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RESEARCH ARTICLE

STUDY ON THE DESIGN OF TRAINING SPACE BASED ON PRACTICAL TEACHING CONSTRUCTION IN APPLICATION-ORIENTED UNIVERSITIES

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ABSTRACT

As pragmatic personnel are popular in modern society, it has become an important topic for application-oriented universities to study the design of Training Space based on practical teaching construction. This essay conducts analysis as well as summary in both theory and practice. The essay introduces concept, classification, function and feature of Training Space, as well as analyzes designing process and application of Training Space in application-oriented universities. Training Space design is important for application-oriented universities to innovate teaching patterns by strengthening practicability in practices so as to improve the standard of practical construction.

KEYWORDS

application-oriented university; practical teaching construction; Training Space; design analysis.

1. INTRODUCTION

Training and teaching space of application-oriented universities plays a crucial role in improving teaching method and quality. With university transition in China, traditional methods of practical teaching construction and planning in application-oriented universities cannot meet needs of emerging teaching patterns. Therefore, it is essential for those universities to study how to plan practical teaching construction, during which positioning training and teaching space in a rational and scientific way so as to promote the application of new teaching patterns has become a key step. This essay conducts a preliminary analysis and study of Training Space plan in application-oriented universities in order to provide references for further designing explorations. The essay promotes the development and popularity of studies concerning training practicability in application-oriented universities and serves as a kind of role model in this field.

2. INTRODUCTION OF THEORIES RELATIVE TO TRAINING SPACE

Practical teaching refers to a process during which teachers guide students to learn theories and improve practical capabilities. It should be closely connected with their daily life in application-oriented universities. It is composed of training, experiment, and internship.

2.1 Concept and feature of Training Space

Practical teaching, also entitled vocational training, refers to a teaching pattern under which students, guided by teachers, practice their vocational skills in surroundings simulating real working conditions. The main aim is to help students improve their professional qualities, cultivate practical skills and accumulate operating experience. The practical teaching in application-oriented universities is also called project training. It focuses on cultivating professional abilities, knowledge application, and project awareness. After experiencing real work conditions and dealing with real cases, student's professional qualities in participation and communication has been improved so that students will be competent for their work.

Training Space refers to practical training required space in application-oriented university teaching process. It requires that all equipment, materials, construction methods and technologies are similar to real productive environments. Training Space has following features. First, the size of Training Space is flexible for the sake of massive and various equipment. Large Training Space offers skill training service. It is large in size with complicated and complex functions. Medium or small Training Space serves professional guidance and is of limited size. Second, most Training Space means space group and shares similar shape of rectangle or square. Training buildings look like teaching buildings or laboratory buildings. The graphic figure of training rooms generally looks like E, L, I, or O for functional requirements, which is shown in Figure 1.

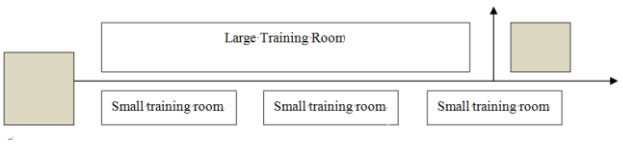

Figure 1: Training room schematic shape Manifold

2.2 Function and classification of Training Space

Main functions of Training Space are as follows:

First, Training Space can be shared. Students from different majors can share same Training Space, software, equipment, teachers and service platforms in order to improve the efficiency of equipment, resource and space usage. Second, Training Space is independent. Considering traffic problems such as logistics and stream of people, possible effects of other teaching activities, as well as campus security, Training Space is generally located at large place. Third, Training Space simulates real working conditions. In order to improve training effects, Training Space should be decorated the same as real professional environments. Therefore, there are strict requirements towards equipment layout, scale and size, as well as processing method and technology.

According to teaching patterns, Training Space of application-oriented universities concludes basic teaching space, capability Training Space and shared Training Space. Basic teaching space refers to a kind of auxiliary space set to introduce in theories. In this space, students submit feedbacks related to theoretical knowledge, skill and experience after the training. Capability Training Space refers to a simulative pre-job training place in

which training is conducted when students have equipped with abundant theories. The space includes engineering material, machine manufacturing, electro-technology and others kinds of training processes. Shared Training Space is large in size. It is generally located at the ground floor, in which training processes are conducted in an independent and flexible way. Itisthe last training place for students. In terms of equipment and architecture, industrialized building is taken as the main standard.

3. ANALYSIS OF TRAINING SPACE DESIGN IN APPLICATION-ORIENTED UNIVERSITIES

3.1 Vertical design of Training Space

In application-oriented universities, Training Space is generally located at the same floor in order to utilize the space to the largest degree and facilitate teaching. With consideration of influences of pollution and noise on surroundings as well as equipment transportation, space of medium or small size or professional teachers are positioned at the intermediate floor, while large space at the ground floor, and theory teaching or teacher's office at between. Unused room, computer room, and electricity room are normally set on the top floor. The vertical design of Training Space in application-oriented universities is as former introduction.

(1) Vertical arrangement of training or teaching space

Generally, there are two types of vertical arrangements of Training Space. First, large Training Space is set at the ground floor of a building, while auxiliary space and medium or small space at the medium floor, as well as classroom, lecture theatre, and professional classroom at the top. Second, large Training Space and other Training Space are situated at the same floor. The smaller size space is of, the upper the floor it will be located at. Therefore, rooms at the top are intensive. Positions are chosen according to major and curricular on upper floor which is blocked into several small rooms. Some teachers are in preparation to serve practical teaching caused by class changes.

(2) Independent arrangement of training or teaching space

Training Space can be arranged independently, for example, connecting office building, and classrooms with corridors to form a unified entirely as is shown in Figure 2.

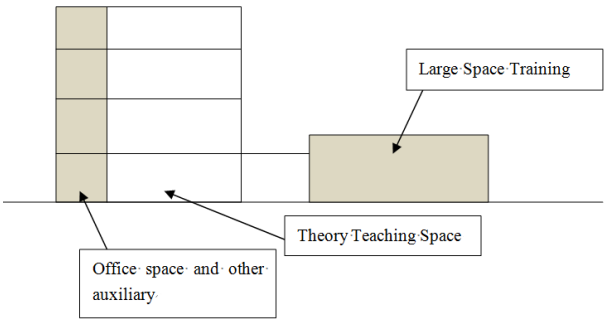

Figure 2: Training - teaching space separate arrangement

First, large or heavy equipment needs large Training Space, for example, equipment with heavy load needed by engineering machinery major has high standards towards the height of space. Upper space of the Training Space with strict load-bearing and ventilation requirements should not be equipped with other functional space. Office and theory teaching space should be set side by side or be connected by passages for better communication. In each building, specialized passage for freight handling, entry and exit should be set to help install and transport large equipment so that Training Space will not avoid other school operations. Meanwhile, as large equipment can make reverberation and noises, and chemical materials will make pollutions, Training Space has certain impact on other teaching districts; therefore, Training Space should be set side by side with theory teaching space for the integration of theory and practice, as well as the communication between students and teachers.

3.2 Graphic design of Training Space

Graphic design of Training Space includes following types:

*Graphic design of passage*In terms of Training Space design in application-oriented universities, passages and corridors are generally used. Such graphic design looks like L or I. There is no direct connection between different rooms and rooms are connected by passages; therefore, traffic flow will not be influenced. Such kind of design suits narrow or long Training Space. Training rooms are connected by passages and located side by side. Toilets, offices and other auxiliary space are located at two ends. Graphic design of passage can connect multi-space, natural light with ventilation in a free way. The space has strong independence.

Graphic design of unit When it comes to graphic design of unit, auxiliary space, teaching space and training are integrated as an independent entity, which looks like a mountain or fish bone from overlook. Traditional buildings are connected by corridors to form an orderly and regular space group. Training Space turns from a single space into a comprehensive unit space which can provide service, production and training. Figure 3 shows the design of Training Space in an economy and trade vocational technical college. Passages connect six teaching space, and each space belongs to different department. Space is independent while connected. Office and Training Space are located at two sides of a passage, while toilets and stairs at two ends. All those form a shared communication space.

Figure 3: An Institute of Trade Training Space plan

Graphic design of yard This design looks like O from overlook because it encloses a large number of functional rooms. The yard is enclosed from three or four directions by buildings. One or more sides of a yard are planned as open areas. Buildings and yards are closely connected in space. A single building connects with another by the yard. The main entrance is set at central area, and vertical facility such as stair is set at four corners. In terms of function, Training Space is set at the center of a yard surrounded by buildings and is combined with auxiliary space. The middle of a yard shares good lighting and climate conditions, which can provide beautiful environments as well as defend sands and winds.

4. DESIGN APPLICATION OF TRAINING SPACE IN APPLICATION-ORIENTED UNIVERSITIES

4.1 Planning and design of training base

In terms of teaching process in application-oriented universities, training base is important for students to use their knowledge to solve practical problems. It is the primary principle to design university Training Space. Training base layout should follow principles such as independency, variety, and particularity. Before making a plan, a designer should analyze pre-functions of a training base in details. In the meantime, external environments such as road, style, functional area, and surrounding should also be taken into consideration.

According to teaching features of application-oriented universities, campus is divided into teaching and research area, life and service area, office area and training area. As more students are enrolled, a large number of application oriented universities have problems such as crowd and lack of enough school buildings. Therefore, further extension of campus should be thought when it comes to planning Training Space layout. In order to arrange properly and prohibit overlapping building, following aspects should be taken into consideration when designing Training Space:

To begin with, a designer should take the internal and external relationship of Training Space into consideration. When making site planning, a designer should not only take surrounding, road, entry and exit into consideration, but also consider about landscape and greening of external environments to ensure that the design of Training Space suits general design of campus. Training base should be arranged intensively to make sure that it can be connected with other buildings in campus and will not interfere them so as to improve school image.

Then, a designer should pay attention to the relationship between training base and surrounding building. Training base is a place which provides

training and internship opportunities for students; therefore, it should be located at a proper space, for example, it is better to be set near frequently-used buildings to help students pay less time on the way. Natural light, pipeline and network construction should be guaranteed in Training Space. A designer should also position equipment emitting harmful gases or making noises properly so that they will not have huge influence on other buildings. Finally, functional areas should be used in a rational way. There are different positioning plans for Training Space and learning space. Therefore, it is essential for application-oriented universities to consider how to ensure high utilization of space and equipment and how to ensure the close connection between theory and professional training.

4.2 Location design and selection of training building

In terms of location design and selection of training building, a designer should not only consider about the general planning of campus, but also the facility of traffic and rationality of location as well as interference. According to major and location, Training Space should be built independently. It can also be set in a group for major's needs. Generally, there are three types of training buildings. The first kind of training building is located at the corner of campus and next to other buildings. The second kind is situated at one side of a road and is close to school gate. The third kind is located at the central area of campus, which is shown in Figure 4.

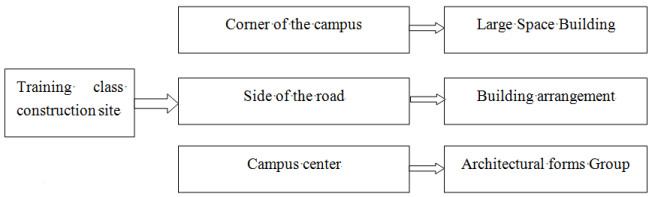

Figure 4: Different types of training classes construction site

The reason why training buildings are located at the corner of campus is that Training Space takes limited place and has limited connection with surrounding buildings. It may also set to facilitate the transportation of large equipment. During practices of some training projects such as vehicle inspection, electrical machine, electrical machinery and electronic control, practical teaching process can easily influence surroundings. Particularly, vehicle repairing workshop, digital control workshop, sheet-metal workshop and other similar workshops should be away from student's living areas such as dining hall or dormitory. Tree or fence is needed if necessary.

The design that Training Space is set at one side of a road and near school gate suits application-oriented universities in narrow shape, in order to facilitate the transportation of large equipment and shorten transportation distance of productive materials. A large number of universities locate Training Space near their school gates for better loading and unloading in order to avoid impacts made by people outside school because Training Space is equipped with social functions such as authenticate, training and service.

Public basic training buildings are generally located at the central area of campus. Those buildings need limited space and there will not be frequent equipment loading or unloading, waste water, gas, noise and shake. They have limited impacts on surroundings such as English teaching training room or computer training room. In general, office, laboratory, research room, and training room are set within the same building which is close to and shares close relationship with other teaching buildings. Such kind of allocation is helpful for students to communicate with each other. Figure 5 shows a graphic distribution picture of a science and technology university. In Figure 5, training buildings are located at central campus, which shows that practical teaching is of great importance in application-oriented universities. Closely connected buildings can improve utilization efficiency of teaching equipment and is also beneficial for intensive management.

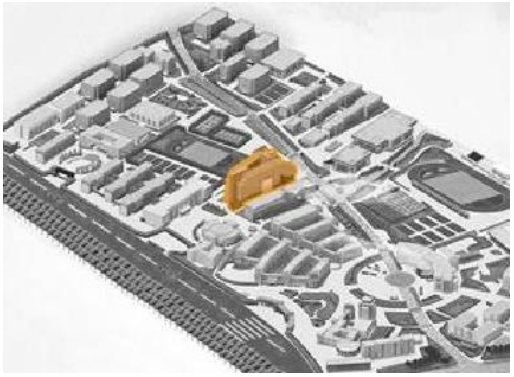

Figure 5: University of Technology campus in a training plane distribution

5. CONCLUSION

With education reforms, it has become the core task for application-oriented universities to cultivate pragmatic personnel to meet social requirements. Training Space is a basic platform for those universities to improve teaching standards and cultivate personnel of high caliber. This essay analyzes and studies rational designs of Training Space in application-oriented universities, introduces notices at location selection and overall layout from the perspective of general planning layout. The essay analyzes the arrangement of training or teaching space in order to improve the rationality of general layout in application-oriented universities as well as the utilization efficiency of teaching resources.

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