

Study on Campus Planning from the Perspective of Environmental Behavior

—Taking Southwest University of Science and Technology in Mianyang, Sichuan Province as an Example

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Abstract

University campus environment is the most one important factors influencing students' daily activities, this article from the perspective of environmental behavior, respectively based on the part of the campus space environment, student traffic flow, and the campus guide identifies three aspects, analyzes the existing problems in the campus space environment and some improvement measures, hoping to design current campus environment design and construction to provide the reference.

Keywords

Environment-Behavior Studies, University Campus, Space Quality, Planning and Design, Evaluate

1. Definition of Environmental Behavior Concepts

Environmental behavior: It's also called environmental psychology. Environmental psychology is a part of psychology, which analyzes the mutual relations and interactions between human behavior (including experience and action) and its corresponding environment (including material, social and cultural). Compared with environmental psychology, the scope of environmental behavior seems to be narrower, and it pays more attention to the relationship and interaction between the environment and people's explicit behavior, so it is more applicable.

2. Introduction

Environmental behavior tries to use some basic theories, methods and concepts of psychology to study people's activities in cities and buildings and people's responses to these environments, and thus feedback them into urban planning and architectural design, so as to improve the environment of human existence (Li, 1999). However, with the development of economy, the university campus in the new era is undergoing constant renewal and construction. Basis of the updating of building forms and software facilities, students and teachers are no longer limited to meet the conditions on the material basis, and their requirements for learning quality and living standard are also constantly improving. In the construction of many campuses, a variety of service facilities begin to appear to meet the needs of students in other aspects of life, such as teahouses, cafes, gyms, reading bars and other small public facilities. Moreover, under the background of large-scale, rapid construction, the university campus planning and design, often pay more attention on the quantity and speed of construction to meet the needs of the development of the university of (Li, 2008) and in shaping regarding the quality of the campus environment is ignored, excessive emphasis on composition form, same campus image and "pretty bad" the outer space. With the gradual slowing of the expansion of colleges and universities, the focus of campus construction is undergoing a transformation from the outside to the inside. How to adapt the existing campus spatial structure to various new functions and concepts has become the core problem to be solved in the next stage of campus development (Wang & He, 2019). To solve this problem, this paper takes Southwest University of Science and Technology as a case to evaluate it from the perspective of environmental behavior.

3. The Research Object

Southwest University of Science and Technology (SWUST) is located in Qingyi Town, Mianyang City, Sichuan Province, covering an area of more than 4000 mu. The campus was formerly known as the Mianyang Branch of Tsinghua University, and some of the original historic buildings of Tsinghua Normal University are still preserved. Up to now, more than 2500 mu of campus has been developed, and the rest of the campus land is still under development and construction. The campus is located in Longshan, which is divided into two campuses: the new campus and the old campus.

Through the investigation and research on the campus, it is found that the campus environmental problems related to students' behavior activities mainly focus on the following three aspects: 1) Landscape space 2) Transportation organization and mode of passage 3) Campus Guide Signs

4. Insufficient Vitality of Landscape Space

Due to the large area, and caused by a considerable part of the local space environment is poor. The development of space construction of the whole environ-

ment is unbalanced. Part of the public space creates an overall feeling of comfort, but there are also many space environments that create unsatisfactory effects, low utilization rate and disproportionate investment and return. Enrich the surrounding landscape of the sitting place by adding landscape pieces and ornamental plants, etc. Make these places more attractive to the rest population and improve the sitting experience (Li & Fu, 2010). Compared with the space environment of the teaching building on the inner ring side of the first east to the fourth east, the space of the buildings from the first east to the fourth east is more comfortable, and the surrounding landscape elements are well used. Water bodies, large and small, are connected in series between several buildings, forming a benign system of running water. At the same time, the area is combined with the Science and Technology Square to form a Tai Chi pattern, which integrates traditional Chinese cultural elements into the landscape design. In addition to the main water feature, there are abundant plants matching with it, forming a good landscape environment. The corridor form is added between the other teaching buildings, and the whole building from the administration building to the library is enclosed into a semi-closed and semi-open space. The grey space and accessibility created by the corridor are exactly in line with the behavior habits of students attending classes and going to the library. The overall space environment is shown in **Figure 1**.

And the art institute of east eight back, is also a circular space to surround close, borrowed from the same water features, such as lotus plant elements to create a relaxed recovery of space environment, but the actual situation is sparsely populated, occasionally a few students in the endorsement, and east eight studio as a large stream of people have point of construction, Its distance from its nearest space environment is often unable to retain people. Public space inevitably requires human participation, human activities are also It naturally becomes the center of the vitality of the whole space (Guo & Li, 2015). After the investigation and analysis of its surrounding environment, from the perspective of environmental psychology, the main reason for this phenomenon is the sense of closure and repression of space. The back of East Eight Studio is facing the ring road, and the difference between the two is large. In this planning and design, water features and lotus flowers were directly added around the building instead of alleviating the height difference, resulting in a pool of stagnant water between the building and the wall of the height difference. In the face of the monotonous closure of the height difference wall, the immobility of the pool water is also one of the elements that cause the depressive atmosphere of the space, as shown in **Figure 2**.

5. Traffic Organization Problem

At present, the campus transportation system is one of the more serious problems. The travel modes are classified according to the behavior habits. One is the walking mode adopted by the students who often stay in the school, which is also the way with the largest traffic flow volume on campus. The second class is



Figure 1. Space environment of East 1st to East 4th Teaching Building in the New District of South-west University of Science and Technology.

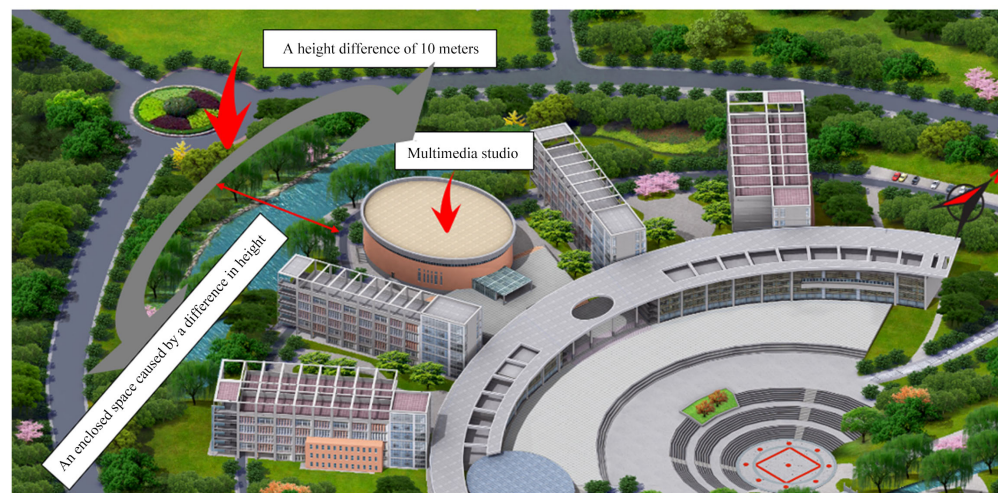


Figure 2. Illustrate the factors causing the closed space.

the motor vehicle adopted by teachers and foreign vehicles. Three types of electric motorcycle travel modes appear and increase increasingly due to the unreasonable campus transportation scheme. The campus transport system is largely based on a pedestrian branch, but there are many sections of the road that are still mixed traffic, especially at several major traffic nodes, where clashes often occur when students are in or out of school. Moreover, due to the emergence of the third mode of travel, safety accidents on campus are also on the rise. The safety accidents caused by electric vehicles are much higher than those caused by motor vehicles. Although the school has also taken corresponding measures to address this problem, such as the speed limit of motor vehicles on campus to 30 km/h, strictly prohibiting motorcycles from speeding still can't change the occurrence of electric vehicle accidents and the increasing number of electric vehicles. The traffic situation of mixed traffic and the steep road conditions caused by the great fluctuation of the terrain are the main factors that induce the campus traffic accidents. The campus traffic situation is shown in **Figure 3**.

From the perspective of environmental behavior, it is largely due to the un-

reasonable arrangement of pedestrian communication lines that students begin to shift to electric vehicles, others party transportation, and the number is increasing. In particular, the pedestrian system in the central district has a particularly serious problem. Whether students go to the new district or the old district, the pedestrian system always passes through a long and high “sky ladder”. And in the process of walking to the old district, you need to bypass a canteen or first down and then up through the canteen, and then around the girls’ dormitory building, and then turn to the “sky ladder” position. It is easy to produce a sense of psychological burden. The route from the central dormitory to the old district is shown in **Figure 4**.

The influence of environment on behavior makes people’s behavior have the characteristics of environmental adaptability (Zhang, 2019). From the figure, we can draw a conclusion that both saving distance and reducing the number of steps are physical consumption of human behavior, and only after long-term calculation of behavior habits can we determine that the electric vehicle program



Figure 3. Campus traffic situation.

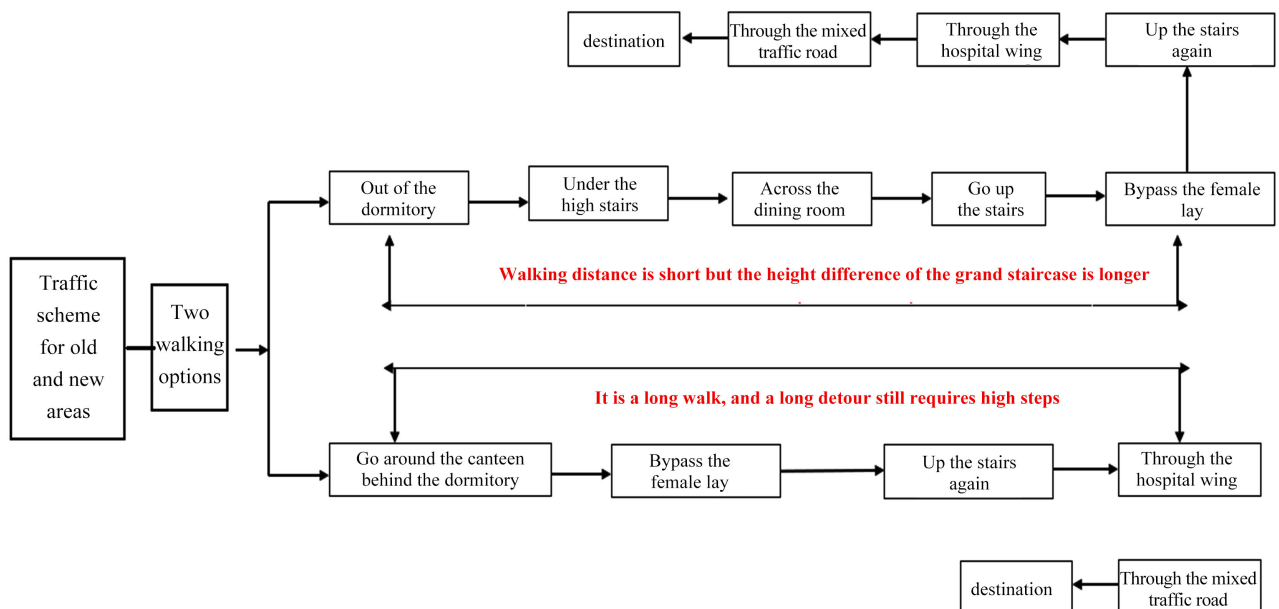


Figure 4. Schematic diagram of walking route from central area to old area.

is the most convenient program. However, due to the unique mountainous form, it is easy to cause traffic accidents. The key to solve this problem is to improve the pedestrian traffic streamline. The slope can be reduced by adding a platform to give a certain buffer time. Reduce the psychological burden to stair to the person psychology at the same time. On the other hand, a new bus route can be opened in the new district to reduce the probability of students buying electric cars and the number of traffic accidents. The spatial environment and improvement of university campus can not only rely on the material transformation, but also should be combined with the policy to create a high-quality campus space.

6. Campus Signage Issues

As an old member who often lives in the campus, I have certain consensus and cognition on the spatial division of the old district, the new district, or the central district. But the definition of space should be clearly marked, not just defined by the impression generated in our mind. The lack of space signs on campus is not friendly to outsiders who have just entered the campus. Often cause clearly through the campus has several times to not familiar with the classification of area, and we the designation and cognition in these areas, and after a certain time of the memory of life and cognitive strengthen to understand, in the final analysis, is linked to environmental behavioral habits of exercise by the division. The emergence of this problem also explains the lack of the guidance of the spatial definition of the campus. The current status of our school's signage system is shown in **Figure 5**.

Campus identification system is constitute an important part of campus space environment, in addition to the basic campus guide, environment is different from other public places in university, the campus identification systems is to represent the whole campus spiritual culture, so the campus identification system should also be a culture and spirit, show a concept of colleges and universities (Wen, 2010).

Indicator signs in different forms, directivity is not obvious



Figure 5. Status diagram of identification system.

7. Discussion

To sum up, combined with environmental psychology, the campus of Southwest University of Science and Technology is observed and evaluated from another perspective. And pointed out some of the problems, the improvement of the quality of the campus space environment can promote the students' physical and mental health. The university campus is constantly updating and changing, which is a long and complex process. This paper points out only part of the problems in the updating process from the perspective of environmental psychology, but the logic of human behavior and demand change behind the space improvement is of universal significance. Moreover, under the current design background, the core concept of "people-oriented" has been deeply rooted in the hearts of the people. More attention should be paid to adjusting the overall spatial layout of the campus and the construction of the environment with people's feelings, and updating the original directive planning to process guiding planning. This study analyzes the existing campus spatial planning problems from the perspective of environmental behavior, aiming to provide reference for future campus planning and design.

In view of the above problems found in the actual survey of campus environment, we put forward the following suggestions through the questionnaire survey of students

Firstly, the space landscape: a lot of space landscape construction should be designed according to the existing terrain and landforms, rather than blindly fill the vacancy. Secondly, the traffic organization aspect: the university campus population is large, therefore in the university campus internal should advocate the person car branch traffic organization way. In addition, in the path planning, students' walking distance to class should not be too long, which will affect the quality of commuting to class to some extent. In the end, the traffic guidance signs on campus should be updated with the existing technology and can be changed according to different time points and places, so as to be recyclable. In addition, according to the campus characteristics and local culture can be designed in line with the campus culture of road signs, eye-catching and beautiful signs for the image of the school and the impression of students have a positive significance.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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