

The Planning and Design of Outdoor Furniture Based on the Characteristics of School Culture

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Objectives: Outdoor furniture is an important part of the overall environment of a university. Its design is not only to meet the needs of people's daily activities, but also to highlight the teaching concept and cultural characteristics of a university. However, at present, the outdoor furniture of some universities in China has the same phenomenon, which can not show the cultural characteristics of universities. **Methods:** In view of this, this study proposes to design and plan outdoor furniture in Colleges and universities on the basis of school culture. Through the research and design of the shape, material and color of campus outdoor furniture, the cultural characteristics of the corresponding schools are reflected, and the proposed design ideas are put into the campus outdoor furniture design of a university, which proves the scientificity and feasibility of the planning scheme by way of examples. **Results:** It is hoped that through this study, the school's cultural characteristics can be integrated with the campus outdoor furniture design. **Conclusion:** So that the campus outdoor furniture can reflect the school's unique teaching philosophy, humanistic feelings and cultural characteristics.

Key words: outdoor furniture; cultural characteristics; university campus; planning

Tob Regul Sci.[™] 2021;7(5): 1889-1894

DOI: doi.org/10.18001/TRS.7.5.110

Campus outdoor furniture is a part of the overall planning of the campus. The basic function of outdoor furniture is to provide the campus staff and students with places for daily activities ¹. On this basis, outdoor furniture can also show its own cultural connotation, the cultural characteristics of the campus and the humanistic care of the school. However, with the rapid development of China's economy, the outdoor furniture in Colleges and universities has not achieved further development, but only remained in the basic stage of meeting people's daily activities ². The outdoor furniture design of some colleges and universities has not been able to meet the current rapid improvement of the public aesthetic due to economic development, nor can it serve as the facade of a college, reflecting the cultural characteristics of the College ³. How to plan and design the outdoor furniture in Colleges and universities, and how to reflect the characteristics of school culture, has become an important topic worthy of exploration and research in Colleges and

universities.

Diler et al. Compared 120 kinds of wood and 2 kinds of construction processes commonly used in outdoor furniture construction, the results showed that the performance of mortise and tenon joint was 4 times higher than that of nail joint, and the use effect of polyurethane adhesive was better than that of polyvinyl acetate adhesive ⁴. Jabareen y et al. Have studied the methods of using urban planning to reduce greenhouse gas emissions, so as to cope with climate change. The research results show that most cities are still adopting traditional planning methods, and the cities after planning still can not resist the harm of gas change ⁵. Landau et al. Tested various spatial logics in the sub communities of Copan City, Honduras, in order to better understand the principles behind pairing group planning. The test results support a prevailing cosmological logic consistent with the work on the concept of directionality, especially the importance of the north and the significance of the North-South building axis ⁶. Gleye P H et al. Analyzed the design oriented material planning and policy oriented social and

economic planning in the United States, and studied the current situation that design oriented plays a leading role in urban development, while policy oriented plays a leading role in the planning industry, and finally put forward five suggestions to help the planning industry to play its unique role again and strengthen its handling of contemporary cities Capacity of city problems ⁷. Schramm s and others proposed to explain the social change system in Hanoi from the perspective of urban political ecology and historical perspective, which is generated from the interaction between discourse and material urbanization dynamics. In addition, Schramm s et al. Also discussed the material reproduction of urban sanitation and drainage in Hanoi as part of the broader urbanization dynamics, conceptualizing regular floods in urban fringe areas of Hanoi as indicators of the sustainable social spatial framework of urban sanitation system ⁸.

Through the research of domestic and foreign scholars on outdoor furniture in Colleges and universities, it can be seen that although many scholars at home and abroad have conducted research on the design of outdoor furniture in campus from various angles and achieved good results, few people have conducted research on outdoor furniture in campus from the perspective of school cultural characteristics. Therefore, based on the characteristics of school culture, this paper optimizes the shape, material and color of outdoor furniture, aiming to provide some reference value in practice and theory for the future campus outdoor furniture design.

METHODS

Outdoor Furniture Features

Furniture can be seen everywhere in daily life. It is a kind of appliance for people to sit, lie down, work or display and store as objects, and it brings great convenience to people's life. The existence of furniture has run through all aspects of people's life. However, with the development of the times, furniture is no longer just a simple tool for people to provide convenience, furniture has a broader meaning. Just as the house is not only a place to provide people with rest, but also a person's home, contemporary furniture has developed a different meaning from general appliances,

involving the complex system of people and environment, and has cultural, functional and artistic features. Furniture can be divided into indoor furniture and outdoor furniture. Indoor furniture is the appliances that can be seen everywhere in daily life, such as bed, sofa, etc. Outdoor furniture is mainly popular in Europe and the United States, because most countries in Europe and the United States have a small population and a large per capita land area, so people in this area live in many houses with gardens, lawns, etc., and outdoor furniture can be placed in these places. In China, outdoor furniture is not as popular as in Europe and America because of the large population base, the small per capita land area and the limited space for most people. In essence, outdoor furniture is the extension of indoor furniture to the outdoor. The difference between outdoor furniture and general indoor furniture is that outdoor furniture is a part of the regional environment and a component element of urban landscape. Outdoor furniture has the communication and publicity that indoor furniture does not have. As an important part of urban landscape facilities, the main function of outdoor furniture is to meet the needs of people's activities, and its existing form is generally table, chair or umbrella and so on. Outdoor furniture can be divided into three categories: movable outdoor furniture, permanently fixed outdoor furniture and portable outdoor furniture.

Characteristics of Outdoor Furniture on Campus

Campus outdoor furniture is located in the campus of outdoor furniture, there are similarities and differences between the two. The similarity lies in that both of them are arranged outdoors, so the furniture is public and communicative. Moreover, because there is no protection for the wind and rain outside, the furniture must be solid, durable, cold proof and heat-resistant. The difference between them is mainly reflected in the difference of service objects. The service object of outdoor furniture is the people of the whole society, whose main purpose is to meet the people's leisure activities and viewing. The service objects of campus outdoor furniture are mostly teachers and students. As an important part of campus, campus outdoor furniture not only provides various activities for teachers and students, but

also embodies the artistic aesthetics of the University, the spiritual style of teachers and students and the cultural heritage of the campus. In this paper, the current campus

outdoor furniture survey, the university campus outdoor furniture classification, classification results are shown in the table below.

Table 1 Campus outdoor Furniture Classification	
Classification by function	Content
Sitting and lying	Stool、Table、Chair、Recliner
Intelligence	Road sign、Indicator、Map、Broadcast、Newspaper column
Lighting	Street lamp、Wall lamp、Floor lamp、Landscape lights
Health	Trash can、Washbasin

As shown in the above table, this paper divides the current campus outdoor furniture into four categories, namely, sitting and sleeping, intelligence, lighting and sanitation. Each type of outdoor furniture is a ubiquitous facility in the campus. Sitting and lying type outdoor furniture, that is, to provide the campus teaching staff and students with places for sitting, lying and other physiological behaviors, the purpose is to let the teaching staff and students have a rest place outdoors, so this kind of outdoor furniture has the highest requirements for human comfort. At present, the outdoor furniture of university campus mainly includes sitting stool, bench, table, several cases and reclining chair, etc. The layout of this kind of outdoor furniture can be adjusted according to the size and layout of the corresponding colleges and universities. The configuration of sitting and lying outdoor furniture, ergonomic compliance, frequency, etc. can reflect the economic level and human cultural level of a university. Information outdoor furniture, as the name implies, is a place to provide popular information, and the ways to provide information for people include but not limited to text, voice, image and video. Common outdoor information furniture includes signboard, map, road sign, newspaper

column, LED display screen, campus broadcast, etc. Through this kind of implementation, it can reflect the historical background and campus cultural spirit of the corresponding colleges and universities. The main function of lighting outdoor furniture is to provide brightness, so that people can see things clearly under the condition of light. This kind of outdoor furniture mainly includes street lamp, wall lamp, ground lamp and landscape lamp. In addition to providing vision for people as mentioned before, lighting outdoor furniture can also play a role in decorating the campus. By combining proper light with the campus landscape, it can set off the atmosphere and beautify the campus environment. Sanitary outdoor furniture, such as dustbin, hand washing pool, etc., which is mainly to maintain the clean and tidy campus environment, is the most important and indispensable outdoor furniture in every university. As mentioned above, the proportion of outdoor furniture in Colleges and universities can be arranged according to the scale of the corresponding campus. After the investigation of most domestic colleges and universities, this study analyzes and summarizes the proportion of outdoor furniture in Colleges and universities of different scales, as shown in the table below.

Table 2
Campus Outdoor Furniture and Dimension

Scale(hm2)	Stool	Street lamp	trash can	Street sign
≤3	√	/	√	/
3-6	√	/	√	/
7-12	√	√	√	/
13-20	√	√	√	√
21-50	√	√	√	√
≥50	√	√	√	√

As shown in the above table, "√" indicates that it must be set and "/" indicates that it is unnecessary to set. In this study, the scale of universities in China is divided into six categories, which are less than 3 mu, 3-6 mu, 7-12 mu, 13-20 mu, 21-50 Mu and more than 50 mu. Then, whether outdoor furniture in these six scales must be configured is studied. From the above table, it can be seen that no matter the scale of the University, outdoor sanitary furniture such as garbage cans, chairs and chairs, and outdoor lighting furniture such as street lamps must be configured. For some intelligence furniture, such as maps, LED screens, road signs, etc., they need to be configured according to the specific situation of the university campus Research.

RESULTS

University Outdoor Furniture Based on the Characteristics of School Culture

University is a small social group which integrates scientific research, teaching, culture, tourism and other elements. It is the epitome of the society. The university should not only serve and receive education, but also be open to the society. The key to improve the campus environment and create a good public image of the campus is to do well in the campus design and planning. On the basis of university teaching and education, it has become a new concept of university campus planning to carry out ecological, regional, garden, modernization and human culture on campus, which should also be observed in the planning and design of university outdoor furniture. When designing outdoor furniture according to the campus culture of colleges and universities, it must be designed according to the actual situation of

the colleges and universities. Because the environment and campus culture of each university are different, for example, some universities are liberal arts universities, some are engineering universities, and some are comprehensive universities. Therefore, before designing outdoor furniture on campus, we must first collect it Collect the data of corresponding universities, and then design. Figure 1 shows a bench on the road of a university campus.

Figure 1
Campus Outdoor Bench



In this paper, based on the perspective of school cultural characteristics, the modeling, material and color of campus outdoor furniture are studied. In China, different colleges and universities have different cultural atmosphere, different historical background, and different shapes can be used to reflect the characteristics of colleges and universities when designing outdoor furniture. For example, designing the shape of street lamp into the shape of ancient lamp post can show a unique charm of ancient China. The campus culture of each university is different. Through the materials used in outdoor furniture, the unique campus culture of different

universities can be divided into and spiritual connotation. Taking Z University in China as an example, since its establishment, the university has advocated the campus culture of seeking practical learning and preserving right and wrong, and up to now, this campus culture is still used as the campus culture spirit of Z University. In order to match the long history of Z University, many outdoor furniture on campus, including street lamps, telephone booths, dustbins, benches, etc., are made of antique wood, and poems describing the local history and beauty are carved on the wood by relief. The ancient poems carved with knot relief technique of imitating ancient wood materials perfectly reflect the long history of Z University and the academic campus learning literature, which set off the cultural atmosphere in the campus. The use of color is the most intuitive of the three methods. Different colors of outdoor furniture can make people feel different changes. Take y University as an example. Y university is a national university. The faculty and students in the university are all composed of different ethnic groups. The University adheres to the campus culture of harmony but diversity and each ethnic group is one. In the campus of Y University, outdoor furniture has been painted with various colors, such as passionate red, solemn black, vibrant green and so on. The colorful outdoor furniture is full of

harmonious and unified aesthetic feeling from a distance. The matching design of this color reflects the harmony and diversity of Y University. Each famous family is a campus culture.

Outdoor Furniture Design of a University

This study takes a university as an example, on the basis of university cultural characteristics, designs the campus furniture of a university. A university is a comprehensive university integrating science, engineering, culture, agriculture, law, economics, management, arts and education. It has a history of 70 years since its establishment. Although the university is a comprehensive university, its forestry specialty is well-known nationwide, so the forestry specialty of a university makes it a key discipline with its characteristics. Since its establishment, school a has been adhering to the campus culture of "trees and people, seeking truth and innovation". Both the school philosophy and the school tenet are centered on the good and consistent. In order to reflect the unique campus culture and specialty of tree people in school a, this study integrates the elements related to trees, branches, leaves and forest into the outdoor furniture design of the campus, and reflects the unique campus culture of school a through the modeling, color and material of outdoor furniture. The following table shows the design of this study.

Table 3
Outdoor Furniture Design Scheme Table

Element	Influence factor	Element extraction
Modeling	Use function and environmental factors	Irregular geometry and cylinder
Material	Wooden materials and stainless steel materials	The color part is mostly paint
Color	Paint-based	Green and wood brown

First of all, the design of outdoor seats on campus. Bench is a place for teachers and students to rest on campus. It is also a kind of outdoor furniture often seen in Colleges and universities. In this study, the shape of the bench is designed as the shape of the stump, and the material is wood. However, in order to increase the durability of the bench, spray a layer of paint on the surface of the bench, spray green paint on the lower part of the

bench, that is, the root of the wooden pier, and spray wood brown paint on the upper part of the bench. This kind of stool looks like a wooden pier in the forest. This kind of stool does not need to keep the same appearance. It can put all kinds of wooden mounds in the campus. The size, size and appearance can be different to increase the authenticity. Then design the trash can in a university. In this study, the shape of the garbage can is designed into a square shape, and the top of the garbage can is designed into a tree

leaf shape. The garbage can body is made of stainless steel. Because the garbage can is full of all kinds of garbage, if wood is used, time will inevitably leave a bad smell that is difficult to remove. After determining the material, select the color, spray a layer of green paint around and at the bottom of the garbage can, which can create a harmonious feeling after being placed in the lawn. However, in order to prevent the garbage can and the surrounding environment from being too desired, the situation that the garbage can cannot be found is studied. The top of the garbage can is designed to be wood brown, which not only keeps the garbage can and the surrounding environment Coordination, and achieved the purpose of highlighting the garbage can. In order to ensure the stability of the street lamp, the material of the street lamp pole is stainless steel, then spray the wood brown paint on the surface of the lamp pole, the lamp head is designed as a circle, and spray the green paint. The rest of the outdoor supporting furniture also adopts the design idea of integrating furniture and trees to reflect the campus culture of "tree people" that a university has always been adhering to.

DISCUSSION

At present, the design of outdoor furniture in many colleges and universities is still at the primary stage of meeting people's daily activities. There is a uniform situation in the design of outdoor furniture in various colleges and universities, which can not reflect the cultural characteristics of colleges and universities. Therefore, based on the characteristics of the school culture, the paper proposes to plan and design the outdoor furniture of the campus, and improves the design from the three aspects of the shape, material and color of the outdoor furniture, and verifies the planning scheme through examples. The results show that in order to make the outdoor furniture reflect the cultural characteristics of the school, we should optimize the shape, material and color of the outdoor furniture, and make these three characteristics become the anchor point of the combination of the outdoor furniture and the cultural characteristics of the school, so as to achieve the purpose of reflecting the cultural characteristics of the school through the

outdoor furniture. However, there are still some deficiencies in this study. The design scheme proposed in this study is only a superficial exploration of the campus outdoor furniture design, hoping to conduct more in-depth research in the future.

Human Subjects Approval Statement

This paper did not include human subjects.

Conflict of Interest Disclosure Statement

None declared.

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