Agricultural & Forestry Economics and Management (2019) Vol. 2: 11-14
Clausius Scientific Press, Canada
DOI: 10.23977/agrfem.2019.21002
ISSN 2616-2202

Application of Open Regional Environmental Testing in Urban and Rural Ecological and Environmental Planning Curriculum

Qiong Wang[1,a], Jingyuan Zhao[1,b,*]

[1]*School of Architecture, Chang'an University, No 161 Chang'an middle road, Xi'an, China*
a. 847221496@qq.com, b. zjyqtt@163.com
**corresponding author*

Keywords: urban and rural ecological planning, spatial planning, subject integration, teaching methods

Abstract: Urban and rural ecological and environmental planning curriculum, as a professional foundation course for urban and rural planning, is based on the special planning of ecology and urban and rural construction. This paper adjusts and optimizes the course teaching content. In the curriculum, teaching contents are set in two parts: adjustment, balance and optimization of urban and rural ecological theory; urban and rural environmental planning practice. In the open regional environmental testing , the urban and rural ecological theory and environmental planning practice are studied from the aspects of time node, participation degree, typical test type, measuring point and parameter selection through large group investigation, discussion and group cooperation experiment, thus realizing the unification of ecological technology theory and planning design, thereby enhancing students'consciousness and adaptability to integrate ecological technology (nature) with design.

1. Introduction

Spatial planning plays a positive role in urbanization development and ecological protection. Thus this paper requires the integration of main functional area planning, land use planning and urban and rural planning. In response to this goal, college needs to continuously train and provide professional spatial planning and design talents with strong basic knowledge, rich theoretical knowledge and strong practical ability.

Urban and rural ecological and environmental planning curriculums are derived from urban ecological and environmental courses. Closely following the requirements of ecological environment, it purposefully carries out spatial planning theory learning and training, which helps establish professional and complete Spatial planning system as a core course of urban and rural planning discipline of higher education institutions [1]. The teaching contents mainly include urban design methods, various special planning design methods and large data mining technology.

However, the current curriculum system simply piles up ecology, urban ecology, urban physical environment and urban and rural planning design contents for separate teaching according to respective modules, which lacks integration links, resulting in unsatisfactory teaching results [2]. In particular, various types of special planning, general planning and ecological knowledge are composed of scattered knowledge points. With knowledge system staying at the level with separate theory and practice. Thus students cannot translate theory knowledge into practical skills for application in work. Yin Weida combined urban and rural ecological environment with green space system planning curriculum [3]. However, basic courses included in urban and rural ecological and environmental planning have abundant contents, with quite difference in hierarchical grading. Students are required to not only master the basic knowledge, but also carry out actual design according to respective technical characteristics. Therefore, the teaching system demands optimization and integration to enhance students' practical and application ability, so that learning can be used and applied.

2. Method

2.1. Basic Teaching Content

The teaching time of Urban and rural ecology and environmental planning curriculum is generally arranged after students have mastered the basic knowledge of "Urban and Rural Planning Design Principles", "Residential Design" and "Architectural Physics". The scheduling semester of the course is sophomore and junior for students majoring in urban and rural planning. The total class hours is 48 h, with 2 times a week, 2 class hours each time, and there are 12 teaching weeks. The teaching content is based on various special plans, including ecological planning, ecological urban planning, environmental planning, ecological planning of urban and rural green space, landscape ecological planning, rural ecological planning and protection area planning. At present, the teaching contents are composed of three parts: basic theoretical knowledge of ecological planning, urban environmental physics and regional environmental physics testing. The teaching process is constructed as dual link of "theory-practice". To ensure the combination of theory and practice, the total class hours of experimental teaching are increased. The teaching content is arranged as follows:

The first 8 weeks (32 hours) are mainly to teach theoretical knowledge. The teaching method is mainly classroom teaching supplemented by student discussion. Since the theoretical knowledge contains the knowledge in ecology, demography and physics, there are more abstract formulas. In view of the weak mathematical foundation of the students, to avoid students from being slow or unable to understand during the teaching process, on the one hand, mathematical theory is not explained in detail, and the focus is given to theoretical guidance and application in practice. On the other hand, new technologies are added to solve practical design problems by specifically combining design specifications and standards. Teaching is provided through lively activities so that students have evidence to follow and rules to abide by.

Weeks 9 to 10 (8 hours) are the teaching session of ppt presentation. Since sophomore and junior students have just started designing, there are few engineering examples that can be analyzed by themselves. The overall control is weak especially for the planning space layout demanding ecological environment and physical environment considerations. Though collecting and comparing excellent design works of the urban and rural ecological and environmental planning, students were

instructed to find the optimal solution according to the acquired knowledge. Then, though demonstrating technical key points and technical software for planning and design, students were instructed to analyze the balance between pros and cons. Though mastering the method of how to combine aesthetic and ecological technical requirements, students can gradually establish the concepts, consciousness and preliminary design theory methods combining theoretical knowledge and design practice.

Weeks 11 to 12 (8 hours) are for on-site practical teaching. Because the low grade students lack practical work experience and have not yet formed theoretical and practical integration ability, simple abstract theoretical explanation cannot meet students' ability improvement needs. Therefore, urban and rural environmental physics and regional environmental physics testing serve as application and practice parts. For adjustment of teaching objectives, the content and proportion of theoretical and practical foundations of urban and rural ecology and environmental planning are adjusted. On the basis of the original urban and rural ecological planning, urban environmental physics, regional ecological suitability evaluation, and special teaching contents of experimental methods and practices are added. The content of practice link is enhanced, so that students can achieve a balance between theory and practice by combing ecological phenomenon and understanding its formation mechanism on the basis of extensive physical experiments on urban and rural ecological characteristic areas.

Finally, the experimental guide book and task book are designed, and the students are required to conduct an open environmental survey on a certain area in groups of 6 to 8 people. Test will be given after point selection so that professional evaluation and improvement measures will be given through data analysis and theoretical analysis.

2.2. Practical Teaching

Practice teaching has always been favored by students. However, accuracy and scientificity of practical teaching planning can only be improved via solid theoretical knowledge system construction. Although students are very interested in on-site field testing, if there is insufficient theoretical knowledge reserve, the basic teaching requirements cannot be met. Therefore, from the beginning of the survey, students should be led to map the measured area, find the advantages and disadvantages of planning design in ecology. On this basis, selection of typical test points is discussed and test parameters are selected from the perspective of ecological environment, so that students can combine ecological and physics theoretical knowledge with planning.

3. Results and Discussion

The combination of theory and practical teaching makes students willing to learn, understand and have proficient mastery. Most students can complete the experimental report in illustrated manner attentively and carefully through diverse and scientific exhibition forms of hand drawing, computer drawing and even simulated schematic diagrams.

Students surveyed and tested the regional environment covers enclosed, semi-enclosed, parallel layout, curved buildings, strip buildings, different underlying surfaces and so on. Students were highly interested and unanimously agreed that they benefited enormously from the report.

Though the multiple discussions in the practical teaching session and small team cooperation for

selecting testing point, the students' communication ability and the overall control ability of organizing scattered knowledge points to a centralized level have been improved. The teaching effect is satisfactory.

4. Conclusion

Through the adjustment of the curriculum system and links, with establishing spatial planning system and promoting multi-planning unity, urban and rural ecological theory and urban and rural environmental planning practice are combined to balance the distribution of teaching content in theory and practice, and realize the unification of ecological technology theory and planning design, thereby enhancing students' awareness and adaptability to integrate ecological technology (nature) with design.

References

[1]National Steering Committee of Urban and Rural Planning Education in China. (2013) Steering code for undergraduate programs of Urban and Rural Planning. China Architecture & Building Press.

[2] Xingzhao Liu, Jing Ye, Yanhai Zhou and Weifeng Zheng. (2018) Optimization of Teaching Contents of Urban-Rural Ecological and Environmental Planning Based on Multi-scale Penetration of Ecological Concepts. Chinese and Overseas Architecture, 8, 83-85.

[3]Weida Yin. (2016) Research on teaching content and mode of "urban and rural ecological environment and green Spatial system planning". Forestry Education in China, 34(03), 70-72.