Research on the Curriculum Reform of "Plant Planting Design" Based on SketchUP

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Abstract. With the rapid development of society, garden has become an indispensable leisure place in the city. Therefore, landscape design has become a hot professional. "Plant planting design" is the core professional course of landscape architecture specialty, which every landscape designer must learn. Plant planting design is an indispensable link in the process of landscape design, which is an important content in the process of landscape professional training. However, most engineering schools lack of teaching experience in plant planting design, which will lead to students not fully understand plant planting design. The SketchUP technology, also known as computer-aided technology, refers to the use of computers and graphics equipment to help designers perform design work, which can greatly improve people's work efficiency and enable people to have concrete cognition of abstract things. Therefore, we must reform the course of plant planting design, which will improve students' interest and enthusiasm, and actively use the SketchUP and other related design tools in the teaching process. First of all, this paper analyzes the problems of curriculum teaching. Then, some suggestions are put forward.

Keywords: Landscape Architecture, Plant Planting Design, Curriculum Teaching Reform, SketchUP

1. Introduction

"Plant planting design" is a required course for landscape architecture major, which is an important major of agricultural and forestry colleges and universities in China. "Plant planting design" is a basic course, which will lay the foundation for the later study of landscape planning course. "Plant planting design" has many aspects of learning, including the ornamental value of garden plants, elements configuration, visual mood matching, etc. Through the teaching process, students will master the artistic and ornamental characteristics of garden plants. Through scientific planning and design, the designer will re match the plant selection, which will shape and design the space landscape of the garden. Through the course practice, students will improve their practical operation ability and plant configuration principle[1]. Through this course, students will make scientific and reasonable plant planting planning
and design scheme, which will provide good design effect for the garden. By drawing the standard planting planning and design drawings, students can express the design effect intuitively, which will achieve the design expression. By drawing the planting construction drawings, students can complete the construction and implementation services of specific garden projects[2].

2. Problems in the teaching of "landscape plant design"

This paper is based on the field survey. 800 formal questionnaires were sent out, 772 effective questionnaires were sent out, and the effective rate was 96.5%.

2.1. Weak design and expression ability of students

When drawing design drawings, students can’t express the details of plant annotation very well, which will cause the problem of indeterminate identification. Therefore, students' design and expression ability is very weak, which will be difficult to form professional ability. According to the survey results, the main problem is Weak design expression ability, accounting for 66.1%. Then there are Poor spatial imagination and Lacking of innovative design concept, accounting for 60.6% and 48.9% respectively, as shown in figure 1[3].

![Figure 1. Weak design and expression ability of students.](image)

2.2. Lack of knowledge accumulation in garden plants

The botany foundation of some students is very weak. Some students know little about the habits of garden plants, such as violent ornamental habits, ecological habits, ecological climate, etc. Therefore, they often ignore the landscape effect of the group. Only pay attention to individual effect, including flower, fruit, leaf and so on[4]. According to the survey results, the main problem is not enough reading, accounting for 74.8%. Then there are neglecting the effect of group plant allocation and over emphasis on individual plant landscape, accounting for 62.6% and 52.6% respectively, as shown in Figure 2.

![Figure 2.](image)
3.3. Problems in curriculum setting and positioning

At present, most of the courses in Colleges and universities have problems, which can’t train application-oriented students very well. When students can’t flexibly apply plant configuration, landscape design will not achieve the desired effect[5]. According to the survey results, the main problem is Repetitive teaching, accounting for 75.9%. Then there are Teacher leading teaching mode and Neglect practical teaching, accounting for 60.0% and 50.9% respectively, as shown in Figure 3.

![Figure 2](image_url)  
**Figure 2.** Lack of knowledge accumulation in garden plants.

![Figure 3](image_url)  
**Figure 3.** Problems in curriculum setting and positioning.

3. Reform of teaching methods

3.1. Reform and optimization of curriculum system

Colleges and universities must reform the curriculum system from two aspects: Theory Curriculum and practice curriculum, which is the key content of optimizing the curriculum system. Colleges and universities can add some courses, which can consolidate students’ basic theoretical knowledge. Through the increase of courses, the course can better transition and link up, which will be a full complement of plant courses. Through the course connection, students can fully understand the landscape professional courses, including landscape plant foundation, landscape plant cultivation and maintenance, landscape ecology, landscape plant application, urban landscape green space system planning, sustainable landscape, environmental ecological restoration, etc. At the same time, colleges
and universities should increase practical courses, which will improve the actual ability of students. By changing the traditional virtual site, students can carry out project design, which will carry out on-site mapping, inspection and research. Through the key exercise of plant configuration, students can understand many factors of plant design, including natural conditions, artificial facilities, environmental conditions, visual quality, etc. Through the practice course, students can design, draw and label[6].

3.2. Improve students' plant allocation skills

Students should learn natural collocation. Through practical excellent cases, students can improve their plant configuration skills. The students should improve their actual disposition ability from the excellent examples of plant landscape planting. Students can go deep into the famous city park, road green space, waterfront green space, etc., which will give students a kind of inspiration. Through excellent examples of plant landscape planting, students can map and record, which will improve students' plant configuration skills. Students can fully understand the content of the course by copying the classic plant configuration cases. By evaluating the quality of copying, teachers can grade students, which can improve students' plant configuration skills. By perceiving the arrangement structure of individual plants in the space plane, students can understand the basic norms and techniques of plant landscape drawings. By accumulating experience in configuration, students can increase their interest and confidence in the course.

3.3. Strengthen the integration of theory and classic cases

In the theoretical teaching of "landscape plant design", teachers can adopt the mode of combining theoretical teaching and case analysis, which can better strengthen students' understanding. Through the theoretical teaching, students can understand the principles of plant design, material selection, basic forms, general techniques, garden elements, etc., which is an important procedure of plant design. Through the case teaching method, teachers can explain and analyze the selection of classroom teaching content, such as Versailles Palace, Humble Administrator's garden, etc. Through the analysis of typical cases, students can master a variety of gardening techniques, including landscape, borrow landscape, barrier landscape, frame landscape and so on. Through the differences of plant material selection and configuration, we can carry out various reforms. By making up for the dullness of the pure theory teaching, we can supplement the traditional theory teaching, which can fill the students' practical action. Through the curriculum reform, we can cultivate the students' ability of transforming theory into practice.

4. Conclusion

Through a deep understanding of the characteristics of landscape architecture, we can make clear the main training direction of the major. By mastering multi-disciplinary knowledge and actively using the SketchUP and other computer-aided tools in teaching, colleges and universities can improve the professional quality of landscape architecture students, which is the basic direction of modern landscape architecture education. Through the gradual improvement of landscape plant courses, we can improve the teaching methods of the courses, which will cultivate more landscape architecture professionals to meet the needs of the society.
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