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Construction of Practical Teaching System of Environmental Engineering Specialty Under the Background of New Engineering

Zongtang Liu* Yufeng Sun Zhenghao Fei Weihua Tao Xiaoju Wen
School of Chemistry and Environmental Engineering, Yancheng Teachers University, Jangsu 224007, China
*E-mail of the corresponding author: zongtliu@163.com

Abstract
New engineering is the inevitable direction of higher engineering education reform in China. It is also a major choice for the development of environmental engineering specialty under the background of the new industrial revolution and new economic development. The practical teaching of environmental engineering is an important way to improve undergraduate experimental practical skills and cultivate scientific research interest, which is significant for the cultivating of high-quality applied talents. Under the background of new engineering, there are still some problems in the practical teaching of environmental engineering specialty in China, which need to be solved urgently. This paper first expounds on the problems existing in the practical teaching of environmental engineering and then puts forward the effective measures to construct the practical teaching innovative system of environmental engineering, to improve the effectiveness of practical teaching and the quality of applied talents.
Keywords: new engineering; environmental engineering specialty; practical teaching system; innovation
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Environmental engineering as a comprehensive interdisciplinary professional mainly studies the protection of natural resources and rational utilization, the improvement and prevention of environmental pollution, the improvement of environmental quality, and has distinct practical characteristics [1]. Practical teaching can not only cultivate students' innovation ability, scientific spirit, and practical ability, but also promote the comprehensive development of students' comprehensive quality, and effectively improve the quality of education. Undergraduates majoring in environmental engineering should master the basic knowledge and skills in this field, and engage in environmental engineering construction, environmental monitoring, pollution prevention and control and other aspects. Therefore, practice teaching in the whole environmental engineering specialty teaching process has a very important role. It is very necessary and urgent to construct an efficient practical teaching innovation system for environmental engineering specialty in China.

1. Current situation of practical teaching in environmental engineering specialty

At present, under the background of new engineering, many universities are exploring to reform the training mode of environmental engineering professionals, aiming to train more and more professional application-oriented engineering talents for the country of China [2]. However, the reform of the talent training mode in most universities mainly focuses on the talent training program, curriculum system, and teaching mode, but often ignores the reform and practice of environmental engineering majors, especially there are many weak links in the practical teaching of environmental engineering majors in local universities [3].

Firstly, professional teaching characteristics are not outstanding enough. At present, more than two hundred universities set up environmental engineering specialties, and the talent training program and curriculum system have an obvious professional homogeneity phenomenon [4]. Some universities mainly follow the traditional talent training mode, the curriculum system focus on the traditional environmental pollution control technology and engineering, and lack of environmental pollution management and control courses. The environmental protection talents trained cannot fully meet the needs of the environmental protection market under the new situation.

Secondly, the practical teaching system is not perfect enough and the teaching content is not updated in time in some universities [5]. The proportion of theoretical teaching is too large, while the practical teaching is relatively small, and the teaching forms are not rich enough in some local universities. Many universities lack the deep participation of related enterprises in the process of professional talent training and do not really establish an output-oriented talent training system. Moreover, with the rapid development of the environmental protection industry in China, the existing practical courses, experimental equipment, and experimental projects in many local universities cannot fully meet the current requirements of professional personnel training.

Thirdly, the innovation of the practical teaching mode is insufficient and the evaluation method is not standard. The practical teaching mode of environmental engineering in many universities lags, and the practical content and projects lack innovation and comprehensiveness, which cannot meet the needs of students' innovation ability and practical ability cultivation [6]. Many universities lack standardized practical teaching assessment methods, the assessment indicators are not refined, and the assessment points always deviate from

the actual requirements of the industry.

2. Construction of practical teaching innovative system of environmental engineering specialty

Under the background of new engineering, combined with the specific problems existing in the practical teaching process of environmental engineering specialties in China, the effective measures for constructing the practical teaching system for environmental engineering specialties are proposed.

2.1 Position the practical teaching plate and construct a characteristic practical teaching system

Under the background of new engineering, universities should combine the training orientation of environmental engineering specialty and the actual needs of local economic development, deeply understand the practical skills urgently needed by enterprises [1]. For example, head of environmental engineering specialty and core course teachers should carry out extensive and in-depth research on industries and enterprises in the atmosphere, soil, and sewage treatment, analyze the specific needs of talents in each job, understand the working conditions, technical categories, ability, work quality of front-line personnel, and fully grasp the professional quality requirements of front-line environmental technical personnel. It should also investigate the practical teaching system of different levels and different types of universities. The differences in the practical teaching construction should be summarized and the teaching experience of famous universities should be constantly absorbed. The training plan for talents and the practical teaching system should also be formulated and characterized according to the actual situation of the university.

2.2 Determine the objectives of the practical teaching system

In the case of understanding the industrial needs, universities should focus on cultivating new engineering talents, construct a practical teaching system, and revise the teaching syllabus of relevant courses [1,2]. With the help of the practical teaching platform inside and outside the school, the professional practice system of environmental engineering should be carefully studied according to the relevant requirements of industrial needs and professional setting, vocational standards and curriculum content, and production process and teaching process. After that, try to transform the traditional "big and complete" teaching content into a "fine but small" characteristic practice project [1]. In addition, universities should also modify, construct and enrich the practical teaching content in time according to the new technology, methods, and equipment of the environmental protection industry, and strengthen the construction of characteristic practice projects.

2.3 Reform the course mode and teaching methods

In the process of practical teaching, technical practice and professional experiment should be effectively integrated. First of all, course teachers should optimize the technical practice topic [6]. The practice programs should be closely around the development of the industry and the needs of enterprises, teachers' scientific research topics can also be introduced into experimental teaching. Course teachers should guide students to redesign the current experimental content in practical teaching. Students independently complete the process of experimental scheme design, preparation, operation, and data processing and analysis. This way can cultivate students' ability of literature retrieval, operation analysis, summary, organization and coordination, theoretical knowledge application, and solving practical problems. Secondly, the production practice and simulation training should be effectively integrated [7]. For example, teachers can use the existing simulation operation software to carry out the virtual simulation operation training of dust removal, desulfurization, denitration, and other processes. Take the computer simulation as an important supplement to the field practice. Finally, the graduation thesis and the discipline competition can be effectively integrated. For example, students are encouraged to participate in environmental science and technology innovation competitions to enhance their scientific and technological innovation ability.

2.4 Strengthen the construction of teachers and enrich teachers' practical experience

The engineering practice level of major course teachers directly affects the cultivation of students' engineering practice ability. Therefore, the enhancement of the engineering practice ability of course teachers has become a vital factor. At present, most young teachers lack engineering education and practical experience, effective teaching methods in the practical teaching process. It is difficult to meet the relevant standards and requirements of professional certification and evaluation. To cultivate teachers' engineering practice ability, universities can employ experts with rich practical experience in environmental engineering design companies and the engineering industry to impart their skills to young teachers [8,9]. Based on case communication of engineering construction, design, production, and operation, improve teachers' ability to combine practice and theory. In addition, universities can arrange for young teachers to carry out special practices in enterprises, and participate in the production training, lectures, and related designs conducted in the environmental engineering industry. This way can also effectively broaden teachers' horizons and enhance their professional practical ability.

2.5 Explore new effective evaluation methods of practical teaching

First of all, universities should strengthen practical teaching management and monitoring [1,10]. By strengthening the guidance of practical teaching, give full play to the core position of instructors, and the number of instructors is set up scientifically. Take the measures of hiring the off-campus guidance teachers through multiple channels to make the teachers guide and manage the practical teaching more fully. Secondly, universities should actively explore new teaching methods and ways of school-enterprise cooperation, and study and formulate effective engineering practice ability training standards. For example, the assessment of experimental teaching projects should be carried out closely combined with the relevant requirements of the industry. According to the three levels of experimental courses, experimental projects, and experimental systems, students' mastery of environmental engineering technical skills is systematically evaluated. Furthermore, the scoring system set up by the platform can be used to automatically and completely record each student's practical academic performance, stimulate students' enthusiasm for independent learning, and change the previous status quo of students' negative self-management and learning.

3. conclusion

Practical teaching is an important link in the training of environmental engineering specialty, and an effective way to stimulate students to think independently, strengthen engineering application training, improve teamwork and cultivate innovation consciousness. Under the background of new engineering, universities can construct a characteristic practical teaching system, determine the objectives of the practical teaching system, reform the course mode and teaching methods, strengthen the construction of teachers, and explore new effective evaluation methods and a number of effective measures, actively construct environmental engineering practice teaching innovative system. The above effective ways can comprehensively enhance students' practical ability, better adapt to the needs of social development for environmental engineering, and cultivate more high-quality and practical environmental engineering talents.

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