

Discussion on Strengthening the Innovative Education for Energy-Saving and Emission-Reduction in the Teaching Process in Colleges

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Abstract. College students' consciousness of energy-saving and emission-reduction are important parts of the public awareness of energy-saving and emission-reduction. Strengthening the education of College students' energy-saving and emission-reduction is of great significance and far-reaching influence. Colleges are important carriers of energy-saving emission reduction education, college students are the main force of the social practice on energy-saving and emission-reduction. Through infiltrating the consciousness of energy-saving and emission-reduction in education, developing innovative contest for energy-saving and emission-reduction, creating innovative practice base for energy-saving and emission-reduction, establishing student volunteer organization of energy-saving and emission-reduction, can cultivate students' innovative ability and improve students' social practice ability, help students set up the consciousness of energy saving and environment protection, and cherish energy, take good care of the environment, enhance students' awareness of social participation and social responsibility.

Introduction

"Energy-Saving and Emission-Reduction" comes out from China's the eleventh five-year outline plan. The outline plan aims at reducing energy consumption gross domestic product and major pollutants by 20% and 10% respectively, during the period of eleventh five-Year outline plan. This is an important measure to implement the Scientific Development Concept, to build a socialist harmonious society, it is the inevitable choice for the construction of a resource-saving and environment-friendly society, it is the only way which must be passed to promote economic structural and change the mode of economic growth. College students are the new force and main force of science and technology innovation and in the future. Therefore, it is a very important job to pay attention to cultivate the innovation ability of college students and the cultivation of consciousness [1].

At present, many colleges strengthen publicity and education on the topic of energy saving, organize contests related to energy saving and improve students' awareness of energy saving, improve the overall quality of students [2]. Management of colleges are also actively explore campus method of energy saving measures, to strengthen college students actively promoting energy saving behaviors. Environmental organizations and associations in Colleges and colleges are also actively organizing energy-saving and emission-reduction actions to encourage students to actively participate in school. Some colleges encourage teachers to infiltrate energy saving knowledge in the teaching of different subjects. In addition to the required courses, some colleges also offer specialized elective courses, so that students can get systematic, comprehensive energy-saving knowledge education [3].

To strengthen the awareness of energy-saving and emission reduction, and put into practice, is of great significance to personnel training and society service. At present, the National College Students' energy saving and emission reduction social practice and science and technology

innovation contest has been conducted eight sessions. We are also responsible for organizing the school selection.

The Event Provides a Platform for College Students to Communicate and Culture the Awareness of Environmental Protection, and Sense of Teamwork

Although around colleges carry out many influential innovation activities, such as College Students' Mathematical Model Contest, College Students Electronic Design Contest, College Students' Mechanical Innovation Contest, national university student extracurricular academic science and technology work competition of "Challenge Cup", the quality of education in colleges can't completely adapt to the needs of economic and social development, innovative work remains to be strengthened[4]. School of power and energy of Northwestern Polytechnical University play an important role in cultivating high quality talents for the major national defense engineering power system, has made great achievements in more than 70 years of practice. Recently, the Energy-Saving and Emission-Reduction Association of Northwestern Polytechnical University has investigated the basic situation of the students in school about energy saving awareness and practical ability, randomly selected 300 samples to carry out a questionnaire survey. From data of the survey, the students who participated in energy saving technology innovation activities account for 21.3%, and did not participate in such activities account for 78.7%. Visible, the proportion of students' participation in science and technology innovation practice is small. Only 12.8% participated in the Provincial College of science and technology innovation project or contest, 23.7% participated in the college students' science and technology innovation project or contest. This shows that the students mainly participated in the field of science and technology innovation activities.

From the questionnaires we put the factors influencing college students' innovative ability for energy-saving and emission-reduction summarize as: the first is the school innovation atmosphere is not strong; the second is the structure and setup of course is not reasonable. Required courses are too many, and elective courses too few. Time of the students on independent learning is limited. And that is not conducive to arouse their interest in learning; The third is that teachers and students who participate in the activities of science and technology innovation are without high enthusiasm, which is not conducive to the cultivation of students' innovative spirit [5].

The Training Mode of Innovation Base Construction

Firth, construction of energy-saving and emission-reduction base for college students, creating the atmosphere of college students' scientific and technological innovation, the cultivation of talents with scientific and technological innovation ability must be in a good environment. Combined with the characteristics of college, we founded the Association for energy-saving and emission-reduction and the innovation base of energy-saving and emission-reduction, the association is responsible for the operation of the base [6]. Including the main directions of innovation: test systems for low pollution and low emissions combustion technology, for efficient heat transfer technology, for advanced energy-saving technology, for solar energy application technology, for wind power technology, for desalination technology, for pollution control and treatment technology, for power systems technology test vibration and noise reduction systems. The construction of these systems has inspired students' spontaneity, initiative, and creativity, provides a stage to display their talent, create a good environment for technological innovation.

Establish a Perfect System of Science and Technology Innovation, and Take the Initiative in Science and Technology Innovation

The innovation base of energy-saving and emission-reduction is open to undergraduate student in school, also attracts some undergraduate students who are interested, two times a year to call students for innovative subjects, and held a competition. All competitions are designed independently by

students with independent construction of experimental devices and independent innovation and practice activities, the base management office is responsible for students to contact the instructors. At the same time, the base recommend excellent works to the whole country, and assist college students to publish innovative practice papers, to apply for patents, to develop the product etc. Students participate in all kinds of science and technology competition and the subject project. On the one hand, that can make them to optimize the knowledge structure, to rich social practice, to strengthen capacity, to improve learning ability, to practical ability, to innovation ability; on the other hand that can improve their ability to communicate with people so that they can learn to survive, to promote them to adapt to society and create a better future [7]. Meanwhile, under the competition mechanism of the system, we will find and train a batch of technological innovation talents [8].

According to the characteristics of each grade students , we carry out scientific and technological innovation activities, establish the practical training system, and set up scientific and technological innovation activities and training system with the characteristics, regularly organize students to participate in academic, exchange and symposium on energy-saving and emission-reduction, actively carry out about energy-saving and emission-reduction scientific propaganda activities and training activities, stimulate students' desire of science and technology innovation, cultivate the students' consciousness of science and technology innovation [9].

The Effect of College Training Mode to Energy-Saving and Emission-Reduction

First of all, the model has opened up the students' vision and inspired the students' innovative consciousness. The training mode of energy-saving and emission-reduction association breaks the traditional teaching mode of "teacher talk, students listen to", change "teach" to "explore", encourage students to innovative, find the answers and sum up the regularity with lectures knowledge as a practice of explorers, cultivate college students' keen observation and active inspiration, encourage them to seek, bring the students' creative thinking ability to full play, get rid of the blocked plight solving the problems in the box. To a great extent, that improves students' ability of creative design and students' ability of engineering practice and students' ability to resolve the difficulties encountered in real life[10]. Secondly, the training of the innovative model improves the comprehensive quality of College students. Whether it is competition, social practice, the development of new products or patent applications, it gives full play to the talents of the team members at each link, mobilizes the many favorable factors for service at the same time. Finally, the model has greatly tempered the team spirit of College students. Energy-saving and emission-reduction innovation base makes students from different disciplines and cultural background to cooperate, to correctly grasps the intention of teachers and other science and technology personnel, to improves students' team cooperation spirit and ability to organize and coordinate, decision-making ability, interpersonal ability, gives full play to collective wisdom [11].

Conclusion

College students accept the education of energy-saving and emission-reduction in college, which has great influence on the formation of their correct outlook on life and environment. College students will be the backbone of socialist modernization construction in China, many of them will be managers, policy makers, have a decisive impact on the social interests. Through implementation of energy-saving and emission-reduction education, college students form the correct concept of energy-saving and emission-reduction, have the consciousness and the ability of energy-saving and emission-reduction, keep energy saving sensitivity, consciously cultivate energy saving behavior in the future decision-making, and consciously cultivate energy saving behavior. The construction of energy-saving and emission-reduction innovation base and innovation system, not only provides a platform for the students who want to exchange with each other, play a important role in guiding students to combine professional knowledge and background of energy-saving and emission-reduction with human services. At the same time, the comprehensive quality of college

students, scientific research ability has been greatly improved in the process of energy-saving and emission-reduction in all kinds of competition.

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