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Research on Strategies of Specialty Construction of Environmental Disciplines in the Context of Petroleum and Petrochemical Characteristics

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Abstract: In the context of the new era, with the focus on talent training, "government, industry, academia and research" integration, environmental disciplines construction deficiencies are increasingly apparent, in view of its problems, in the context of petroleum and petrochemical characteristics of the construction of the whole process of the linkage mechanism, a full range of evaluation system. This article not only provides comprehensive guidance for the construction of the environmental discipline in our school, but also provides effective mechanism and method guarantees for the deep integration of the demand side of senior environmental protection professionals and the supply side of universities exporting talents to the chemical industry. It has important practical and far-reaching strategic significance for the construction and development of the environmental discipline in our school.

Keywords: Environmental Discipline; Construction.

1. Introduction

With the development of society and the improvement of environmental awareness among the people, vigorously promoting the construction of ecological civilization and environmental protection, and building a beautiful China cannot do without solid talent support. Universities shoulder the important mission of cultivating moral character, cultivating socialist builders and successors with comprehensive development of morality, intelligence, physical fitness, aesthetics, and labor. The deepening construction of environmental disciplines in universities is the foundation for ensuring high-level environmental protection talents.

At present, the construction of environmental disciplines and specialties has been carried out by many universities at home and abroad, for example, Tsinghua University, Tongji University, Harbin Institute of Technology, Massachusetts Institute of Technology, Stanford University and other famous universities at home and abroad have achieved remarkable results in the construction of environmental disciplines and specialties and the effect of talent cultivation. However, it is also noted that the environmental disciplines and specialties of different universities at home and abroad have certain deficiencies in terms of the degree of integration of "government, industry, academia and research", multidisciplinary crossover, reform and improvement of the knowledge system, and characteristics of talent cultivation. Generally speaking, our university's environmental disciplines and specialties have studied and implemented the "Opinions of the General Office of the State Council on Deepening the Integration of Industry and Education" and other documents on disciplines and specialties construction and talent cultivation, relying on more than 10 national, provincial and ministerial practice platforms, and achieved certain results in the collaborative cultivation of government, industry, academia and research, and gradually formed the advantage of cultivating environmental talents with environment as the core and the integration of safety, chemical industry and other disciplines, and has established a complete "Government, Industry, Academia and Research" integration degree. It has established a complete training system of "bachelor's degree, master's degree and doctorate degree", and has become one of the important training bases for high-quality environmental protection talents in petroleum and petrochemical fields in China.

2. Problem Analysis

However, at the same time, through summarizing and analyzing the development and talent cultivation effect of the environmental discipline specialties over the years, the current construction of the environmental discipline specialties mainly has the following three deficiencies:

(1) The construction mechanism is not sound enough and arbitrary in the construction process of environmental discipline specialties, thus making the construction process less stable and secure.

(2) At present, the petroleum and petrochemical characteristics of environmental discipline are not prominent enough, and the integration of theoretical courses with the petroleum and petrochemical background of engineering practice system is not enough.

(3) The evaluation system of government-industry-university-research collaborative education is imperfect, emphasizing the evaluation of learning effect and lacking the rational evaluation method of the effect of industry and research on educating people.

3. The Solution Paths

Focusing on serving the construction needs of new engineering disciplines, with a background in petroleum and petrochemical industry as its characteristic, we focus on industry demand orientation and cross-border cross integration. By establishing a deep integration and collaborative education mechanism of "politics, industry, academia, and research", we provide comprehensive evaluation methods for the construction guidance planning

and education effectiveness of environmental disciplines, providing guidance for the overtaking and strategic development of environmental disciplines.

(1) Establish the whole process of collaborative education mechanism of "government, industry, academia and research" for talent cultivation.

Under the guidance of output orientation and the concept of new engineering, and oriented by the national policy and industry talent demand, "government, industry, academia and research" jointly design and re-design the talent cultivation objectives, graduation requirements, curriculum system and cultivation mode of environmental disciplines of the university, breaking through the disciplinary barriers; at the same time, we jointly carry out the implementation of talent cultivation activities and evaluation of cultivation effect, and finally form the "government, industry, academia and research" deep mutual integration and collaborative cultivation whole process linkage mechanism. At the same time, the implementation of talent training activities and the evaluation of training effect will be carried out jointly, so as to form a whole-process linkage mechanism of "government-industry-academia-research" for in-depth mutual integration and collaborative training.

(2) "Government, industry, academia and research" integration and intercommunication to form a guidance plan for the construction of environmental discipline specialties with distinctive petroleum and petrochemical characteristics.

From the perspective of in-depth integration of petroleum and petrochemical background into environmental professional talent training theory and engineering practice course group, the guidance of high-level environmental protection talent training system has been formed with environment as the core and multi-disciplinary courses such as chemical industry and safety deeply integrated. Further, relying on the industrial practice base and science and education platform, the implementation plan of "linked talent training" mode is formed from the aspects of "on-campus + off-campus" dual-teacher system implementation, construction of engineering case and scientific research case resource database, talent training to solve practical engineering problems and equal emphasis on discipline frontier, and finally the guiding plan for the construction of environmental discipline specialty is formed, which points out the direction for the subsequent construction of environmental discipline specialty.

(3) Establishing an all-round evaluation system for the effect of human training with the linkage of "government, industry, academia and research" and multiple synergies.

Combined with the actual situation of each link of talent cultivation, we will carry out an all-round evaluation system of the effect of training people in all aspects, such as the effect of course learning, the effect of engineering practice, the quality of graduation thesis, and the tracking of career development, with the participation of the government, industry, academia, and research.

4. Implementation Effects

(1) Innovation in the collaborative education mechanism of "government, industry, academia, and research"

From the perspective of the new engineering discipline, effectively integrate the resources of the four directions of "politics, industry, academia, and research" and fully leverage their respective advantages. On the one hand, "government industry research" provides direction for the development of comprehensive environmental protection talent training goals and graduation requirements for schools; On the other hand, in the establishment of a multi-disciplinary integrated curriculum system for environmental majors in schools, the implementation of various curriculum teaching activities, and the evaluation of educational effects, the entire process of "political industry research" is permeated. The school synchronously feeds back the educational achievements to the "political industry research", supporting relevant policy formulation and testing of talent cultivation effects. Finally, an innovative whole process linkage mechanism was established for the deep integration and collaborative education of "government, industry, academia, and research".

(2) Innovation in the comprehensive evaluation method system for the educational effect of deep participation in politics, industry, academia, and research

We have established an educational effectiveness evaluation system that focuses on universities for theoretical courses, industry for internship and practical courses, and collaboration between industry and research institutes for design courses. The evaluation system involves multiple parties, including government, industry, academia, and research, and is synchronized with the tracking and evaluation of employers. The evaluation results are used to continuously improve the training objectives, graduation requirements, curriculum system, and teaching process, continuously improving the quality of talent cultivation.

5. Conclusion

(1) In response to the current problem of inadequate construction mechanisms and strong arbitrariness in the construction process of environmental disciplines, which leads to weak stability and guarantee in the construction process, a comprehensive "government industry university research" collaborative education whole process linkage mechanism should be established.

(2) In response to the current issue of insufficient prominent petroleum and petrochemical characteristics in environmental discipline majors, the background of petroleum and petrochemical is integrated into theoretical courses and engineering practice to form a guiding plan for the construction of environmental discipline majors with distinctive petroleum and petrochemical characteristics from the perspective of new engineering disciplines.

(3) In response to the current issue of emphasizing learning evaluation in the evaluation of educational effectiveness, but lacking in the evaluation of industrial and research education, a comprehensive evaluation method system for the collaborative educational effectiveness of "government industry academia research" has been established.

Based on the accumulation of the construction work of environmental disciplines and the previous experience, this paper will provide guidance for the strategic development of environmental disciplines from the aspects of "national policy as the guidance, industrial demand as the goal, teaching innovation as the basis, science and education integration as the enhancement", which is in line with the future development trend of environmental disciplines in the new era.

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