

Shaping the Future of Undergraduate Environmental Science Education

Innovation and Change From the Perspective of Ecological Civilization

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Abstract—The College with environmental specialty is the main force in the construction of campus ecological civilization. As a leading indicator of future trends of ecological civilization, it should play a distinctive role and bear the historical pioneer responsibility for the environmental education under the guidance of the view of ecological civilization within universities. Based on the practice of the environmental education for the students in Guilin, China, the significance, the actuality and the problems of the environmental education from the perspective of ecological civilization were analyzed. Some innovation and change of the present environmental education methods were also proposed to construct an ecological civilization in campus.

Keywords-college; environmental education; campus ecological civilization; innovation

I. INTRODUCTION

Environmental education in China has always been closely tied to national environmental protection policies which are in turn turned to developments at the international level. The authorities in this rapidly developing nation have identified environmental education as a critical strategy for preventing further degradation as well as promoting a better environment [1]. Ecological civilization is the basic concept for the sustainable development. As the transmitters and executors of ecological civilization, colleges must act as a pioneer of ecological civilization. The colleges with environmental specialty are the main force of campus education of ideological, cultural, science and quality. As the leading researchers on ecological civilization, the colleges with environmental specialty should play a distinctive role and bear the historical pioneer responsibility in environmental education [2].

Focusing on formal education, it proposes how the ideology and culture of the college curriculum in China is posing significant challenges for environmental education. The research highlights the role of environmental education from the perspective of ecological civilization as an instrument for environmental improvement and traces its increasing importance within China's National Environmental Policy. As a green University, the College of Environmental Science and Engineering, Guilin University of Technology (GUT), has expanded the range of professional course education under the guidance of the view of ecological civilization. The

construction of a beautiful and harmonious' campus has also been taken into the whole process of education activities, scientific research and daily life of students. All specialized courses are encouraged to include content about ecological civilization concept and methods to protect ecological environment.

II. FORMING OF THE VIEW OF ECOLOGICAL CIVILIZATION FROM A NEW PERSPECTIVE

The college should take the establishing of the interactive relationship between environmental education and ecological civilization as a starting point of each course, and has appealed all faculties and students to take part in the management and supervision of theory education under the guidance of the view of ecological civilization and the practice to build a beautiful campus. All lecturers must carry out the teaching reform project research to promote the teaching methods of ecological civilization education about ecological theory, morals norm and the construction ability. Whole education procedure must make sure that students can understand the importance of ecological civilization in environmental protection and so establish an excellent ecological concept for professional study. The principle of ecological civilization education is required to be included not only in all basic theory courses, but also in all experiment courses. The ecological civilization concept has become the key factor for the learning and training of students in all aspects of campus life.

Earth Day, World Environment Day and some more special festivals can be a good opportunity for thematic activities during student's day life. Every year, the college carries out an ecological civilization thematic activity named 'Environmental Protection in the Spring' with modern propaganda techniques such as web promotion, microblog, campus broadcasting and dormitory posters. The purpose is to intensify the ecological concept and a good habit for environmental protection and resource conservation in all faculties and students. Economic, material, reasonable honors are specially awarded. All measures are aimed to create a pleasant ambience to work together and to build a beautiful and harmonious campus.

Personal positive consciousness and action is the basic guarantee for the successful building of ecological civilization. So, the intensifying of the ecological civilization concept is an

important step to build a beautiful and harmonious campus. Ecological civilization morality is an important component of human morality, but moral education is different from management. The effect of guide education and communication on an equal basis is better than punishment from rules and regulations obviously. The college encourages the ecological civilization lecture series, and the student supervisory office, the youth league committee and all student associations always to invite some education experts with environmental specialty background to take part in moral education courses. The student corporation activity and class-meetings can create a generosity moral education circumstance and strengthen the ecological civilization education.

III. CONSTRUCTION OF FACULTIES UNDER THE GUIDANCE OF THE VIEW OF SCIENTIFIC DEVELOPMENT

The permanent workers at the college include all the members from teach-research institutes, laboratory, administrative office and international student offices, etc. Teachers are the pioneers and indicators of the construction of the campus ecological civilization. Their words and deeds can take a great effect on the forming of a positive concept of ecological civilization in student's mind and on the daily doing of the students in building a beautiful campus. Therefore, excellent teaching staff must have both professional excellence and moral excellence, which is not only beneficial to the spreading of the ecological civilization spirit, but also a key factor for the promoting of the construction of an ecological civilization campus.

The strategy 'Talent is the key for the scientific development' is further enforced by the college. The teaching staff is reinforced after the criteria of both professional excellence and moral excellence from the perspective of ecological civilization. Meanwhile, the middle-aged and young teachers are encouraged to improve their professional skill through attending short-term training and joining scientific researches in other universities or institutes. The college has already implemented a tutorial system for undergraduate students. The assessment of teachers' morality is carried out by undergraduate students to enhance the relevant cultural accomplishment and the responsibility of the staff. On the other hand, the necessary security for better teaching service to carry out the environmental education under the view of ecological civilization has been provided by financial support, equipment purchase, project establishment for research and education of ecological civilization, etc. View of all teacher's ecological civilization is also widened through distance education of higher quality and investigation practice to encourage them to keep the highly activity in ecological civilization education and to comprehend the scientific implications of ecological civilization education through their professional knowledge.

Ecological civilization education is required for the further development of environmental education, which is especially meaningful to be recognized by the lecturers of environmental specialty. The teachers are encouraged to integrate more ecological civilization ideal into their own research activity by different means, such as professional skill training, financial supporting and project of brilliant talents. All these practices have created a harmonious teaching and learning environment

for the young teacher's self-development. All members are willing to make contributions to development of campus ecological civilization and scientific researches.

IV. CONSTRUCTION OF PROFESSIONAL COURSES UNDER THE GUIDANCE OF THE VIEW OF ECOLOGICAL CIVILIZATION

Classroom teaching is a major step of campus ecological civilization education. The merging of the ecological culture in basic courses, professional basic courses, professional courses, practices and experiments can effectively decompose the task and achieve the construction target of the ecological education. Based on the characteristics of the environmental disciplines courses, all teachers were encouraged to take the contents of the ecological civilization into all teaching practices that are combined with the reform of public courses and professional courses in cooperation with teachers from other colleges. The teachers of environmental disciplines are not only responsible for the lecturing courses about environmental science and technology, environmental protection and environmental ethics, but also obligated to give some public courses for all students of the university in related to accomplishment training with ecological civilization. By means of the special funding and the high-quality educational reform project of GUT, the professional teachers are encouraged to exploit education resources about ecological civilization and to guide the curriculum construction and teaching mode innovation by using the ecological civilization theory.

Combined with the local economic development and the scientific research requirement of the Guangxi Autonomous Region of Zhuang Minority, China, the contents of all the courses of study offered by the college are enriched by finding the key conjunction points of ecological civilization education and professional education. The content and teaching time for ecological civilization should be scientifically assessed and adjusted ever year to innovate the education model systematically. Practice teaching is an important part of the environmental professional education. In the revising of the talent training plan, much more attention should be paid to improve practical teaching plan combining with local economic development and ecological civilization construction. For example, in combination of the Construction of '14+4' Industrial Cluster of the Guangxi Autonomous Region, the water pollution problems that could be brought about by the development strategy in the Beibu Gulf, the South China Sea are considered in the education. Meanwhile, some industrial wastewater comprehensive experiment and the water pollution investigation and assessment of the Lijiang River, Guilin have been integrated in the practicum program.

As a part of the national training program for excellent engineers, some advanced practicums with ecological civilization view were established in cooperation with many administration and enterprise units, such as the Nanning Jianning Water Investment Group, the Guilin Drainage Water Group Company, and so on. In the activity of comprehensive practice curriculum with a new focus of the ecological civilization construction, the environmental social practice plays an important role in the ecological civilization education, which encourages the students to solve some domestic issues by their own professional knowledge. As an "environmentalist",

the students' ability of comprehensive analysis and ecological problem-solving should be improved through professional practices of ecological humanistic quality education, which can enhance the connotation of environmental curriculum construction and affect the students' life from the perspective of ecological civilization. Through the four-year ecological civilization education, the students are guided to take action from oneself on, from now on, and from the existing condition on at the level of the consciousness and behavioral of ecological civilization.

V. CONSTRUCTION OF A HARMONIOUS CAMPUS OF ECOLOGICAL CULTURE

Construction of ecological civilization can not only give rise to a new environment education, but also requires more harmonious campus of ecological culture, thus the entire education development mode is changed and has ushered in a new era of education career. The ecological culture atmosphere of a harmonious campus requires not only a beautiful clean campus, but also need to build a harmonious interpersonal environment and civilization effective teaching method. By the means of the teacher's ethics construction, it is necessary to create an ecological civilization harmonious campus culture atmosphere with observance of discipline, moral maintenance, love to own career and stressing honesty in the college. In terms of people's harmony, the harmony between teachers and students decides the teaching level. The management and service level depends on harmony within college and the harmony among faculties decides the educational level. The most important task for the construction of harmonious campus ecological culture is to improve the comprehensive ideological and moral quality of the faculties and students. According to the actual situation, the college clearly defines the teaching duty of teachers and 'the ways of being a competent teacher' in various occasions. The lecturers teach not only professional knowledge, but also education ideas. The teachers should do more things in many aspects with the aim of caring for people, inspire people, development, the achievement of human values, and arouse people's initiative and dynamism. The improving of students' comprehensive quality cultivation is beneficial to the forming of the campus ecological culture with loving environment and respecting nature as the core of the spiritual prop of environment-friendliness and harmonious society. In this way, the harmonious environment is constructed for teachers to give full play to their own scientific and humanistic abilities, and for students to be talent.

VI. IMPROVEMENT OF CONSTRUCTION SYSTEM OF KEY DISCIPLINES OF ECOLOGICAL CIVILIZATION

The ecological civilization construction must have a corresponding system of key disciplines to provide encouragement and guarantee. Neither disciplines without construction or construction without disciplines can ensure the achievement of the sustainability and the desired result of ecological civilization construction [3]. Ecological civilization system of disciplines is the sum of all kinds of guidance, normalization, binding rules and guidelines, which are

beneficial to support, promote and safeguard the ecological civilization construction [3].

The corresponding rules and regulations for the campus ecological civilization construction are introduced, and the evaluation system is also established. For example, the campus is divided into many clean areas and the responsibilities for the routine management are assigned to the faculties, which has established human-oriented values, and thus, embodies humanistic implications of the scientific development view 'Person is main body in the ecological civilization construction of the campus'. On the basis of the relevant rules and regulations of GUT, the college can further refine the rewards and punishments regulation to let each teacher and student to take part in the activity. The enthusiasm of the teachers together with their functional group are inspired to participate in the theme activities "Beautiful Guangxi, Clean campus" by the appraisal of office cleaning, corridor purification, purification family. Every teacher should make himself to take action from now on and join the students' activity including campus, classroom and lab cleaning. An environmental protection pioneer team is organized by the teachers and students with environmental engineering background to promote environment protection and advocate low carbon living in the campus. As part of environmental education, the natural degradation time and resource consumption of professional processing of all kinds of waste produced in the campus are illustrated and given in the poster board. All members are urged to turn off the taps of the water after using them, take their waste away and keep campus clean and green.

Above all, we need to keep our campus clean and green, because we are teaching and studying in there; we need a clean and quiet environment, we can live and study better. It's more easily to enhance the level of personnel training by improving ecological civilization quality in combine with the environmental education. Thus, the colleges with environmental specialty are the main force in the construction of campus ecological civilization and should play a distinctive role and bear the historical pioneer responsibility for the environmental education under the guidance of the view of ecological civilization within universities.

ACKNOWLEDGMENT

Financial assistance for this research was provided through the National "Eleventh Five-Year" Education Science Program from the Ministry of Education of China (FFB090534) and the scientific research project of the Department of Education of Guangxi Zhuang Autonomous Region (200708LX206).

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