps to highlight the nature and functions of the laboratory, cultivate students' comprehensive professional quality, stimulate students' learning interest and build a laboratory brand.

## Acknowledgment

(1) The "13th Five-year Plan for the Development of Philosophy and Social Sciences" in Guangzhou in 2019 (2019GZGJ174);

(2) Subject of Guangdong Higher Vocational and Technical Education Research Association 2019 (GDGZ19Y030).

## References

[1] Baidu Baike <https://baike.baidu.com/item/%E6%96%87%E5%8C%96/23624?fr=aladdin>.

[2] Zhao Shanqing. Innovation of Co-construction and Sharing Management Mechanism in Higher Vocational Training Bases[J]. Experimental Technology and Management, 2014, 31 (05): 235-238.

[3] Fang Xianghong. Thoughts on the Cultural Construction of Higher Vocational Chemical Engineering Training Bases[J]. Experimental Technology and Management, 2010, 27 (05): 127-128 + 132.

[4] Deng Guoli. Construction and Exploration of the Training Room Environment Culture from a Multidimensional Perspective[J]. Education and Occupation, 2016 (16): 112-114.

[5] Guo Xin, Ma Tongtao, Han Jianxin, Li Bingkan. Research on the Construction of University Laboratory Culture System[J]. Experimental Technology and Management, 2018, 35 (07): 233-235 + 250.

- [6] Ji Fengjuan. Thoughts on Cultural Construction of Training Bases in Higher Vocational Colleges[J]. Journal of Changchun University of Science and Technology, 2013, 8 (04): 105-106.
- [7] Ou Mei. The Current Situation and Innovative Development of Laboratory Culture Construction in Colleges and Universities[J]. Theory and Practice of Contemporary Education, 2017, 9 (05): 86-89.
- [8] Xia Hui, Kong Xiaoli, Li Ping. Exploration on the Cultural Construction of Economic Management Laboratory Under the Background of Internet+ [J]. Laboratory Research and Exploration, 2017, 36 (08): 169-172.
- [9] Ke Hongyan, Zhang Jie, Jin Rendong. Laboratory Culture Construction in Colleges and Universities Under the Background of "Double Class" Construction[J]. Laboratory Research and Exploration, 2019, 38 (03): 227-229 + 244.