The Higher Education Mode Exploration on Environmental Pollution Remediation at Home and Abroad

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Abstract. In China's talent training program, the acceptance of higher education is a very important means, and graduate education is the higher education after the undergraduate education, which is the highest level of education in the higher education system. In recent years, due to the human's large-scale development and construction to nature, the pollutants into the environment, the environment has suffered serious damage-. The destruction of the environment is not only a threat to natural ecosystems, but also a threat to the survival and development of human beings, so that the environmental protection and repair has been put on the agenda. The demand for environmental pollution remediation professionals is also greater. The talents who are qualified for the design of the project and the engineering design and have the ability to deal with complex pollution problems have become one of the core objectives of the training of environmental science and engineering professionals. However, China’s current education model can not meet the needs of society. As everyone knows, the higher education teaching model in United States, Britain and other Western countries is very unique and its teaching level has been in the world leader. Therefore, the experience of higher education in western countries is a very meaningful reference and inspiration for China, which is in the midst of vigorous development.

Introduction

Graduate education is the highest level of higher education, and also is an important part of the education system. Its quality and quantity is the basic symbol of the level of higher education and the development level of cultural science and its potential and prospect [1]. Graduate education is a systematic project, which includes many aspects, such as curriculum teaching, social practice and degree thesis. Among them, the graduate course teaching is the basic link of the whole graduate education, which quality determines the quality and level of the whole graduate education. And it has received great attention from the national education authorities as well.

With the rapid development of China’s economy and society, the problems of environmental health and human settlements have become increasingly prominent. Facing these problems, the national government has put the environmental ecological restoration on the agenda and given the support of policies and funds, which has spawned environmental restoration industry, which needs talent and technology support as a guarantee. As one of the most important courses for the cultivation of environmental remediation professionals, environmental pollution remediation is the key to personnel training [2].

This paper aims at the differences between Chinese and western higher education teaching mode in environmental pollution remediation, through difference analysis, testing Chinese shortage of higher education, putting forward the innovation teaching mode to adapt to environmental remediation professional talent training, in order to cultivate students in environmental pollution.
remediation technology application ability and scientific research quality, and so as to lay the necessary foundation for future work or continuing education.

1. China’s Teaching Mode and Its Existing Problems

   In our country’s higher education, most of the courses usually adopt the traditional teaching method, which is “lecture method”. Throughout the historical development of the educational model, the large-scale use of the “lecture method” adopted after the industrial revolution in the educational model, when the “class teaching system” appeared in order to meet the growing student scale [3]. In this model, according to a fixed time, by a fixed teacher to a fixed class teaching, greatly improves the teaching efficiency. The advantages of the lecture method are that teachers and students have eyes and language exchanges, and students’ memory of knowledge will be more profound. Teachers can be flexible to master and solve problems in the classroom, and also improvise and play on the blackboard. With the social development, there have been multimedia teaching methods, which is that it can render complex abstract images with students understanding very clearly. However, the excessive use of multimedia will limit the communication between teachers and students, and we should find the balance between the two in the application.

   At present, the teaching mode of colleges and universities in China is mainly a combination of lecture method and multimedia technology. China’s traditional teaching model to “classroom” as the center, the classroom is “teacher” as the center. In this mode, the students are only the recipients of knowledge, over emphasising on the teaching of teachers in the process of teaching, and students’ learning initiative has been weakened, which can not meet the needs of the development of students’ personality. The single teaching model will allow students to continue to accept information like a machine, without a good understanding, to absorb knowledge, take the initiative to think about the problem. After a brief exam, with the passage of time, the knowledge is easy to forget, but also prone to mental weariness. This kind of teaching mode not only hinders the students from creating the potential, but also makes the students rigid thinking, so that students just become other people’s theoretical results porters, who did not develop critical thinking and innovation ability, so that people can easily be replaced [4].

2. Teaching Model of Environmental Pollution Rehabilitation in Western Countries

   American higher education is the most mature educational model in the world today. With its perfect core curriculum system and a flexible and diverse teaching model and a variety of campus culture environment, students have a strong sense of independence and independent innovation [5]. In addition, the level of education, academia and scientific research in the UK is a world leader. The University of Oxford and the University of Cambridge are known to the world in the UK, and it is among the world’s most important educational hub outside the United States [6]. For the “Environmental Pollution Repair” course, its theory knowledge is difficult to understand, and its content is more than others. In the course of teaching, flexible and diverse forms of classroom teaching can be adopted. And gradually shift the “teacher as the main body” teaching method to “take the student as the main body” way, so that let the students take the question to ponder, to stimulate the interest of study, to display the initiative and creativity of study [7].

2.1 Inquiry teaching model

   Inquiry teaching is a process and method for students to understand and construct knowledge and experience knowledge generation under the guidance of teachers through observation, thinking, hands, cooperation, communication and other forms [8]. To this end, this teaching method into the classroom: the teacher throws a water cadmium pollution repair problems; students self grouping; group as a unit, began to solve the problem. In order to solve this problem, students often make assumptions based on prior knowledge, and then through the search for literature and other means to obtain evidence, to explain and evaluate. Finally, under the guidance of teachers to communicate with each other, students ultimately get the most prepared explanation.
2.2 Situational participatory trial teaching model

The main characteristic of the experiential teaching is that in the process of higher teaching, teachers in a certain theory as a guide, to create the teaching situation, stimulate students’ emotion, and guide students to participate directly in the setting of life, by preparing beforehand, participation, expost evaluation, let the students to understand the depth of knowledge through perception. For example, after bioremediation, in order to strengthen and consolidate the understanding of knowledge, teachers can set up a situation: suppose a waters appearing cadmium pollution, according to the students’ class learning and research to the case facts, from water pollution area, water body, pH value, flow rate, length of repair time, repair methods can be used in microbial classification, and proposed solutions. Through the simulation of environmental pollution situation creation, students can learn the classification of further knowledge, through self-construction of knowledge categories, to strengthen the learning effect.

2.3 Practical teaching mode

The practical teaching mode is to establish the second class, increase the extracurricular teaching activities, and pay attention to the cultivation of students’ creativity and practical ability [9]. In teaching, the materials used are often written for many years, the knowledge learned is not the latest subject information, theory and practice out of touch. The construction of environmental pollution remediation course includes the organization of rich and colorful second classroom, watching the video through the organization, using of spare time to the nearby rivers, lakes, or biological repair site observation, recommended to participate in academic environment pollution remediation technologies, pleasing professionals in the field of environmental remediation on theory and technology for the latest the students, so that students always keep pace with the times.

3. Innovative Teaching Model for Cultivating Environmental Remediation Professionals

According to the experience of teaching methods of environmental pollution restoration in western countries, this paper proposes a teaching model which is suitable for cultivating environmental rehabilitation professionals-teaching mode of “teaching, learning and practice”. With a water cadmium pollution remediation problem as an example, the teacher first gives a question, students organize the information according to the problem, and make the report in class, the teacher makes a summary, and the final conclusion is reached. The students made a report in the classroom, and the teacher summed up the point and came to a final conclusion. Finally, they use the spare time to observe the nearby rivers, lakes, or biological repair site observation, apply the knowledge learned in the classroom to practice.

Concluding Remarks

Although the current teaching model of higher education in some respects behind the United States, Britain and other western developed countries, but as long as the state, society, schools, these three areas can work together on the current higher education teaching model drastic reform, the authors believe in the near future, professional people will be more and more.

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