

The Innovative Talents Training Mode of the Generic Architecture Discipline

--Take the 《An Introduction to Soundscape Design》 As Example

Tang Zhengzheng

School of architecture
Harbin institute of technology
Harbin, China

e-mail: tangzhengzheng88@163.com

Han Zhenkun

School of architecture
Harbin institute of technology
Harbin, China

e-mail: hanzhenkun8585@tom.com

Tong Xin

School of architecture
Harbin institute of technology
Harbin, China

e-mail: 240015561@qq.com

Abstract—In this paper, a generic design of acoustic landscape architecture discipline, for example, through the analysis of the focus of architectural subject innovation talents training and the teaching difficulty of the architectural discipline, we put forward three case studies the cultivation of the practical teaching mode to make the Soundscape design teaching to expand from the class to the practical, to expand from theory to application, to improve overall architecture students design level effectively, cultivating the innovative talents to adapt to the needs of social development in the future.

Keywords—*Soundscape design; Cultivation of talents; Practical teaching*

The architecture discipline education starts late in our country, but with the development of era, the building and construction has gained more and more important position in China's social and economic, and so on basic education guiding should also be paid attention. China's modern education system mainly comes from two schools of western model-- Beaux System (Beaux-arts) system and the Bauhaus (Bauhaus), although there are many different points of these two genres, both of them emphasis to train practical talents as teaching purposes. [1]Moreover, the goals of architectural education in the 《Architectural Education Charter》 has also been made clear that for we architect, concerned about the future of architecture in the rapid development of the world , we believe that everything related the built environment, using improving, beautify and maintenance all belong to the architect activity areas. [2] It shows that the practical teaching have occupied an important position in all ages and it shouldn't be ignored.

With the continuous development and mature of architectural disciplines in recent years the need considered of more factors related architectural design is becoming more and more widely and more favor of

multidisciplinary cross. [3]So in the early education of building foundation shall have pan subject consciousness, in addition to the traditional architectural drawing, architectural structure, construction measurement course, it also should strengthen students for building sound, light, heat and other aspects of understanding and the understanding of knowledge.

This paper set the architectural acoustics as example and to discuss preliminary how to introduce pan architecture discipline link to basic construction education and to cultivate innovative talents and practical talents for the purpose to execute teaching practice.

1.The soundscape design and the teaching difficulty

As governments pay attention of the residents living environment in recent years, more people put forward to the requirement of governance of noise during regulation of environment, the concept of "Soundscape" also arises at the historic moment. Although the word by the "Landscape" has evolved, it's not confined to the outdoor environment, it contains people sound environment in all life. Recently the international organization for standardization defines soundscape as individual, group, or community awareness of the sound environment in a given scenario. [4]

The main content of the soundscape design is the sound environment how to affect the user in a given scenario, [5] [6] we research it in three aspects scene, users and impact assessment and finally have a purpose by design means to build the voice of the surrounding environment. [7] Due to the study of scenario, users and impact assessment, usually need collect data index to present and the need to establish by statistical methods and models for standardization, [8] [9] and it need to complement a variety of software in the process of equipment used to fit the data collection and analysis, thus it involves more theoretical formula and technical operation, it easy to increase the difficulty of the beginner

students .Moreover, the architectural acoustics is rational and boring scientific discipline comparing with the architectural design of other courses. So it is easy to reduce the students' learning enthusiasm. [10]

2. The practical teaching cases

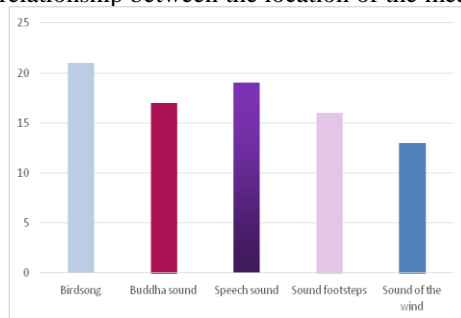
In order to improve the students' interest in learning, to enhance students' ability in the practical application, this study simplifies the process of the formulas in teaching organization and put the actual case into studies, chieve mastery through a comprehensive study of related knowledge in specific operations, and combined with three concrete cases have a purpose to cultivate students' ability of practical application, improve the comprehensive quality of students.

2.1Case One: Harbin "Jile Temple" and the "Wen Temple "as a sound application research of historical soundscape ecological method

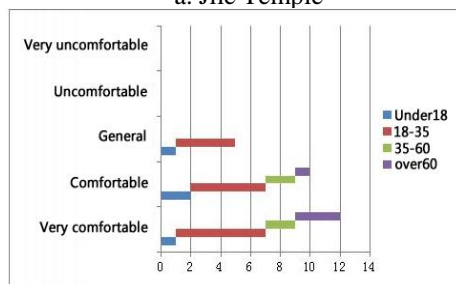
The case one main purpose is to study as a sound scological historical research method. The historical value of Harbin typical architecture "Jile Temple" and "Wen temple" was chosen as the object for recording and analysis. Research in the first place in the related basic theory research and discussion, through field investigation and questionnaire survey and other research methods, to analysis and list its soundscape subjective evaluation ant then through the study to conclude that special sound view of cultural value, historical inheritance and environment to create value and build the corresponding protective design framework.

In the process of project operation, total of 11 different space point as the measuring point on sound scene, in view of relationship between the location of the measuring point

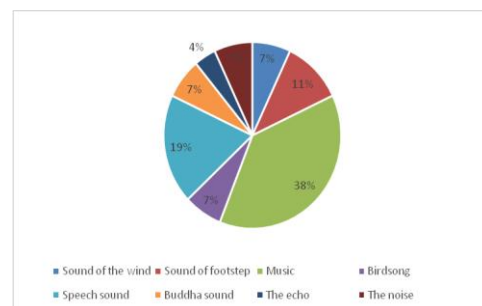
combined with the analysis, and to analysis the main sound source according to the 360° video. As shown in figure 2-1, The spatial distribution of typical representative selection of measuring points, such as garden view field investigation, etc. We studied form the visual environment, sound environment and humane environment three aspects. The visual environment mainly includes the landscape of the external environment and internal space. through on-site investigation, combined with Google Earth GIS map and CAD drawings, to understand the geographical position of the garden, the surrounding environment characteristics and the basic internal space composition; Sound environment mainly includes the basic elements of acoustic soundscape, the landscape of the acoustic space distribution and time change. Researchers through the field observation all-weather, combined with interviews for landscape management personnel, record the main sound source and soundscape in one day, a week, a year change rule of a category, and initial partitions for sound scene; Humanities environment mainly includes the associated with sound view of humanistic design, such as plaques and couplets, etc., through on-site field investigation and finally have the feelings of noise environment. As shown in figure 2-2, it increases the public attention to soundscape culture heritage research, and in the wider comprehensively and systematically carried out similar research, in order to make precious soundscape culture remains get effective protection and utilization.



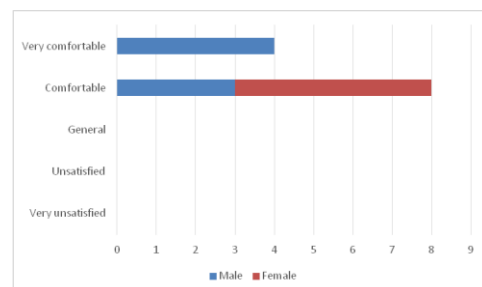
a. Jile Temple



a.Jile Temple



b.Wen Temple



b.Wen Temple

2.2 Case Two: Harbin Daotai House building group sound environment perception and evaluation

The case two is the main purpose of the research view the relationship between influencing factors and subjective feeling. Through the two investigates at different times of

Daotai House(winter in December, spring in March), according to itself characteristic and cold city(Harbin) its natural factors to design questionnaire, according to the winter and spring questionnaire to conclude the characteristics of the sound environment of Daotai House; At the same time it can combined with other ancient

architectural complexes, Jile Temple, Wen temple of on-the-spot investigation and questionnaire survey, to understand the psychological needs of tourists to the acoustic environment and puts forward a series of sound design scene.

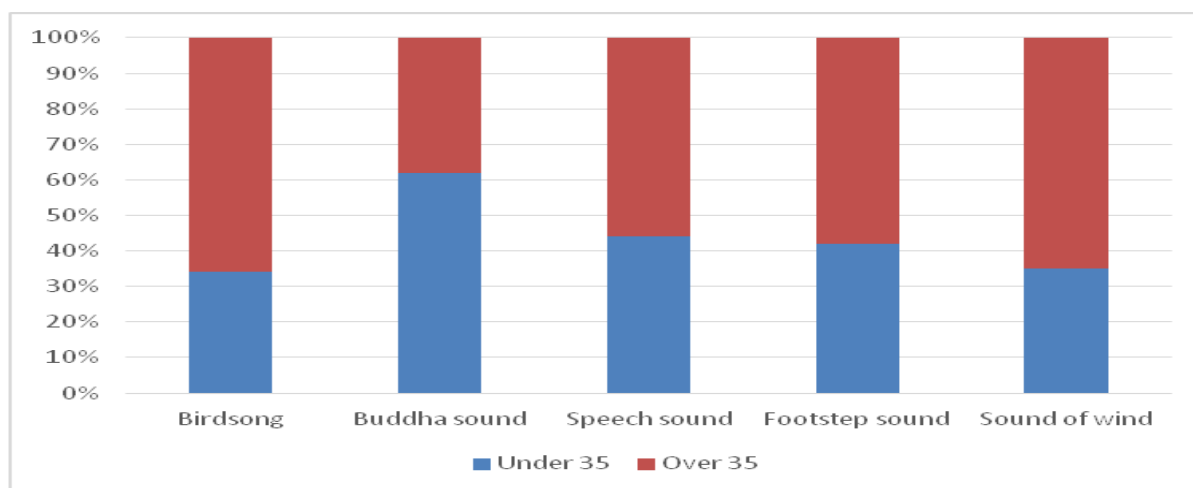


Figure2-3 Different age group for the feeling of the acoustic environment of Daotai House

According to the survey, it can draw different crowd have different psychological feelings on the sound environment. For example, people under 35 years old voice generally feel stronger than over 35 people feel. For the Buddha, people under the age of 35 than 35 profoundly; For voices and footsteps, not much difference in the two groups, As shown in figure 2-3, Daotai House in the design of sound environment should consider the feelings of certain people. From the practice result we select some meaningful conclusions, such as different people have different perception of sound environment, sound environment and architectural culture background, as well as some excellent soundscape design technique, etc. According to the actual situation it applied to the design and protection of the soundscape. It mainly includes the following methods of design: 1) filling, such as increasing the Buddha, in fact it is not really the sound of chanting, but in the Buddha hall outside for play songs and patter, in order to make up for the lack of soundscape elements and to create a sense of place. 2) mask, such as around the temple to urban trunk road traffic, there are a lot of business around, temple visitors more, so the noise is relatively serious, can use to improve the design of soundscape elements to cover up the noise a means, reduce the influence of the noise brings, and weaken people's perceptions of the noise.

2.3Case Three The research and design of voice map that used to guide the blinde passage interior space

The case 3 main purpose is to help the blind finding decisions and judgments by using the computer network ,automatic control and other technical methods and through the voice map of research and development and design. The research mainly uses the interaction experience and interactive technology as the core of the design and technology research, it can make the voice map using the signal communication between signal transmitters and receivers to locate the building in each

space unit. Equipped with a set of routes generated system at the same time, and to digitalize the building interior space information then to stored in a database in the form of 3d coordinate, according to the requirements of the current location and moving target ,to calculation to generate the optimal foot route.

Due to the practice have strong technical, students and teachers should exchange suggests from research project basis and the key problems for many times. First the ask students on the basis of field investigation and observation records, to carry on the preliminary understanding to the part of Harbin region intensive using of public buildings and major cities in the life of blind users generally travel and public activity, then to lay a good foundation for the implementation of the project.. And then through the analysis of public building space structure and personnel flow, indoor blind road and traffic node, and studies the Arduino board structure and Processing, Max/MSP, VVVV and other interactive software, and some basic knowledge of interactive technology principle, to the structure of the information in the form of data stored in database, to write supporting program automatically generated path. Finally it should invite the blind test voice maps in different public building usage, then finish the evaluation report, the concluding reports, articles, and declared the patent for utility model.

3.The results of the practice and thinking

Through the practice data research and analysis to conclude a result, it has certain value in the professional field of research, it has certain value in the professional field of research, and it has certain positive effect in the development of subject research aspect.. The data and results of research, on the one hand, further expand the ancient soundscape culture legacy database, raise the awareness of people for "sound heritage" and attaches importance to, on the other hand is also designed for the protection of the historical and cultural buildings and provides basis, for the future to apply the technique of landscape design of historical building protection means of

actual laid the foundation. Moreover, the informatization and the combination of the architectural design way also has a certain inspiration and contribution to the research about voice map. At present, the way a mansion of soundscape perception evaluation to the Daotai House has won second prize scientifically and create project plan once a year to Harbin institute of technology, the "An introduction to soundscape design" which is based on the generic architecture discipline teaching practice and innovation personnel training research project has been listed as the ministry of education national teachers' scientific research as the 12th five-year plan key subject's a sub project and gain a lot of results.

At the same time, along with the practical teaching, students don't only understand about the soundscape theory, but also have a certain a subject for research ability and grasp the scientific research method and train of thought and it laid the foundation for the cultivation of innovative talents. In terms of design, students will also be able to break the traditional view of architecture, to evaluate a building group from the angle of the sound environment and to design the architecture and environment, and to perfect the design. Many students generally reflected by this project can not only more vivid understanding of architectural acoustics theory and design method, but also improve their research and the ability of independent thinking, benefit a lot. With the combination of college students' innovative training program, students also made some research achievements in the process of research practice. At this time, the teacher are only the designer and the guide of the course, the students are the main participants. This is common practice education conception can help to reduce the modern university student are strong at theoretical, and the problems of divorcing from theory and practice, and starting from the solution actual problem, to help students to cultivate students' independent thinking and creative consciousness has played a positive role, thereby also achieved good teaching aim and actual effect.

Thus it can be seen that it's impossible to open some innovative, opening, comprehensive practice course for

building and other generic architecture discipline, it's also has a positive effect to enhance the students' comprehensive design and cultivate ability, it can be popularized in appropriate.

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