

Exploration on Teaching Reform of Energy Specialty under The Background of Ecological Civilization

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Abstract. With the rapid development of science and technology and profound changes in society, the traditional classroom teaching mode can no longer meet the needs of modern education. At the same time, the implementation of ideological and political education is a major reform in educating people in colleges and universities under the background of the ecological civilization. As the backbone of training energy talents, energy and power engineering majors shoulder the mission of training successors with firm ideals and beliefs. This paper expounds the connotation and significance of ideological and political education for energy and power engineering majors in colleges and universities under the background of ecological civilization construction in the ecological civilization, strengthens teachers' awareness of moral education, deepens educational reform and innovation, and promotes the implementation of ideological and political education for energy and power engineering majors in colleges and universities. The purpose of this paper is to explore the necessity and strategies of classroom teaching reform in the ecological civilization, and to provide useful reference for improving the quality of education and cultivating innovative talents.

Keywords: Classroom teaching reform; Energy and power engineering; Quality of education; Innovative talents

1 Introduction

The implementation of the fundamental task of cultivating people with moral integrity must integrate and inseparable the value moulding, knowledge imparting and ability cultivation. Comprehensively promote the construction of curriculum ideology, is to put value guidance in the knowledge transfer and ability training, to help students shape a correct world view, outlook on life, values, which is the proper meaning of talent training, but also the necessary content^[1]. Therefore, in the context of the state attaches great importance to the ideology and politics of the curriculum, colleges and universities are actively exploring effective ways to integrate ideology and politics education into professional education and teaching, and promoting the construction of the ideology and politics of the curriculum^[2].

The teaching of energy and power engineering professional courses is an important link in the training of students and the main position of ideological and political education. How to comprehensively promote the construction of course ideology and politics in the context of the ecological civilization is the key to solving the problems of professionalism and ideological and political education of students in colleges and universities. At the same time, with the construction of ecological civilization, great changes have taken place in the social demand for

talents^[3]. To sum up, the teaching reform of energy courses has become an urgent problem to be solved in the field of education.

2 Civic and political construction of energy and power engineering programmes

The major of energy and power engineering has always been at the forefront of cultural and ideological security. Students of this major are exposed to more foreign cultures in the learning process^[4-5]. Therefore, as teachers of related majors, we should pay more attention to students' ideological and political education while guiding students to familiarize themselves with professional knowledge, and guide students to establish a correct world outlook, outlook on life and values under the construction of ecological civilization in the ecological civilization. As a teacher majoring in energy and power engineering, taking the course "Energy and Power Testing Technology" as an example, this paper deeply explores the ideological and political elements in this course, and expounds how to promote the ideological and political construction of the course and give full play to the role of educating people from the perspective of professional construction^[6].

2.1 The characteristics of the course "Energy Power Testing Technology"

Energy and Power Test Technology is an important basic course for energy and power engineering majors in colleges and universities^[7]. The main goal of this course is to train students to master the application technology of measuring instruments and testing technology in energy and power engineering, master the testing methods of various parameters and related testing abilities, and pay attention to cultivating students' engineering quality, craftsman spirit and innovative quality. Through the study of this course, students can understand the latest testing technology, measuring equipment and research results at home and abroad, be familiar with the application of testing technology foundation, measuring instruments and testing technology in energy, and master the testing methods and related testing skills of thermal parameters^[3]. Have the ability to design and apply the test scheme by using the test theory and measuring instruments, cultivate students' good engineering quality and engineering innovation consciousness, and have the enterprising spirit of popularizing new technologies or innovating existing technologies^[8].

2.2 Ideological and political construction of the ecological civilization course of "Energy and Power Testing Technology"

In-depth study and mastery of the ecological civilisation thought system of the ecological civilization, through the analysis of the ecological civilisation thought system and core principles, applying it as an important knowledge system and knowledge point in the construction of energy class course ideology and politics. Focusing on the learning of new energy knowledge, and on this basis, its influence on the construction of ethical and moral values of the energy class profession is explored, so as to improve the students' worldview and ecological civilisation worldview. The new energy and renewable energy courses' ideological construction is formed with the "ecological civilisation thought system of the new era" as the knowledge system, the core principle as the knowledge point, and the goal of improving

professional ethics, professional morality and building the worldview of ecological civilisation^[9]. It generally refers to renewable energy and clean energy developed and utilised on the basis of new technologies, specifically including solar energy, biomass energy, hydroelectric energy, wind energy, nuclear energy, geothermal energy, tidal energy and other forms of energy. The course itself contains the ecological concept of clean, renewable and environmentally friendly, and reflects the ecological civilisation system of thought in its core knowledge content, so that students' world view of ecological civilisation can be further enhanced through the study of the course^[10].

3 Pedagogical design and methodology of the programme civics

3.1 Pedagogical design of the programme civics

In the design process, we can ease the contradiction between the implementation of curriculum ideology and reality by constructing a systematic curriculum ideology and politics. In addition, China's energy-related fields started late compared to the West, the development of today's situation, thanks to the great practice of socialism with Chinese characteristics in the ecological civilization, teachers can use this point, from the actual situation and combined with the teaching of professional courses, course practice, etc., to explore the elements of ideological and political education of the curriculum, to stimulate the patriotism of the students, the protection of the party emotion. Colleges and universities are the place where students spend most of their time studying and living, so colleges and universities should take the initiative to understand the development of the industry as well as the national development strategy, enhance the sense of mission, and consciously practise the professionalism of environmental protection majors and professional ethics.

3.2 Methods of implementation of civics in the curriculum

Civics in the course "Energy Power Testing Technology" is implemented firstly in the classroom through direct or indirect teaching by the teacher. Secondly, students discuss and reflect among themselves to make themselves aware of the importance and necessity of the Civics of the course. The assessment methods can be usual assignments, classroom performance and final examination. In the usual homework, the teacher can qualitatively assess the students' completion of homework and learning attitude; in the classroom performance, the teacher can release the discussion topics and ask the students to actively think and answer the questions; in the final examination, the teacher can increase the proportion of the course-related learning outcomes, so as to make the students reduce the chances of sudden learning and coping with the examination.

4 Experimental results and validation

4.1 Design and implementation of empirical research

In order to verify the actual effect of the teaching reform measures, we selected two classes of energy and power engineering major in the School of Energy and Architectural Engineering of our school as the experimental group and the control group, and conducted an empirical study

for one semester. The experimental group adopted the above teaching reform measures, while the control group maintained the traditional teaching mode. During the experiment, we collected abundant data through questionnaire survey, classroom observation and evaluation of students' works. Subsequently, we use statistical analysis methods to deeply process and analyze the data.

4.2 Experimental results and discussion

Enhance learning interest and participation. The experimental results show that the students in the experimental group are obviously superior to the control group in learning interest, autonomous learning ability and innovative ability. Specifically, compared with the reference group, the classroom participation of the students in the experimental group increased by 8% from 74% to 82%, and more students were willing to take the initiative to speak, ask questions and participate in discussions. This shows that the teaching reform measures have effectively stimulated students' interest and enthusiasm in learning.

Self-regulated learning ability and innovation ability are enhanced. The students' autonomous learning ability in the experimental group has been significantly improved. They are better at using extracurricular resources to learn, and can complete more complex learning tasks independently.

Improve academic performance and comprehensive quality. The average score of the students in the experimental group increased by 7.1 points in the final exam, and at the same time, the winning rate in innovative projects and competitions also increased significantly. These results fully illustrate the positive role of teaching reform measures in improving the quality of education and cultivating innovative talents.

Although the empirical research results show that the teaching reform measures have achieved remarkable results, we also realize that there are still some problems and challenges. For example, some students are slow to adapt to the new teaching methods and contents, and need more guidance and help. In the future, we will continue to deepen the research on teaching reform and explore more effective teaching methods and strategies to better meet the needs of students and the expectations of society.

5 Conclusions

The ideological and political education of energy professional courses puts forward the ideological and political goal of improving professional ethics and professional ethics and building an ecological civilization world outlook, and points out what the ideological and political education of energy courses in the new era should talk about; Through the construction of curriculum ideological and political knowledge system and the establishment of the mapping relationship between the core principles of "New Era Ecological Civilization Thought" and the curriculum content, this paper specifically analyzes how to talk about ideological and political education in new energy and renewable energy courses, and constantly updates and iterates the ideological and political elements in the course of "Energy and Power Testing Technology", and how to profoundly implement "New Era Ecological Civilization Thought", so that students' ideological and political education is guaranteed.

Through the study of this kind of courses, students can improve their self-moral cultivation, enhance their professional ethics and build an ecological civilization world outlook on the basis of mastering professional knowledge.

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