A Study on the Construction of Informal Learning Spaces (ILSs) on University Campuses in China

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Abstract: The main research object of this paper is informal learning spaces (ILSs) on Chinese university campuses. Due to the traditional educational system, Chinese dominated pedagogy is examination-oriented and talent training, which restrict students’ abilities of self-learning and group collaboration, so students lack reasonable and effective independent and cooperative learning opportunities and awareness. Additionally, because of the influence of national government will, most of Chinese university campuses construction process lack the consideration of the main users of them-students. They are hard to meet the students' rich daily lives, lacking the construction of ILSs. The students’ learning and life on the campus are fixed on the three points of "classroom-dining hall-dormitory". Lacking the construction of spatial layers and atmosphere, public spaces on campuses are difficult to attract students to stay, to carry out various activities and to meet the diverse learning patterns of contemporary university students. According to the problems above, this paper puts forward the construction strategy of ILSs on university campuses by means of interviews and questionnaire. On the basis of this theory, this paper analyses the various environmental factors on the campuses based on the survey questionnaire, and further puts forward the conceptive ILSs unit model, which is suitable for outdoor and indoor spaces on campuses. Finally, according to the classification of external space and internal space, the six sorts of campus spaces which are square, landscape, pedestrian, architectural entrance, architectural transport and architectural atrium, are discussed respectively, and the construction strategies and theoretical models of ILSs which are suitable for these spaces are summarised. With the reforming of China's education, the pedagogy of higher education is changing gradually. The proportion of formal learning and informal learning will be balanced. Thus, the strategies and models this paper points out will help to advance this trend and the development of informal learning in Chinese higher educational institutions. However, the limitation is obvious, lacking of real cases to verify the validity of the results, so they are still theoretical.

1. Introduction
Informal learning is a learning method that means a learning activity that learners implement learning autonomously in informal learning time and venues, without pedagogical aim and instruction. It can be processed every place, without specific classrooms, sense of organisation and institution (Chen and Liu, 2011). ILSs means the spaces available for implementing informal learning, and they can inspire students’ abilities of self-learning and collaboration (Wang, 2018; Wu et al, 2015). The history of Chinese modern higher educational institutions is short, even the earliest ones were set up at the end of 19th century. Since then, there has been no systematic theory of planning and constructing for modern university campuses in China (Chen and Shi, 2011). Additionally, Chinese universities and colleges are mostly, traditionally, follow the rules of Chinese governments and authorities, so the theory and practice of construction of their campuses are falling behind within the whole world, whereas those of foreign,
especially western ones, are developing rapidly. Hence, at present, there is nearly no ILSs on most of Chinese university campuses, leading to less informal learning processed by students (Wang, 2018). In this environment, it is significant to design and construct ILSs on the campuses. This paper takes Chinese university campuses as templates, find out problems and shortcomings of current spaces, and summarise the methods and strategies for constructing ILSs on them, to supply theoretical basis for advancing higher educational quality and construction of university campuses.

2. Methods
The methods divided into two main surveys. The first one is by visual observation: Through the observation of several out-of-class spaces on selected university campus, which is North and South Campuses, Anhui Jianzhu University, this paper will point out and summarise some typical problems on Chinese university campuses. The focus points include campus layout, construction of facilities, vegetation, students’ activities, etc.

The second one is by interviewing and questionnaires: According to the problems of spaces on Chinese university campuses, this paper collects, assembles and analyses relative data via interviews and questionnaires. This interview is proceeded on the internet. The interviewees are Chinese university students, and the number of them is 500. Interview questions mainly involve environmental elements in outdoor and indoor spaces on university campuses, summarising popular spaces, and concluding the main environmental elements. The questions for outdoor spaces survey are: (1) Do you usually stay somewhere outdoor on university campuses and how long do you stay; (2) What kind of activities do you usually do and the range of number of people engaging in; (3) Why do you select the space(s); (4) Do these activities influenced by external factors easily; (5) Which physical environmental element(s) influence your activities; (6) Which human environmental element(s) influence(s) your activities. The questions for indoor spaces survey are: (1) and (2) are the same as above, (3) Which environmental element(s) are necessary for your activities. According to the survey outcomes, this paper will summarise suggestions and sample models for ILSs units. Furthermore, it will ultimately summarise six sorts of ILSs on university campuses based on these ILSs units pointed out before.

3. Analysis and Constructing ILSs Units
Through observation and interviewing, the current problems on spaces of Chinese university campuses are discussed below, and then the outdoor and indoor ILSs units will be pointed out to solve these issues.

3.1. Problems on Outdoor Spaces on Campuses
(1) Square: Many universities set magnificent squares in main entrance and axes, and around main buildings, to promote the appearance of campus. However, the functions of squares on campuses are just normally flourishing and beautifying the layout and environments of campuses, lacking of social activities in them. Environmental factors of squares are simple, without vitality, narrow and small, or poor accessibility, even nearly no communication in some parts of them. (2) Landscape: Most of landscape spaces on Chinese university campuses lack layers. For example, the most common landscapes on Chinese university campuses are open and empty lawns, without space division by vegetations, benches, woods and some other factors, so it is difficult to see people study and do activities in them. (3) Pedestrian: Pedestrian spaces are places where students usually utilise beyond classes and living time. However, Chinese university campus planning just makes these spaces for commuting, paths for pedestrians and bicycles, and even car parks, lacking the consideration for other functions.

3.2. Samples of Outdoor ILSs Units
According to the interview, 67.67% of interviewees sometimes stay outside to communicate and do other activities, only 26.32% of them usually do these things, and just 12.03% of them stay there more than one hour, demonstrating that outdoor spaces are not students’ first choice for ILSs. To solve this problem and enhance outdoor informal learning, the first step is setting the environmental elements,
which include: Temperature (T), Humidity (H), Sunlight (S), Sound (SO), Wind scale (W), Water (WT), Virescence (V), Accessory (A) (pavilion, bench, stone seat, etc.), the Number of Activity Groups (NAG), the Number of Activity People (NAP), Activity Genre (AG), People Flow (PF) and Vehicle Flow (VF) respectively. They are divided into two genres: The one is physical environmental elements (to attract informal learning), the other is human environmental elements (to maintain and advance informal learning).

According to the survey outcomes, the percentage of all interviewees can be set as “Whole Quantity 10”, and the percentage of influenced people by single environmental element can be set as “Impact Quantity” (rounding off), using Impact Quantity/Whole Quantity will calculate “Impact Factors”. The numerical value of impact factors represents the incidence of environment to people, by means of it can avoid the design conditions and problems when designing outdoor ILSs. The consequence is as shown in Table 1:

| Impact quantity Whole quantity | Physical environmental elements | Human environmental elements |
|-------------------------------|--------------------------------|-----------------------------|
| T    | S    | SO   | V    | W    | H    | WT   | A    | NAG  | NAP  | AG   | PF   | VF   |
| 8    | 6    | 7    | 4    | 6    | 2    | 2    | 3    | 2    | 1    | 2    | 4    | 2    |
| 0.8  | 0.6  | 0.7  | 0.4  | 0.6  | 0.2  | 0.2  | 0.3  | 0.2  | 0.1  | 0.2  | 0.4  | 0.2  |

It can be concluded from Table 1 that: (1) In physical environmental elements, T, S, W and SO are relatively high, and V, H, WT and A are lower. Therefore, it is necessary to control temperature and humidity when constructing outdoor ILSs, and avoiding noisy quarters or making sound insulation well; (2) As for human environmental elements, the impact factor of PF take up the most part, so it is necessary to get away from quarters where people flow is high when design and construct ILSs, or to segregate others who just pass by to reduce the influence for students who are processing informal learning in such spaces. Although that of NAG, AG and VF are competitive low, they cannot be ignored. It means that it is necessary to engage different types of learning in outdoor ILSs, to satisfy every kind of activity and group of people. That of NAP is the smallest, demonstrating that different numbers of people in group can all be settled in outdoor spaces, including private and group activities for 2-4 people and even more than 60 people. According to the survey outcomes, different outdoor spaces with different environmental elements and impact factors can summarise a range of Outdoor ILSs units below: (1) Open unit, suitable for setting in big scale and open spaces; (2) Semi-Surrounded unit, suitable for setting in small squares and around teaching buildings; (3) Surrounded unit, suitable for setting in kind noisy places, available for short-term learning; (4) Height difference unit, suitable for setting in plain and open places, to increase the scale of spaces and possibility of learning; (5) Covered unit, suitable for setting in humid and windy regions, to provide shelter from rains and kind of private spaces to learners; (6) Enclosed unit, suitable for setting in noisy spaces, available for long-term learning. The sample models are as shown in Figure 1:

![Figure 1. Sample models for outdoor ILSs units](image-url)
3.3. Problems on Indoor Spaces on Campuses

(1) Architectural entrance: Many entrance spaces are short of variety. For example, in some of such spaces, the atmosphere and learning-supported facilities are limited; Although some of them cultivate circumstance of learning by means of physical and human infrastructures, they still lack the design of staying and learning facilities, so there are few students would like to stay in them; Also, although some of them enhance contact between outdoor and indoor spaces, the single function limits a wide range of activities. (2) Architectural transport: transport spaces in school buildings include internal and external corridors, aisle and paths, etc. They normally lack spatial change and rhythm, just as paths connecting entrance and other sections of buildings. Students’ learning needs flexible and changeable spaces. For example, after classes, teachers and students normally look for the nearest places to discuss. If communicational spaces are far from them, they may utilise adjacent corridors, stair cases and terraces to talk to each other shortly, with limited or even without learning-supported facilities, the quality of communication will be not enough. (3) Architectural atria: architectural atria are normally the most flourishing parts of indoor spaces, and their types are pretty diverse. However, at present, many of them are just grand and empty without construction of learning environment, wasting much area of interior spaces, so teachers and students just pass them through rather than staying in them to learn and communicate.

3.4. Samples of Indoor ILSs Units

As for indoor spaces, the survey outcome indicates: 57.89% interviewees usually stay to communicate and learn in indoor spaces. 48.87% of them can keep staying for more than one hour in such spaces. Nevertheless, the potential of these spaces is not deeply explored. For instance, many lobbies, foyers, and corridors are only for walking and short-term communication, rather than after-class learning and long-term activities. This survey summarises following several necessary environmental elements for indoor spaces learning, which are infrastructures (IF), sunlight or lighting (SL), tranquil (TQ), Wi-Fi, learning resources (LR), catering (CT), virence (VS) and multimedia (MM) respectively. The survey outcome is as shown in Table 2:

| Indoor environmental elements | IF  | TQ  | SL  | LR  | Wi-Fi | VS  | CT  | MM  |
|-------------------------------|-----|-----|-----|-----|-------|-----|-----|-----|
| Proportion                    | 24% | 21% | 18% | 13% | 10%   | 5%  | 3%  | 3%  |

Table 2: Proportion of different indoor environmental elements

Table 2 reflects that the main five environmental units for learning indoor that students choose are infrastructure, lighting, quiet, learning resources and Wi-Fi respectively. Thus, it is vital to construct indoor ILSs to follow these five rules: (1) Setting enough learning infrastructures, to satisfy different kinds and sizes of informal learning, just like private learning, collaborative learning for 2-4 people and seminar for more than 4 people; (2) Constructing quiet environment, individual should keep quiet when communicate and discuss, and it is valuable to set private spaces in public spaces to separate from other parts; (3) Setting proper lighting, whatever natural or artificial light need to satisfy the requirement of illuminance for learning; (4) Setting enough and sound learning resources, because students need to read books, journals and electronic papers easily when processing indoor informal learning; (5) Making sure setting Wi-Fi, which can provide students with online learning resources to advance their informal learning (Dugdale, 2015). It can be seen obviously from the survey above that, compared to outdoor informal learning, indoor informal learning relies more on human factors, such as learning resources, multimedia, learning infrastructures, public service, etc. Hence, the setting of indoor ILSs needs some necessary indoor environmental elements, so this paper concludes four sorts of indoor ILSs units, which are private-alone, public-alone, private-sharing and public-sharing unites respectively (Scott-Webber, 2015). Private-alone and private-sharing need sense of field, so these units require independent surrounded spaces; while public-alone and public-sharing units require open spaces, and they need to be located at core spaces and facing to the public. Indoor ILSs unit samples are as shown in Figure 3:
4. Constructive Strategies for ILSs on University Campuses

Combined with the ILSs units that last section summarised, this section will propose the constructive strategies for ILSs on university campuses. They can be classified as six spaces in two dimensions. The first dimension is outdoor spaces, which are square space, landscape space and pedestrian space. Another dimension is indoor spaces, including architectural entrance space, architectural transport space, and architectural atrium space. The details are stated below:

4.1. Constructive Strategy for ILSs in Squares

1. Good Access: the location of squares should not be too remote, and there should be some highly used places around them, such as teaching buildings, libraries and student centres, etc. The entrance of adjacent buildings needs to face to the squares, to convenience the students who finish formal learning to walk through, stop to rest, and process informal learning in them. Meanwhile, combined with the design of pedestrian spaces, making more students engage in activities in such spaces, the rate of using for squares will be high. In addition, it is vital to prevent squares from vehicles passing and running, as they are easy to be used as car parks without guarding. Thus, separating people flow from vehicle flow, making loop roads for cars, keeping people flow at central section, and setting enough car parks in proper positions on campuses are all valuable methods to keep good access of squares.

2. Valid Size: Yoshinobu Ashihara (1970), Jan Gehl (2002) and Kevin A. Lynch (1960) all claimed that around 25 metres is a pleasant spatial size, so it is achievable to make 25 metres as a basic spatial module, dividing original big scale of spaces, cooperating with landscape and ILSs units, to construct sound ILSs to suit for psychology and sensual experience of users. Besides, the height of adjacent building should also be suitable for the size of squares, the feelings of different ratios of width (W) of squares and height (H) of buildings are different for users: squares will be alley spaces when W/D is less than 1, and they are too narrow to exist; the proportion of squares and building will be fine when W/D is between 1 and 2, since the centrality is suitable to gather people, and the perspectives of users are good; the ratio of squares and buildings will be too big when W/D is more than 2, people would not like to stay in them for long time as lacking of centrality.

3. Suitable Lighting: Squares should be open to sunlight as much as possible, because the places which are full of natural light are popular to do any activity, while the squares which are back to sunlight lack comfortable sensation. Thus, the design of square needs to consider the layout of around buildings, to avoid that squares are shaded by buildings. It is also important to avoid the glare from buildings’ glass windows and curtain walls, so the planning of trees and constructions around and in squares is helpful to prevent them from glare.

4. Valid layout of outdoor ILSs units: The scales of square spaces are generally big, and these spaces can accommodate different kinds of activities, so the designers should properly match different types of ILSs units basing on specific function when they are designing ILSs on squares. For example, the open and central squares line some open learning units and embed a number of semi-surrounded units on edges, limiting the scale of squares and constructing edged learning spaces at the same time; At the centre of square, to flourish the layers, it can be done by rising and sinking the surface floor, using these spaces combined with height difference and enclosed units to create public and private learning spaces

![Sample models for indoor ILSs units](Image)

**Figure 3.** Sample models for indoor ILSs units
separately; The path design cooperated with several of semi-surrounded and surrounded units can provide short-term learning to users. To sum up, the creativity of square spaces is relatively high, so there are many kinds of ILSs can be constructed in them. The sample model of ILSs on squares is as shown in Figure 4.

![Sample model for perspective of outdoor ILSs units in squares](image)

**Figure 4.** Sample model for perspective of outdoor ILSs units in squares

4.2. **Constructive Strategy for ILSs in Landscapes**

1. Valuable site: The location of university campus landscapes not only need to follow the lead of the main plan, but cooperate with other campus elements, to create such whole landscape systems which make central landscape as the core parts on campuses assisted with accessories, in order to embody the whole potential of function and value of campus landscapes. Therefore, landscape should be located closely to campus buildings (building clusters), assisted with around constructions, buildings and vegetations to create the core place on campuses. At the meanwhile, they need to be located away from noise and pollution, to provide students with good environment to do informal learning and other activities.

2. Environment cultivating: Campus landscapes indirectly reflect campus’ cultural connotation. Whatever natural or cultural landscape is a representative memory of campuses for current students and alumni, this characteristic can normally gather and attract students to do learning and other activities. Thus, it is necessary to cultivate natural and cultural environment in proper places in landscapes.

3. Validly constructing outdoor ILSs units: Landscape spaces on university campuses should keep natural and cultural status as much as possible. Outdoor ILSs units can be randomly set in landscapes, without deliberately setting decided implication. This sort of settle can flourish landscape and spatial secrecy on campuses, to attract students to utilise, and to provide more possibilities for informal learning. The construction model of ILSs in landscape is similar to that of ILSs in squares.

4.3. **Constructive Strategy for ILSs in Pedestrians**

1. Conveniences: Convenience is the initial factor to consider when constructing pedestrian spaces. Therefore, the layout of pedestrian spaces should cooperate tightly entrances with campus buildings and students’ living and commuting flows.

2. Environmental design: As pedestrian are just passing spaces, so the most of current setting of accessories are kind of monotonous, including repeating border trees and street lamps. Repeating objects can not only cause visual fatigue, but increase walking distance psychologically. In contrast, abundant and distinctive landscape can flourish walking experience, including commercial setting, natural landscape, and ornaments, etc.

3. Setting outdoor ILSs units: The core points to construct the ILSs in pedestrian spaces on campuses are solving the problems, which are pedestrian system on campuses lacks the function of learning, and the conflict between people flow and static spaces. Because of the limited scale and function of pedestrian spaces, the operability of such spaces is comparatively low. According to the survey, the duration of outdoor activities is mostly kept within one hour, so open and semi-surrounded learning units are
suitable for pedestrian spaces. This strategy designs two kinds of ILSs for pedestrian spaces on university campuses. One kind is along street type and another is back street type, as shown in Figure 5. As along street ILSs are affected by numerals environmental elements, including pedestrians and vehicles, so the number of learners to informal learning is small, with poor sustainability, suitting for private and short-term learning, to satisfy learnings within half hours; However, back street type is different. Backing to noisy streets, back street ILSs can avoid pretty much outdoor environmental elements, immersed in quiet atmosphere, so it is suitable for group and long-term learning.

![Back Street ILSs](image)

**Figure 5.** Section of outdoor ILSs units in pedestrian spaces and perspectives

4.4. **Constructive Strategy for ILSs in Entrances**

1. Transition of outdoor and indoor spaces: Entrance spaces are the transitions between interior and exterior spaces, so they are easy to be effected by both the outdoor and indoor environmental elements. Thus, it is vital to consider natural environmental elements, such as local climate, sun light and ventilation when constructing ILSs, as well as human environmental ones just like indoor lighting, facilities and flow rate. One of the outdoor spatial influence factors is temperature buffer area, which can be achieved by objects which have relatively high specific heat capacity, like water and lawn. It can also be down by setting ecological facilities, such as vertical greening and passive energy conservation; Another factor is light buffer area, which can be realised by means of constructions and plants to set some grey spaces in front of entrances, or by increasing natural sunlight inside the entrance, setting skylight or glass curtain walls to make sure the photopia suitable.

2. Improving attraction of spatial environment: The size of entrance spaces should not be too small, so the entrance spaces can be through the height of several layers, or utilise glasses taking place opaque material walls around, to extend the sense of space. As for the accessories, there can be s serial of catering facilities and learning resources and learning furniture, etc., so as to achieve the aim of one-stop service, and to interest students to keep staying in such spaces. Additionally, arranging some exhibition such as university histories, stories of famous alumni and students’ works, etc., to attract students. It can make them relax and also learn more knowledge when they passing through the entrance.

3. Combining with private-alone and public-alone ILSs units design: The construction of ILSs for architectural entrance spaces should satisfy the requirements of transport, rituality and openness at the same time. In another word, these spaces suit for self-learning and collaborative learning for 2–4 people, so it is suitable to embed private-alone and public-alone ILSs units. It should be noticed that ‘territoriality’ does not to be pretty clear, reducing the limitation of the borders, because the fuzzy boundary can enhance communications between learning individuals. Specifically, it can be achieved by embedding static spaces with private-alone and public-alone ILSs units to make some “Learning Islands”. Islands can be islet and archipelago modes, decided by the number of users: When there are conferences or open speeches hosting in such spaces, ILSs units can be united together; When there are seminars or individual learning processing, these units can be separated. The biggest volume of an island is four, and the smallest volume is one. In summary, this combination of tables and seats can provide informal learning with many possibilities, the sample planning and models are as shown in Figure 6.
4.5. Constructive Strategy for Transport Spaces

1. Comfortable lighting and ventilation: To achieve indoor transport spaces satisfying the requirements of informal learning, comfy ventilation and lighting are the essential conditions. Thus, they should be considered isolated at the initial step of designing such spaces. To improve the quality of learning environment in these spaces, they should not only provide the function of transport flow, but also reach the physical environmental requirements of informal learning.

2. Linking internal and external spaces: The sense of transport spaces can be expanded assisted by roofs and overhead corridors, to achieve different degrees of connecting between inside and outside. The measures of connection include direct connection, indirect connection and visual connection. Direct connection means direct linking of transport and external spaces, such as ground corridors; Indirect connection can be achieved by roof platforms, atria and grey spaces; Visual connection does not require transport and exterior spaces to link together in the same diversion, while just by means of visual contact to make people in these two spaces see and communicate with each other.

3. Differentiating dynamic and static spaces: Internal transport spaces responsible for flow lines within buildings, so it is significant to separate dynamic and static activities when constructing ILSs inside of such spaces. It can be done by setting learning furniture to distinguish dynamic and static spaces, and it should make sure that the width of transport spaces is enough.

4. Valid layout of private-alone and public-alone ILSs units: The rate of using for indoor transport spaces is comparatively lower than that of entrance spaces, and the proportion of spaces which can be used is smaller as well, so they suit for private-alone and public-alone units whose occupations are small; In addition, because such spaces are pretty close to classrooms and lecture rooms, and they are normally used no more than half hour, so private-alone and public-alone units suit for the condition. It can be achieved by setting retractable tables and seats on the walls of such spaces, to be convenient for teachers and students to use instantly, the volume can be 1 person and small group containing 2-4 people, as shown in Figure 7.

4.6. Constructive Strategy for ILSs in Atria

1. Enhancing communicating with adjacent spaces: Atria are surrounded spaces, circled by other different functional spaces. Compared with other interior parts, they have advantages of gathering people and controllability of space shape. Just because of these, creating more connections between atria and spaces around, increasing overlaps between transport spaces and main flow lines of students, spatial
accessibility, openness, and attractions of atria. As good connection with other spaces, atrium spaces can become remarkable ILSs.

2. Designing combined with service facilities: Learning-supported service facilities are also needed for ILSs in atria. It can be done by means of setting plants, learning resources and leisure facilities, etc. in atrium spaces properly, increasing spatial vitality, by doing that there will be more places where students can go after classes; Besides, it can also be achieved by embedding stages where many public speeches can be hosted and students can do individual learnings in other periods of time.

3. Designing combined with natural environment: The construction of ILSs in outdoor atria should cooperate with natural environment, due to more outdoor than indoor environmental elements, including sunlight, temperature, wind, rainfall, virescence, etc. Vibrating outdoor atrium spaces to be served as the public communication centres, combined with abundant vegetations and platforms to increase activity layers on campuses, and imbedded with some service facilities to attract more users, to make students immerse in but not distracted by natural environments.

4. Embedding private alone, public-alone, private-sharing and public-sharing ILSs units: Because of the diverse sizes, shapes, environments, functions and accessories, atrium spaces can house more kinds of activities, so they are suitable for all four kinds of indoor ILSs units.

5. Results and Discussions
In the upcoming days, higher educational pedagogy will gradually balance the proportion between formal and informal learning, and the design and construction of ILSs will be flourished (Harrop and Turpin, 2013; Cox, 2018; Hunter and Cox, 2014). More and more ILSs will be constructed on Chinese university campuses, to solve the present problems. There are two steps to make it:

1. First Step: Two sorts of ILSs units: (1) According to the requirements of environmental elements for outdoor spaces, it can be summarised six kinds of outdoor ILSs units, which are open, semi-surrounded, surrounded, height difference, covered and enclosed; (2) According to the requirements of environmental elements for indoor spaces, it can be summarised four sorts of indoor ILSs units, which are private-alone, public-alone, private-sharing and public-sharing.

2. Second Step: Taking these ILSs units as fundamental elements for ILSs, this paper summarises constructive strategies and theoretical models for six types of ILSs: (1) Squares. Good access is the primary condition, so they should be located on the main flow lines, and there should not be obstacles and barriers around, to be convenient for a huge number of people to use. The second condition is setting sound size and lighting, making users comfortable. The last one should be setting outdoor ILSs properly, enhancing spatial flourish and sense of experience, so different sections should be set different ILSs units, achieving high efficiency of spatial using. (2) Landscapes. Firstly, the setting of landscape spaces should be convenient for students. Secondly, the environmental construction of landscape spaces should be suitable for implementing informal learning and separating spaces well. Finally, embedding outdoor ILSs units soundly. (3) Pedestrians. Similar as square spaces, pedestrian spaces should be very easy to use. Secondly, increasing outdoor environmental elements in such spaces, to flourish the using experience of the space. Finally, setting outdoor ILSs units properly. (4) Architectural entrances. Firstly, making good converting of internal and external spaces, to increase the attraction of spatial atmosphere and environment. Secondly, cooperated with private-alone and public-alone units. (5) Architectural transport spaces. Firstly, providing transport spaces with proper ventilation and lighting, to provide spaces with good learning atmosphere. The next step is making connection between indoor and outdoor spaces well, and to distinguish flow lines and static spaces, to avoid two groups of people disturb each other. Finally, setting private-alone and public-alone ILSs units validly in spaces. (6) Architectural atria. Atrium spaces should enhance contact with adjacent spaces, combining with service facilities and
natural environments. Embedded with private-alone, public-alone, private-sharing and public-sharing ILSs units.

6. Conclusions
In the twenty-first century, architecture, landscape and planning for university campus are no longer the same as the past, and they need to be satisfied with the requirements for changing students’ life and learning (Coulson, Roberts and Taylor, 2011; 2018). Hence, the strategies of construction for ILSs on Chinese university campuses will be necessary to improve the quality of higher education, to flourish campus spaces, and the most important aim is to change Chinese students’ simple school life which is three points of "classroom - dining hall - dormitory". However, the outcomes and results of this paper are still unknown to fit for the majority of universities and colleges in China, lacking real case studies. Therefore, the future research and practices for ILSs on Chinese university campuses need to cooperate to develop and progress together, so as to provide more possibilities for upcoming plan and design of Chinese university campuses.

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