

Teaching Reform and Practice of Landscape Plant Pathology

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ABSTRACT

Landscape Plant Pathology is one of the major courses for the undergraduates specializing in landscape architecture and forestry in the higher agricultural and forestry colleges. In this paper, the author discusses some issues in the teaching course of Landscape plant pathology, including irrational knowledge structure of teachers, short class hours, more examples of agricultural plant diseases adopted in teaching, low initiative of students, etc. In addition, the author comes up with the corresponding solutions, such as improving the teacher's knowledge and improving teaching efficiency, so that students can understand the importance of the course content for future work as early as possible. By virtue of these reform measures implemented, it not only obviously enhances the teaching effectiveness, but also cultivates the enthusiasm and initiative of students to boost students' ability to analyze and solve problems. Thus, it contributes to improving the teaching quality of Landscape Plant Pathology.

Keywords: *Landscape plant pathology, Teaching reform, Teaching practice, College of landscape architecture.*

1. INTRODUCTION

Landscape Plant Pathology is one of the major courses for the undergraduates specializing in landscape architecture specialties and forestry specialties in the higher agricultural and forestry colleges. This course focuses on the phenomena of various plant diseases during the growth and development of landscape plants or the storage and transportation of landscape plants, inclusive of the symptom characteristics of diseases, the morphological characteristics of pathogens, the occurrence, development and epidemic law of diseases. What's more, it designs the practical and effective disease control methods on this basis [1]. By learning this course, students can't only master the characteristics of typical symptoms of common garden plant diseases and their identification methods in order to develop effective disease control strategies, but also make the layout of landscape plants more reasonable in the landscape design [2]. As the colleges and universities have enlarged the enrollment scale and new concepts and methods of Landscape Plant Pathology are constantly emerging, the society demands higher and higher quality of landscape practitioners. As a result, the new tasks and challenges are faced in the teaching courses of Landscape Plant Pathology [3]. Therefore,

how to accomplish the teaching mission of Landscape Plant Pathology with high quality has become an urgent problem to be solved by the teachers of Landscape Plant Pathology in the higher agricultural and forestry colleges. The author has long been engaged in the theoretical and practical courses and related internships of Landscape Plant Pathology for the undergraduates of landscape architecture specialties in College of Landscape Architecture, Beijing University of Agriculture. In terms of the main problems existing in the course of teaching, the author puts forward some corresponding improving methods in combination with the teaching practice and experience of the curriculum group, so as to serve as references to improve the teaching effectiveness of Landscape Plant Pathology in the future.

2. PROBLEMS EXISTED DURING THE TEACHING PROCESS

2.1. The Professional Backgrounds of Course Teachers does not Match the Teaching Content of the Courses

At present, most courses of Landscape Plant Pathology in the higher agricultural and forestry colleges are taught by the teachers of Plant Protection or landscape architecture specialties. Take the course undertaken by the author worked in landscape architecture specialties in College of Landscape Architecture, Beijing University of Agriculture as an example. Because of the shortage of teachers and the limitation of related facilities, the course has been undertaken by the course teachers of the Department of Plant Protection in our university before the author takes over. Although the teachers in the Department of Plant Protection have a solid knowledge of Landscape Plant Pathology, their knowledge of landscape plants is relatively insufficient. What's more, the teachers in the Department of Plant Protection have to take the course of Plant Pathology of Plant Protection, Agronomy, horticulture Specialties. Hence, the teachers have the limited energy to grasp the knowledge of garden plant diseases. However, the professional knowledge system of plant pathology is relatively weak for the teachers of landscape architecture specialties. Therefore, the course teachers will not explain the relevant theories and the landscape plant diseases thoroughly and sufficiently enough in the course of teaching, affecting the teaching effect finally.

2.2. The Contradiction between Few Teaching Hours and Much Teaching Content

In most agricultural and forestry colleges, the pathology courses of other specialties rather than plant protection specialty are the core of the specialties, so the theoretical hours and experimental hours are relatively small. In the Syllabus of Beijing University of Agriculture, the teaching hours of Landscape Plant Pathology course are 24 class hours for the students majoring in landscape architecture specialties, including 16 class hours for the theoretical course and 8 class hours for the experimental course. It is very difficult for the students to master the basic knowledge of plant pathology and the characteristics and control methods of various garden plant diseases in the limited theoretical class hours. Especially, each theoretical content of garden plants only focuses on gray mold, powdery mildew, meloidogynosis and other major categories of garden plant diseases. In addition, the experimental course mainly revolves around the observation of the morphology of fungi, bacteria, nematodes and other major pathogens, which is limited by the class hours.

Although most of the students are interested in the course of Landscape Plant Pathology, they do not have a thorough understanding of the knowledge. As a result, they can deal with the problems related to garden plant diseases by themselves.

2.3. More Examples of Agricultural Plant Diseases and Pathogenic Specimen are Adopted in Teaching

Because of the deep research of plant pathology on grain, vegetables, fruit trees and other plants, these plant diseases are often used as typical examples to explain in the overview of the Landscape Plant Pathology texts. Taking the concept part of physiological race as an example, it has been explained by using the cases of more kinds of rice and wheat diseases, while the research on physiological race of garden plant pathogens hasn't been explained. Because there are few permanent specimens of the pathogens of garden plant diseases and types of disease specimens, we can only use the slides of the pathogens and the specimens of the plant diseases of the grain and vegetable plants in the experimental course, such as soft rot of cabbage, black spot of sweet potato and so on. As for the problems above mentioned, it's not conducive to students majoring in landscape architecture specialties to grasp garden plant diseases symptoms and pathogens.

2.4. Students have the Low Initiative Towards the Teaching Courses

Students who study the course of Landscape Plant Pathology are mainly specializing in landscape architecture specialties, and the course has been established as the core course in Beijing University of Agriculture. Compared with the basic courses of Botany, Floriculture Science and Dendrology, the students pay less attention to the Landscape Plant Pathology, resulting in taking less time to have the poor learning effect in the course. In addition, the content of the course of Landscape Plant Pathology is closely related to the microbial world, which is difficult to understand abstractly for students of landscape architecture specialties without a microbial background [4]. Restricted by the class hours and teaching methods, the dynamic process of the disease occurred can't be displayed fully during the teaching process, which seriously affects the learning initiative of the students. As a result, it causes the autonomous learning inefficiency of students who are only tired of coping with examinations. However, they don't really understand and grasp the key knowledge points.

3. CORRESPONDING MEASURES OF TEACHING REFORM

Based on the problems in the teaching process of Landscape Plant Pathology and the characteristics of teachers and students in the college, a series of teaching reform measures are carried out.

3.1. Overcome the Knowledge Weakness of the Course Teachers

In order to cultivate qualified graduates meeting the Age, the contemporary teachers in universities and colleges should strengthen their study, who combines the teaching content with the domestic and foreign research frontiers and actual needs of the production. Therefore, course teachers of Landscape Plant Pathology who specialize in Plant Pathology should not only keep pace with the forefront of plant pathology, but also strengthen their knowledge reserves in landscape flowers, landscape trees, landscape ecology, botany and so on. In addition, course teachers should also understand the configuration of various plants in gardening design in accordance with the employment characteristics of students majoring in landscape architecture specialties in future. On the contrary, course teachers specializing in landscape architecture specialties should strengthen their basic knowledge of plant pathology and related experimental skills. With the development of informationization, course teachers can improve their knowledge reserves by various means, such as online excellent courses, MOOC and other open resources.

3.2. Improve the Teaching Efficiency and Strengthen the Relevant Knowledge Points in the Practice

At present, it is difficult to increase the class hours of Landscape Plant Pathology courses under the trend of reducing the total class hours of specialized courses for undergraduates. Therefore, we should pay more attention to improving the teaching efficiency in the limited class hour. In the traditional teaching process, the teachers mainly adopt the "instilling-like" teaching method, while the students passively study the knowledge. The students need to spend a lot of time to digest after class. In the follow-up teaching of Landscape Plant Pathology, course teachers can upload courseware and other materials to the teaching platform before class, so that students can review in advance. In class, the teaching efficiency can be improved by combining discussion teaching with lecture teaching based on the knowledge points to be mastered. Thus, the valuable classroom time can be used for teacher-student interaction, so as to deepen the grasp and understanding of the important and difficult knowledge. In addition, the practice of Landscape Plant Pathology is an

important way to consolidate and supplement the classroom knowledge. The practice of Landscape Plant Pathology course usually lasts 2-3 days. Combined with the knowledge points of classroom teaching, the practice content should be set reasonably. As a result, it can deepen students' understanding of the disease characteristics, disease cycle and control of garden plant diseases. At the same time, teachers should cultivate students' ability to look up relevant materials independently, so as to make a qualitative leap in the comprehensive practical ability of the students. Fundamentally, it can solve the contradiction between relatively short class hours and increasing requirements for students' comprehensive quality.

3.3. Collect the Related Data of Garden Plant Diseases and Make Garden Plant Diseases and Pathogen Specimen by Ourselves

On account of the problem that more examples of agricultural plant diseases are used in teaching, the course teachers should make full use of all available resources, such as online plant disease identification websites, various garden plant diseases atlases and so on, and collect all kinds of pictures and video materials related to the garden plant diseases to use them in classroom teaching, which is conducive to improving students' perceptual knowledge of the garden plant diseases. In order to facilitate students to learn at any time, we can establish a plant disease and pathogen database [5]. In the teaching and scientific research for many years, the author has collected and taken pictures of various garden plant diseases in Beijing, and made them into a picture library of disease material, providing a strong guarantee for teaching and students' review. In view of the problem that more agricultural plant diseases and pathogen specimens are used in experimental teaching, course teachers actively carry out garden plant diseases specimen self-making and purchasing as far as possible. Taking the powdery mildew of the experiment teaching as an example, only a bit of powdery mildew specimens of landscape plants can be purchased, which are inclusive of *Cotinus coggygia* powdery mildew and poplar powdery mildew. Combined with making the powdery mildew specimens of garden plants such as peony, lawn grass, *Euonymus japonicus* and Chinese rose in the process of teaching practice, the slides of sexual and asexual spores of these diseases are made and compared by the students in groups in the experimental courses. This teaching mode not only improves the practical ability and team cooperation ability of the students, but also enhances their interest in learning and enhance their understanding of professional knowledge.

3.4. Help Students to Realize the Importance of this Course and Improve Their Interest in Learning

In terms of the low initiative towards learning, the importance of this course can be strengthened by introducing some relevant examples at the beginning of the course of Landscape Plants Pathology, so as to improve the learning interest of the students. By introducing the important influence of garden plant diseases on some famous parks and enterprises, such as the Summer Palace, Olympic Forest Park, Huanglong Nursery, etc., and some disease cases of heteroxenous parasitism that should be taken into account in the process of garden plant allocation, the students can realize that the knowledge taught in the course has such practical significance in the future work at the beginning of learning this course that the students have the learning attitude changing from negative coping to active learning. In view of the features that pathogens of plant diseases are invisible and touch less, Computer Aided Instruction (CAI) can be introduced into the teaching of Landscape Plant Pathology, which can not only make abstract knowledge vivid, but also arouse students' initiative for learning to improve students' learning efficiency by combining the audio with video [6]. In addition, students can make animation courseware in groups based on the content of the course, which strengthens the understanding of knowledge, and the ability of cooperation, communication and autonomous learning.

4. CONCLUSIONS

General Secretary Xi Jinping's proposal "Lucid waters and lush mountains are invaluable assets" fully reflects the importance our nation attaches to the construction of ecological civilization. Meanwhile, he also puts forward higher requirements for agricultural and forestry technical talents in our country. Therefore, how to cultivate students with extensive adaptability and certain expertise within a limited time is a huge challenge faced by every agricultural and forestry college [2]. As one of the major courses for the undergraduates, Landscape Plant Pathology is a compulsory course for high-quality landscape architecture practitioners. Taking the Landscape Plant Pathology course taught in landscape architecture specialties of College of Landscape Architecture, Beijing University of Agriculture as an example, we discuss the common problems in the course and put forward corresponding solutions in this paper. By virtue of these reform measures implemented, not only does it obviously enhance the teaching effectiveness of this course, but also cultivates the enthusiasm and initiative of students to boost students' ability to analyze and solve problems. Thus, it is of great significance to cultivate high-quality and innovative professionals.

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