Discussion on the Teaching Reform of Ecological Environment Planning Course under the New Situation

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Abstract. The course of ecological environment planning is a comprehensive, interdisciplinary and practical course for environmental and related majors in colleges and universities. However, at present there are some problems in course teaching, such as paying more attention to theory and less attention to practice, ignoring the cultivation of students' practical ability, which makes it difficult for students to solve practical problems. Under the new situation, in order to improve the teaching effectiveness of ecological environment planning course and cultivate students' practical application ability, it is necessary to reform the teaching content and teaching method of this course. Based on the analysis of the current teaching situation, this paper puts forward the relevant measures and suggestions, such as updating and optimizing the teaching contents, emphasizing the case practice teaching, integrating the ideological and political contents, trying new teaching technology methods, paying attention to the cultivation of application and innovation ability, and reforming the evaluation methods for students' performance.

Keywords: Ecological Environment Planning; Application Ability; Case Teaching Method; Teaching Reform.

1. Introduction

The course of ecological environment planning is an important compulsory course for environmental and related majors in universities. It emphasizes the combination of professional basic theory and application practice, and integrates the knowledge of environmental science, environmental law, eco-environmental engineering, environmental management and other disciplines. It has the characteristics of comprehensiveness, intersection and application practice. The course comprehensively cultivates students' knowledge, ability and quality in the teaching process, so that students can understand the basic theories and procedures of ecological environment planning, and mainly master the methods of water environment planning, atmospheric environment planning, acoustic environment planning, solid waste pollution control planning and ecological protection planning [1].

Due to the characteristics of ecological environment planning itself, the practicality and applicability should be highlighted in the teaching process, the technical methods of eco-environmental planning need to be applied to the social production practice, and the social production practice should be used as the teaching cases to enrich the teaching contents and materials, so as to achieve the integration of classroom teaching and practical cases. In addition to teaching the textbook of eco-environmental planning, the teaching of eco-environmental planning should emphasize the revision or issue of relevant laws, regulations, policies and guidelines of eco-environmental planning to keep pace with the times, such as the "dual carbon goal" policy (carbon peak and carbon neutrality), the "three lines one permit" policy (red line of ecological conservation, bottom line of environmental quality, upper line of resource utilization, and the access list of projects with eco-environmental impacts), eco-environmental zoning management, the ecological protection and high-quality development of the Yellow River basin, and the collaborative control of "high pollutant emission and high energy consumption (dual-high)" industries[2]. In addition, the active integration of ideological and political contents into the teaching of ecological environmental planning course and the introduction of the concept of ideological and political education are of great significance to the

reform of traditional teaching concepts and the improvement of students' concept of ecological civilization and sense of social responsibility. However, at present, there are many problems in the teaching process, such as emphasizing basic theory, ignoring practical application, and the teaching content is not effectively combined with the latest policy documents related to ecological environment planning. It is insufficient in cultivating students' ability to analyze problems and solve practical eco-environmental planning problems. Therefore, based on the analysis of the problems existing in the teaching of eco-environmental planning course, through optimizing the teaching content, emphasizing the integration of theory and practice, highlighting the application of practice, to explore effective teaching mode, cultivate students' practical ability and innovation ability of environmental quality assessment, lay the foundation for the service work of eco-environmental planning after graduation, and become an important goal of the teaching reform of eco-environmental planning [3].

2. The Problems Existing in Ecological Environment Planning Course Teaching

Based on the actual situation of the author's university and the investigation of some universities, the following problems are found in the teaching of ecological environment planning course.

2.1. Teaching Content Cannot Fully Keep Pace with the Times

In recent years, eco-environmental planning system in China has undergone great changes, and laws, regulations, guidelines and standards related to eco-environmental planning are frequently updated. Technical guideline for formulating plans for ecology and environment-General principles was issued in 2024. The technical guideline for environmental impact assessment-Ecological impact was revised in 2022. Technical guideline for planning environmental impact assessment-Comprehensive River basin planning, and industrial park with technical guidelines for environmental impact assessment were issued in 2021. Land space use control and planning permission system, and technical specification for territorial spatial planning have been implemented in recent years. It indicates that the work of ecological environment planning has strong timeliness. With the continuous deepening of the reform of ecological environment planning, relevant laws and regulations, policies, technical guidelines and standards would be revised and updated, so the content of ecological environment planning textbooks also needs to keep pace with the times.

However, the textbooks usually lag behind the reality, and it do not fully meet the relevant requirements of the current national laws and regulations, which will lead to students' inability to master the latest eco-environmental planning policies, technical guidelines, standards and methods, and to meet the national requirements for environmental planning technicians, so as to adapt to the new requirements of eco-environmental protection under the new situation. At present, the publication of existing textbooks provides good teaching contents for the teaching of ecological environment planning, but the latest relevant policy documents based on ecological environment planning still need to be supplemented in the teaching process.

2.2. Insufficient Practical Teaching Content

The existing teaching contents are mainly related to the introduction of the related concepts, and basic theories of ecological environment planning. Although case teaching method has been used in the teaching process, most of them are based on the introduction of traditional existing cases without using the actual cases based on the real situation, and it cannot meet the actual requirements of society and the actual work of ecological environment planning.

Many colleges and universities in China offer 32-40 teaching hours of the theory course of eco-environmental planning. Due to the comprehensive characteristics of eco-environmental planning, the existing teaching hours are difficult to thoroughly explain the laws and regulations, relevant standards, technical guidelines, operation methods, case analysis and other contents related to eco-environmental planning. In addition, ecological environment planning course is highly practical,

which should be explained in combination with real cases. It can broaden students' horizons and stimulate their interest in studying. However, there is a relative lack of course design and practice in many universities [4].

3. Measures and Suggestions on Teaching Reform

3.1. Update and Optimize Teaching Content and Highlight the Latest Advances

In view of the fact that the current teaching contents and materials are relatively lagging behind the actual situation of ecological environment planning, it is necessary to update and optimize the existing teaching system. The contents of the textbooks need to be updated, and the latest relevant laws and regulations, technical guidelines, standards and methods of ecological environment planning should be introduced into the classroom, such as the technical guideline for formulating plans for ecology and environment-General principles (issued in 2024). “dual carbon goal” policy (carbon peak and carbon neutrality), the “three lines one permit” policy (red line of ecological conservation, bottom line of environmental quality, upper line of resource utilization, and the access list of projects with eco-environmental impacts), eco-environmental zoning management, the ecological protection and high-quality development of the Yellow River basin, and the collaborative control of “high pollutant emission and high energy consumption (dual-high)” industries, and promoting the integration of greenhouse gas emissions into environmental impact assessment management. Especially, the technical guideline for formulating plans for ecology and environment-General principles (issued in 2024) specifies the general principles, procedures, contents, methods and requirements for the preparation of ecological environment planning, which is applicable to the comprehensive planning of ecological environment, regional planning of ecological environment and other ecological environment. The updated teaching contents will enable students to master the latest developments in ecological environment planning.

3.2. Increase Practice Teaching Time and Build Typical Real Cases to Carry out Practice Teaching

Based on the course content and syllabus of ecological environment planning, the teaching time of this course can be increased to 40-48 teaching hours, and the increased teaching hours can be allocated to case analysis and other practical teaching of ecological environment planning, so as to enhance the competitiveness of students in finding job after graduation. Case teaching is one important teaching method of many courses, especially for ecological environment planning course with high practice. In case teaching, the situational, interactive and practical teaching should be emphasized, and the teaching content should be effectively combined with the real cases of ecological environment planning. In addition, the curriculum design or practice link should be added to carry out the curriculum design or experiment on a specific practical problem, so as to enhance the students’ practice and innovation ability, such as the comprehensive treatment planning of volatile organic compounds in the atmosphere, the comprehensive planning of river basin water environment, the planning of wastewater discharge outlets of rivers, and the ecological planning and design of urban river channels.

3.3. Clarify Teaching Objectives and Strengthen the Cooperation of School and Enterprise

The teaching goal of ecological environment planning course is to cultivate future ecological environment planning engineers who meet the market demand and carry out ecological environment planning. When formulating the curriculum outline and teaching plan, we should emphasize the purpose of solving the practical problems of ecological environmental planning. Taking the students' needs as the centre, we should reasonably determine the teaching contents and key points, improve the students' application ability, practical ability and innovation ability, and clearly cultivate the innovative talents with strong practical ability.

The eco-environmental planning company is the frontline specialized in the practical work of eco-environmental planning. It has rich practical experience. Therefore, it can strengthen the cooperation between schools and enterprises, and introduce enterprise mentors to help cultivate students' practical application ability, so that students can know the working ability requirements of the future work. The eco-environmental planning enterprise can serve as an eco-environmental planning internship workplace to learn the preparation of the eco-environmental planning report documents of actual projects.

3.4. Ideological and Political Contents are Integrated into the Course Teaching

Ecological environment planning aims to avoid or reduce the possible adverse environmental impact of human construction and production activities from the source. The ecological environment planning system is an important part of China's ecological civilization construction, which contains rich ideological and political elements. The teaching aim of this course is to create excellent ecological environment planning and protection talents with correct values and national feelings, and strengthen students' recognition of the idea of respecting nature, protecting nature and staying in tune with nature.

For example, to teach the teaching content of the significance of carrying out ecological environment planning, to integrate the profound connotation of building "beautiful China" and "lucid waters and lush mountains are invaluable assets" into the teaching, and to establish a strong the sense of ecological civilization and social responsibility. Development is good only when it is green, circular, and low-carbon. The intensity of development should be brought under control on the basis of eco-environmental functional zoning and spatial planning to ensure that development and conservation are coordinated and reinforce each other. When teaching about resource and energy consumption accounting, we can introduce the carbon cycle, the concept of "dual carbon" and "*increasing production and reducing pollution*" into classroom teaching to make students aware of the importance of adhering to green development and practicing low-carbon concept. In the ecological planning, biodiversity protection is taken as the element point of Ideological and political education, so that students can realize the harmonious coexistence between human and nature. The eco-environment zoning management has been implemented in the ecological environment planning, so that students can understand the requirements of precise management and control of regional differentiation. The ideological and political content can be effectively integrated into the teaching content of the course by relying on the "University of China MOOC" network platform, PPT, learning rain class and other teaching methods, and using a variety of teaching methods such as case-based, situational infiltration, and flipped classroom.

3.5. Reform the Evaluation Method and Emphasize Practice Performance

The existing traditional evaluation methods mainly focus on the closed-book examination and basic theoretical knowledge. Many students get test scores by strengthening memory and reciting briefly, which cannot better reflect the evaluation of practice and innovation ability. Therefore, in the evaluation process, we should pay attention to practical innovation and process assessment, and increase the assessment proportion of curriculum design, curriculum training or practical activities. Teachers should give real/actual case materials and require students to finish case solutions on the basis of reading materials or watching teaching videos. For example, some actual ecological environment planning projects can be selected and assigned to students. The whole process should assess students' ability to analyze practical problems. Combined with students' daily performance, curriculum design, course training, final exam scores, etc., the final score of students will be calculated according to a certain proportion.

3.6. New Technology to Improve Teaching Quality

The calculation of environmental capacity is one of the important contents of environmental planning. Try to guide the use of mathematical models or programming software to calculate the atmospheric environmental capacity and water environmental capacity.

As an emerging technology, artificial intelligence (AI) has been widely used in the field of education and has brought revolutionary changes to education. Artificial intelligence technology can create a more interactive and immersive learning environment in education. Through virtual reality and augmented reality technology, artificial intelligence can create a virtual learning environment similar to the actual situation. Students can practice in these virtual environments and experience real scenes. This interactive learning method can stimulate students' learning interest and initiative, and improve their learning enthusiasm. In particular, AI technology will play an important role in simulating situations in the classroom.

4. Summary

Based on the analysis of the existing problems in the teaching of the course of ecological environment planning (e.g. emphasizing basic theory, ignoring practical application), the corresponding measures and solutions are put forward, such as updating the content of teaching materials, keeping pace with the times, highlighting the real case practice teaching, Integrating Ideological and political elements, strengthening the cooperation between colleges and enterprises, paying attention to the cultivation of application and innovation ability, and reforming the assessment methods, so as to cultivate the practical application and innovation ability of students' ecological environment planning, and lay the foundation for engaging in the service work of ecological environment planning after graduation.

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