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Analysis of environmental education status of higher education institutions - taking higher education institutions in the south of jiangsu as example

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ABSTRACT

The paper analyzes current status of environmental education, environmental protection publicity and environmental protection activities of higher education institutions in the south of Jiangsu through literature material collection, questionnaire survey and interview to indicate existing problems in environmental education of higher education institutions and provides corresponding countermeasures and suggestions from the level of higher education institution and the nation.

KEYWORDS

Institution of higher education; Environmental education; Environmental protection awareness.



INTRODUCTION

In recent years, with the increasingly sharp contradiction between the rapid development of economic society and the restriction of resource and environment, environmental pollution is getting worse and ecological environment is worrying, making the mode of long-term extensive economy development unsustainable. With the progress of society and people's thinking, more and more scholars and experts realize that environmental education is the only way to awaken entire society to act together to protect environment and improve environment by scientific development. As people's living standard is increasing with each passing day, people pay more attention to the environment which is closely associated with life. Environmental protection becomes not only a hot topic that everyone concerns but also a depressing topic. Today, with continuous advancing of popularization process of higher education, an increasing number of people realize that environment education should be involved in education system of higher education institutions. As a result, various environment courses spring up at higher education institutions across the country. The environmental education of higher education institutions in the south of Jiangsu enjoys concern of people from all walks of life. Through various education forms such as class education and social practice, environmental protection knowledge are imparted to students to make students become backbone and core force implementing environmental protection and sustainable development strategy, which is of great practical significance and far-reaching significance in promoting environmental consciousness of whole society and realizing sustainable development and building harmonious society.

OVERVIEW of SURVEY

Purpose of survey

Analysis of environmental education status of higher education institutions in the south of Jiangsu is made through survey on various key higher education institutions in the south of Jiangsu (Nanjing, Changzhou, Suzhou, Wuxi and Zhenjiang). It is hoped that the survey will impel various higher education institutions to improve environmental education system, make more efforts on environmental protection publicity, actively carry out environmental protection activity and cultivate undergraduates' environmental protection awareness and behavior.

Survey content

(1) Awareness of environment education of higher education institution. Whether higher education institution has environmental protection awareness; Whether higher education institution has some understanding of its students' environmental protection awareness; Whether higher education institution has the awareness of implementing environmental protection in overall environmental protection of campus; Whether higher education institution has the awareness of imparting environmental protection awareness to students and improving students' environmental protection awareness; Whether higher education institution has the awareness of applying environmental protection in social practice.

(2) Actions of environmental education of higher education institutions. Whether higher education institution sets up relevant environmental protection courses; Whether higher education institution takes actions to support students' activities relating to environmental protection; Whether higher education institution owns specific plan to protect overall environment of campus; Whether higher education institution possess specific plan to enhance and improve students' environmental protection awareness; Whether higher education institution provides conditions and creates opportunities for students' participation in environmental protection practice activities.

(3) Survey research method. The survey on environmental education status of higher education institutions is carried out through three methods, i.e. literature material collection, questionnaire and interview. a. Literature material collection and arrangement. It is realized mainly through online education overview search and document arrangement. It is the first and foremost survey method of the survey practice activity. b. Sampling survey of random questionnaire. Questionnaire questions are mainly related to environmental protection awareness of undergraduates, and some of which are about environmental education of higher education institutions. Questionnaire survey is specifically carried out by releasing questionnaires to students at dormitory, study room, school gate and teaching building entrance and inviting students to answer questions. c. Interview. In the survey, deep interview is made by direct conversation between investigators and relevant person-in-charge of schools, and having an interview of undergraduates.

IMPLEMENTATION CONDITION of SURVEY

Object of survey

The survey has wide scope with coverage of various key higher education institutions in the south of Jiangsu, including 11 representative famous universities such as Nanjing University, Southeast University, Hohai University, Nanjing University of Science and Technology, Nanjing Normal University, Nanjing Agricultural University, Nanjing University of Information Science & Technology in Nanjing, Suzhou University, Suzhou University of Science and Technology in Suzhou, Jiangnan University in Wuxi, Changzhou University in Changzhou, Jiangsu University in Zhenjiang.

Collection condition of literature material

The information about establishment of environmental majors, environmental courses and practical activities of various higher education institutions and the faculty condition of environmental education of various higher education institutions are collected and investigated by full use of any accessible approaches such as network resources and literature statistic data material of various universities and recruitment data summary of higher education institutions.

Release of questionnaire

Questionnaires are released at various higher education institutions in the south of Jiangsu. In the course of sampling survey, the balance between senior class and low class and between art and engineering are taken into account to strive to obtain the most objective and practical survey results.

In the process of survey, there are altogether 800 questionnaires released at various higher education institutions and 783 questionnaires recovered, with recovery rate of 97.9%; there are 758 effective questionnaires, with effective rate of 96.8%.

Interview condition

To know environmental education status of various higher education institutions more accurately, direct interview with relevant person-in-charge and students of some higher education institutions is made. In the interview, I focus on knowing environmental education policies of various higher education institutions and students' understanding and views of environmental education received.

STATISTICS and ANALYSIS of SURVEY DATA

TABLE 1: Establishment of Environmental Majors of Some Higher Education Institutions

| Name of universities | Undergraduate course | Master program | Doctoral program | Postdoctoral research center |
|---|--|---|---|---------------------------------------|
| Nanjing University | Environmental Science/Environmental Engineering/Resource Environment and Urban-rural Planning Management | Environmental Science/Environmental Engineering | Environmental Science/Environmental Engineering/Environmental Material Engineering | Environmental Science and Engineering |
| Southeast university Nanjing University of Science and Technology | Environmental Engineering | Environmental Science and Engineering | Environmental Science and Engineering | None |
| Hohai University | Environmental Engineering/Environmental Science/Water Supply and Drainage Engineering | Environmental Engineering/Environmental Science/Landscape Ecology/Municipal Engineering | Environmental Engineering/Environmental Science/Landscape Ecology/Municipal Engineering | Environmental Science and Engineering |
| Nanjing Normal University | Environmental Science | Environmental Science/Analytical Chemistry | None | None |
| Nanjing University of Information Science & Technology | Environmental Science/Atmospheric Science/Ecology/Environmental Engineering/Water Supply and Drainage Engineering/Resource Environment and Urban-rural Planning Management | Environmental Ecology | Science/ Environmental Ecology | Science/ None |
| Jiangsu University | Environmental Engineering/Safety Engineering | Environmental Engineering/Environmental Science/Safety Engineering/ Ecology | Environmental Engineering/ Agricultural Biological Engineering and Energy Engineering | None |
| Jiangnan University | Environmental Engineering | Environmental Engineering | Environmental Engineering | None |
| Suzhou University | Environmental Engineering | Environmental Engineering | Environmental Engineering | None |
| Suzhou University of Science and Technology | Environmental Engineering/Urban Planning/Environmental Science/Municipal Engineering/Resource Environment and Urban-rural Planning Management/Building Environment and Equipment Engineering | Environmental Engineering/Municipal Engineering | None | None |
| Changzhou University | Environmental Science/Building Environment and Equipment Engineering/Environmental Engineering | None | None | None |

Statistical analysis of data from literature material and interview

Information about environmental education status of representative higher education institutions in the south of Jiangsu are collected and analyzed by use of network information of higher education institutions, compilation of literature materials and the interview.

(1) Current status of establishment of environmental majors of higher education institutions in the south of Jiangsu. In the south of Jiangsu province, there are over 20 universities that establish more than 10 environmental majors in different levels as of June 2010. Please see Table 1 for establishment of environmental majors of higher education institutions. According to the table, it is not hard to find that environmental majors of higher education institutions in the south of Jiangsu focus on environmental engineering and environmental science, and are mainly established in undergraduate program, and also in master program and doctoral program by some universities; in addition, it can be found that environmental majors are mainly distributed in 4 subjects, i.e. engineering, agriculture, forest and literary art, with engineering accounting for 53.66%, agriculture 4.88%, forest 4.87% and literary art 36.59%; the establishment of environmental majors is relatively concentrated. Some universities with advantage in environmental majors (such as Suzhou University of Science and Technology, its former is Suzhou University of Urban Construction and Environmental Protection) and some universities (such as universities with strong water conservation majors) set up environment majors derived from water supply and drainage major. As a whole, compared with previous establishment of environment majors, improvements have been achieved. However, defects exist in a fairly large part of environment majors derived from traditional subjects.

(2) Faculty structure of environmental majors of higher education institutions in the south of Jiangsu. Teacher is the principal part of environmental education. University environmental education is made by teachers who play leading role in the education. The improvement of teachers in environmental science quality is the key and premise of doing university environmental education well. For faculty conditions of representative universities in the south of Jiangsu, please refer to Table 2. From the faculty team, there is great difference among some higher education institutions. Distribution of faculty is not uniform. Some famous universities own many more teachers with senior professional title than common universities. Table 2 shows that as to universities investigated, teachers with senior professional title, professors and associate professors account for 51.3%, 23% and 28.3% respectively, revealing that higher education institutions in the south of Jiangsu own a strong faculty force with respect of environmental education.

(3) Establishment of environment courses and practical activities of higher education institutions in the south of Jiangsu. It is also found according to survey that apart from compulsory specialized environmental courses and environmental scientific research and development in relevant environmental majors, various universities also provide some selective environment course to undergraduates in different majors in order to popularize environmental protection knowledge and improve students' environmental protection awareness. What's more, universities or students' organization regularly carry out environmental practical activities, such as Suzhou University Environmental Protection Union Competitive Tender Plan.

Statistical analysis of data from questionnaire survey

From answers to the question of "Whether your university delivers environmental knowledge lecture or carries out environmental protection activity" in questionnaire (please see Figure 1), it could be seen that there are only 5% universities always doing these, 49% universities sometimes doing these, 40% universities rarely doing these and even 6% universities never doing these, reflecting that most of higher education institutions have put environmental protection education on the agenda, however, actions taken are insufficient and fail to keep up with awareness. During interview, quite a few students raise doubt on their universities environment protection education, and believe that environmental protection fails to be actually implemented, and both environmental protection modes and means remain to be improved, which deserve our reflection. Therefore, today, environment education of higher education universities still has a long way to go, and there is large space for improvement.

According to answers to the question of "whether you have ever joined environmental protection association and organization of your university," it could be clearly seen (please see Figure 2) that there are 5% universities without environmental protection association and organization; about 40% students have ever joined environmental protection association and organization, however, only 9.8% students actively participate in activities conducted by environmental protection association and organization; although the remaining 30.1% students have joined environmental protection association and organization, they rarely engage in activities conducted by environmental protection association and organization. Higher education institutions should attach importance to the circumstance. Students joining in environmental protection association and organization but failure to engage in activities conducted reveal the fact that environmental protection association and organization fail to achieve systematization and scale management or are not attractive, liking a lead balloon. Environmental protection activity is an important source for students to acquire environmental protection knowledge. Therefore, higher education institution should attach importance to the planning and development of environmental protection activity.

According to answers to the question of "What do you think is the most serious problem in your university?" in the questionnaire (see Figure 3), it could be clearly seen that the most severe problem in higher education institutions is the failure to implement garbage classification; the second problem is excessive use of disposable dishware and packing bag, which can be associated with the problem of disposal of waste battery in the survey on undergraduates' environment protection knowledge. Most of students fail to correctly make disposal of water battery owing to improper garbage classification; then the problem is the severe waste of natural resources such as water and electricity and weak environmental protection awareness of students. From views of undergraduates, it is the four problems that are severe problems existed in universities. Besides, there are some other problems such as noise pollution and insufficient greening. Higher education institutions shall pay special attention to solving these problems.

TABLE 2: Faculty of Environmental Education of Some Higher Education Institutions

| Name of university | Name of school or major | Total faculty members | Professor Number | Professor Proportion (%) | Associate professor Number | Associate professor Proportion (%) | Lecturer and others Number | Lecturer and others Proportion (%) |
|--|--|-----------------------|------------------|--------------------------|----------------------------|------------------------------------|----------------------------|------------------------------------|
| Nanjing University | School of Environment | 77 | 31 | 40.26 | 23 | 29.87 | 23 | 29.87 |
| Nanjing University of Science and Technology | Department of Environmental Science and Engineering | 15 | 3 | 20 | 6 | 40 | 6 | 40 |
| Hohai University | Department of Environmental Science and Engineering (Environmental Engineering, Environmental Science and Water Supply and Drainage Engineering) | 70 | 19 | 27.14 | 12 | 17.14 | 39 | 55.72 |
| Nanjing Normal University | Environmental Science | 10 | 3 | 30 | 6 | 60 | 1 | 10 |
| Nanjing Agricultural University | Environmental Science | 21 | 6 | 28.57 | 7 | 33.33 | 8 | 38.10 |
| | Environmental Engineering | 20 | 5 | 25 | 7 | 35 | 8 | 40 |
| | Resource Environment and Urban-rural Planning Management Major | 12 | 2 | 16.67 | 5 | 41.67 | 5 | 41.67 |
| Suzhou University of Science and Technology | Environmental Science, Environmental Engineering, Resource Environment and Urban-rural Planning Management, etc | 72 | 12 | 29 | 25 | 35 | 45 | 56 |
| Changzhou University | Environmental Science, Environmental Engineering | 63 | 9 | 14 | 16 | 25 | 38 | 61 |
| Jiangsu University of Science and Technology | Environmental Engineering | 35 | 4 | 11 | 8 | 23 | 23 | 66 |
| Jiangsu University of Technology | Environmental Engineering | 10 | 1 | 10 | 4 | 40 | 5 | 50 |
| Jiangnan University | Environmental Engineering | 10 | 3 | 30 | 4 | 40 | 3 | 30 |
| Suzhou University | Environmental Engineering | 11 | 6 | 54.55 | 3 | 27.27 | 2 | 18.18 |

Does the school open environmental knowledge lectures or organize environmental protection activities

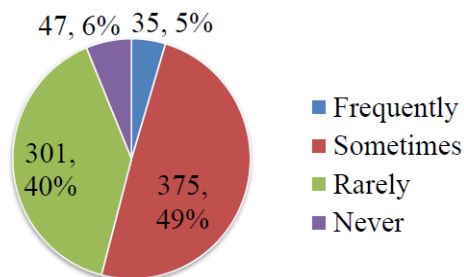


Figure 1: Setting of Environmental Knowledge Lectures or Organization of Environmental Protection Activities in University

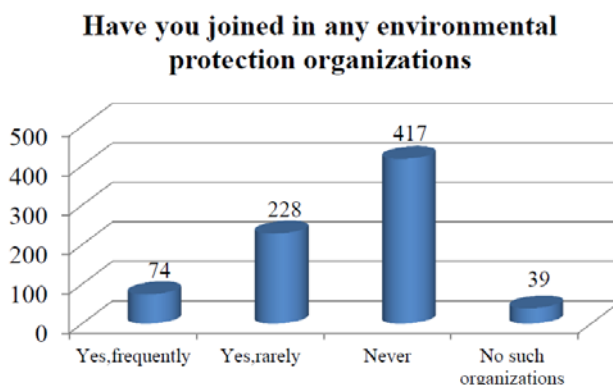


Figure 2: Students’ Participation in Environmental Protection Organization of University

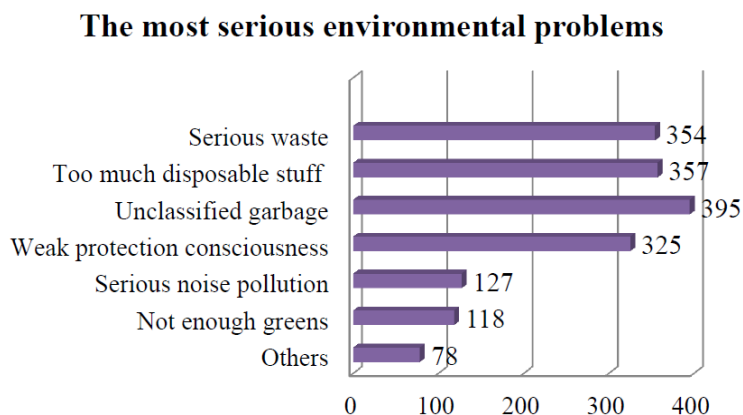


Figure 3: The Most Severe Problem Existed in University from Views of Students

CONCLUSIONS and SGGESTIONS

Analysis of conclusions

(1) Current status of environmental education of higher education institutions in the south of Jiangsu. It could be found from data analysis of environmental education of higher education institutions in the south of Jiangsu that the vast majority of higher education institutions launch majors relating to environment and regularly conduct environmental protection education for students, revealing higher education institutions actively respond to the call of Chinese central government. However, problems exposed are also very serious:

Firstly, there is deviation in environmental education concepts in most higher education institutions. Environment education of higher education institutions is supposed to cover various aspects. In other words, environmental education should be involved in all subjects, and the idea of environmental protection should be followed in various activities, rather than be limited on one school or certain majors. Moreover, as most environment majors are derived from traditional subjects and majors, most majors have strong traditional ideology, with deep influence of “source”. Both elementary courses and specialized courses established in environmental majors are based on original courses. Content of new course launched also has phenomenon of “piecing together.” Features of environmental majors fail to be fully indicated.

Secondly, education content has low operability, with environmental protection actions lagging behind awareness. Course and teaching contents are inflexible, outdated and always restricted on integration of natural science and engineering technology, lack of humanity and foresight. Therefore, current education content is far from being able to meet needs of sustainable development.

Thirdly, compulsory credits account for a large proportion of current undergraduate credit system, and there are a small variety of specialized courses, leading to limited opportunity for students to select environmental education.

Lastly, environment protection publicity is far from enough though most of higher education institutions have ever made environment protection publicity. Higher education institutions fail to make adequate environmental protection education, especially they rarely conduct public benefit activities relating to environment protection, which are common problems that exist in various universities. Most higher education universities carry out environmental protection activities only occasionally, and are lack of association and organization relevant to environmental protection.

(2) Analysis of environmental education trend of higher education institutions. Taking higher education institutions in the south of Jiangsu as example, the future development of environmental education of higher education institutions is mainly embodied in following three aspects: Firstly, the diversification of setup of major and course; Secondly, taking quality-oriented

education and market orientation as training objective; Thirdly, focusing on the comprehensiveness of environmental sciences and attaching importance to the combination of natural environmental science and humanistic environmental science.

Relevant suggestions

(1) Micro level – from the perspective of higher education institution. Firstly, provide strong support for and pay high attention to environmental education and conduct environmental protection publicity and education activities, for example, promoting environmental protection consciousness and engaging in environmental protection publicity on every Green Day; donate used articles to the poor and support environmental protection donation; organize recycle of waste battery, metal, plastics and paper; act as environmental protection volunteer and engage in voluntary labor such as cleaning of street and sea beach; carry out field trip to help students know grassland crisis and desertification and realize the importance of protecting forest and ocean and taking care of ancient and rare trees. Secondly, launch new elective courses relating to environmental education to make environmental protection step into campus and class; take environmental protection as an important aspect in quality examination and final evaluation of undergraduates. Thirdly, add new facilities conducive to environmental protection in campus, such installing more sortable garbage bins and putting up more slogans that call for environmental protection, to make the idea of environmental protection penetrated into everyday life.

(2) Macro level – from the perspective of national environmental education system. Firstly, increase capital investment in environmental education; Secondly, enhance the exchange with foreign colleges and universities with environmental majors and learn their advanced education ideas and environmental protection measures; Thirdly, make innovation and develop new technology and equipment conducive to environmental protection; Fourthly, endow pleasure in teaching, establish harmonious and evolutionary penetration mode of environmental education course, and make overall optimization of curriculum structure; Fifthly, set up environmental education system and strengthen teaching staff construction to create institutionalized, normalized, scientific and three-dimensional environmental education; Sixthly, fully explore the potential of environmental protection industry and promote industry development by education to realize mutual promotion between education and industry. Lastly, enhance environmental protection publicity and popularization by means of role of culture and other industry to realize diversified environmental protection education pattern.

REFERENCES

- [1] Zhu Huaixin; International Environmental Education Development Overview. *Comparative education study*, **3**, 33-36 (1994).
- [2] Wei Shiguang, Li Lin, Liu Kehui; Discussion of Environmental Education Cause of Higher Education Institutions. *Yearbook of the World Chinese Entrepreneurs-Higher Education Study*, **6** (2009).
- [3] Wang Leshan, Yang Xueli; Problems and Countermeasures of Environmental Education of Higher Education Institution. *Journal of Puyang Vocational and Technical College*, **4**, 79-80 (2006).