

Paradigm Change in Environmental Education Through Interdisciplinary and Innovative Educational Curricula

Shailinder Sekhon

DDE, Punjabi University Patiala

Abstract

Environmental education is a process which can be incorporated in diverse areas of the curriculum for the purpose of developing appropriate environmental attitudes, values, skills and actions. The overall goal of ecological literacy is to promote the attitudes that support a lifelong commitment to promote the environment on local and global level. The major part of the paper emphasized that Environmental Education should be integrated across the whole institution by cutting across conventional boundaries such as academic disciplines, professional qualifications and departments.

Key Words

Environmental Education, Education for Sustainable Development (ESD), Environment Management System (EMS), Ecological Literacy, Innovative Educational Curricula.

INTRODUCTION

Education is key process by which human beings and societies can reach their fullest potentials. Education at all levels and in all its forms helps people of all ages to better understand the world in which they live, the complexity and interrelationships of problems such as poverty, wasteful consumption, environmental degradation, urban decay, population growth, gender inequality, health, and the violation of human rights that threaten our future. Environmental literacy is defined as the ability to comprehend and critically evaluate the 1) basic principles of nature that govern natural systems; and 2) linkages among living organisms and the

physical environmental and consequences of human activities on natural systems. Education for Sustainable Development (ESD) is a concept that encompasses a new vision of education that seeks to empower people of all ages to assume responsibility for creating and enjoying a sustainable future. Agenda 21 of UNE Programme was the first international document that identified education as an essential tool for achieving sustainable development and highlighted areas of action for education. Sustainable development includes several issues such as :

- Population stabilization
- New technology transfer
- Effective use of natural resources
- Prevention of pollution
- Integrated environmental system management
- Refining market economy
- Education for all
- Change in perception and attitude of people
- Social and cultural changes etc.

To design an environmental curricula for sustainable development educational institutions/communities need to first identify knowledge resources, issues, skills, perspectives and values central to sustainable development and then to link all these variables with each of the three components, i.e., environment, economy and society as discussed by Francis C. Indoshi in his paper that the integration of knowledge in these three sectors is also important to show human environmental interactions and impacts.

The Indian Constitution laid down the responsibility of the Government to protect and improve the environment (Constitution of India, Article 48-A) and made it a fundamental duty of every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife (Constitution of India, Article 51-G). The National Policy of Education (NPE) 1986 has also envisaged protection of environment as a core element of education as an integral part of the curriculum at all stages of education. In 1979, a national seminar on Environmental Management was organised in which emphasis was given to incorporate Gandhian thought and values as a part of environmental education. However, the educational policy of the Indian institutions is not effectively focusing on the environmental issues, as a result, very few environmental management practices exist at the campuses.

REVIEW OF LITERATURE

Paltasingh, Shreyashi (2010), in his paper titled "Influence of Socio-demographic Factors on Environmental Education Awareness of people in an

around Kolkata City", has examined the awareness levels of 120 respondents belonging to Kolkata city. The impact of social demographic factors such as age, sex, marital status, locality, income, educational background was studied in relation to level of environmental education awareness. And he observed that all these factors except marital status have significant impact on the level of awareness about environmental education. Chaudhury, Suman Kalyan (2010) in his paper on, "Environment Management" identified the problem that rapid industrialization and fast growing population in India have been demanding on environment infrastructure and natural resources. In such a situation, a well developed EMS can help a firm in managing, measuring and improving the environmental aspects of its business activities. Joshi, Madhavi (2010), in her paper on, "ESD in India: Current Practices and Development Plans", linked the importance of environmental education to development and quality of human life. By identifying the status of core issues of education for sustainable development (ESD) (i.e. value education, environmental education, health education), she suggested that it is not only the paradigm of development that needs to be changed to achieve sustainability, but that the paradigm of education also need to be changed in certain fundamental ways. Indoshi, Francis, C (2010), in his paper titled, "Education for Sustainable Development: Challenges and Opportunities for the Secondary School Environment Education in Kenya", studied that in Kenya, through the government recognizes the need for environmental awareness to achieve sustainable development but this desire has not been adequately reflected in the school programmes. So, this situation calls for urgent review of school curriculum to incorporate education for sustainable development as a compulsory subject. Seaton, Andrew (2010), in his paper on, "Awakening a Sustainable State of Being: Education for Deep Intelligence" highlights the limitations of human knowledge. It remarks that our current approach to education and community disconnects the young from faculties, sensitivities and processes within them that are vital to humanity. The solution lies in an education for deep intelligence which awakens the faculties of consciousness and general abilities, such as self management, literacy, creativity, participation in community and stewardship of the earth. Sharma, Monika (2010), in her paper on "Environment Education: Indian Context" discussed the current status of environmental issues/problems in India and the role played by the Indian government in this direction. According to her, environmental education can enhance critical thinking, problem solving, and effective decision making skills; so environmental education should focus on objectives like participation,

knowledge, values, skills and awareness. Chalisgaonka, Deepa (2010), in her paper titled, "ICT and Environment", stressed that ICTs are a powerful tool for civil society in protecting environment. It is the core of contemporary urban environment management systems, and a pre-requisite for proper and timely dissemination of information to the concerned persons at the higher, institutional and individual levels. This paper highlighted the contributions of ICTs in the field of environment made at the all levels in the society, such as higher, institutional and individual levels. Komi, Teshome, Tola and Jyothi, T. Nirmala (2010), in their paper titled "Developing Environmental Consciousness Through Education." discussed that in today's world, environmental issues have grown in importance so there is a need for the general public to acquire environmental literacy, as it is a process in education which can be incorporated in all areas of the curriculum and through which appropriate environmental attitudes, values, skills and actions can be developed. They propose an integrated approach to face the challenges seen by the institutions while implementing environmental educational policies at their campuses. Wamutitu, Joseph Mworira (2010), in his paper titled, "Environmental Literacy and Essential Concepts for Achieving Positive Environmental Attitude." that environmental consciousness is important for enhancing the understanding of people at all levels about the relationship between human beings and the environment. Further, they are of the views that the special and difficult responsibilities involved in planning and administration of environmental education requires specialized training and orientation for the personnel involved. Clark, E Amelia, (2002), in her thesis titled, "Campus EMS for the Implementation of a University Policy: Dalhousie University as a Case Study" describes various components of a campus environmental management system in the form of five outcomes, and gives concrete recommendations to Dalhousie University for a systematic improvements in its existing environmental management system. In this research project she has found five outcomes for EMS, that are, (i) components of a campus EMS; (ii) drivers of a campus EMS at Dalhousie University; (iii) Potential environmental interactions at Dalhousie University; (iv) Potential roles and responsibilities of campus environmental management at Dalhousie University; and (v) Potential improvements for systematic environmental management at Dalhousie University.

A review of related studies revealed that the healthy environment is the need of the day. The environmental protection is the collective responsibility of the state, the society and the interested groups working in tandem. The present study

emphasized that every educational institution has the role of stabilizing the natural environmental climate by paying sharp and focused attention to the pollution free environment. In this paper, the researcher proposes that designing an interdisciplinary environmental education through innovative curricula could bring in the desired change in addressing the deep environment consciousness of people and society in toto.

A Multi-Disciplinary Perspective in Environmental Education – A Concept and Discussion

Tom Kelly, Director and Secretariat of University Presidents for a sustainable future realizes that students are learning a great deal from the way our institutions are structured, their patterns of consumption and production of waste, and the relationships they have with local, regional and international community, but our formal curricula is constant, repetitive and against the very principles of environmental literacy that we seek to engender in our students. So every higher education institution should adopt and implement a strategy for the development of environmental education in their curricula and also a wider strategy for the improvement of all aspects of its environmental performance as an institution. Here idea has been proposed to relate the concerned disciplines with environmental education by putting new visions in their respective problem areas as discussed in this part of the paper. The global environmental issues such as, depletion of natural resources, non-economical use of resources, experiments on the earth's natural climate control systems, ever increasing pressure on natural resources due to population growth and deficit Government budgets are not only concerned with pure sciences, but as well as with social sciences too.

The ecosystem services and the developing tools to understand them represent a core organizing framework for implementing multi-disciplinary approaches to achieve sustainability. The multi-disciplinary approach expends the interdisciplinary concept from having primarily different science disciplines cooperatively work together to now link these sciences with non-scientific disciplines such as sociology, economics, architecture, information technology, commerce and management, education and others.

For instance, the study of economics is the backbone of the growth and development of the country so it is not possible to handle environmental issues without inter-relating this discipline with other disciplines. If these disciplines work together, then recyclability models, reusability models, energy/resources saving models, cleanability models, management of hazardous and biomedical waste models can effectively fulfill the increased demand of people about the scarce resources.

Also, the ITC and the environment have much deeper connection, because Information Technology helps us in collecting, storing and communicating information on environmental problems but in reality, unavailability of accurate data about waste and environmental destruction is one of the major problems. So, students and faculty from this discipline can do joint efforts with experts of other inter-related field by communicating their environmental knowledge on the one hand and by 1) observing, recording and describing the environmental information, and 2) by designing an intelligent data analysis system for environmental information management on the other hand.

In addition, looking at the bare fact that the rapid growth of population, poverty and illiteracy, industrialization in India is also quite responsible for the rapid degradation of the environment, there is a need to identify and measure the impact of industrial growth on environment on the one side, and climate changes' impact on business on the other side. Commerce and management disciplines should be made responsible in this direction as reorientation in their syllabi can also educate the students and faculty about climate change, regulations on environmental reporting, environment audit, Environmental Impact Assessment methods, Waste management techniques, Green products, reusability techniques, environmental accounting etc. Above discussion showed that Environmental Education is the basic need of every discipline so it should be integrated across whole institutions by cutting across conventional boundaries such as academic disciplines, professional qualifications and departments. The chapter 36 of agenda 21 of the United Nations General Assembly resolution on sustainable development (1992) has also considered education for SD as a part of the life-long education process. This agenda recognizes basic education for all as one of the necessary conditions for promoting SD. Further, it stresses on the integration of environment and development concepts including demography in all educational programs. Also, the Ministry of Human Resource Development views environmental education as a key input into the education system at all levels of education.

Hence, environmental issues are recommended to be integrated into education at all levels cutting. The need of the present time is to throw the light on the following key issues, that

How syllabi of all the courses should be redesigned or modified to incorporate environmental knowledge in them?

How students' activities should be designed to socialize them to contribute to social progress and advancement of environmental knowledge?

How institutions can educate, develop and utilize human capital (i.e. students, faculty and other concerned authorities) for the environmental development programmes?

For this one needs to move towards the education discipline, as environmental education touches beliefs and attitudes of people so that they live in sustainable manner and provide adequate information to support these beliefs and translate attitudes and values into actions.

Thus, environmental education should be an integrated effort at institutional level cutting across conventional boundaries of varied academic disciplines, professional qualifications and departments.

Suggestive Measures to develop Innovative Educational Practices at the Campuses

Environmental education doesn't mean a particular view point or course of action. By keeping in view of objectives of environmental education (as described/ listed by UNESCO, 1977), the basic components of environmental education for Sustainable development are put forth as under :

- (i) To make people aware and sensitive to the environment and environmental challenges.
- (ii) To develop attitude of concern towards environmental problems/ issues.
- (iii) To motivate the people to improve or maintain the environmental quality.
- (iv) To help individuals, groups and societies for gaining a variety of experiences and knowledge of the environmental challenges.
- (v) To help the people acquire the action competence or skills of environmental citizenship.
- (vi) To provide people with opportunities to be actively involved in exercising their skills towards environmental changes.
- (vii) To relate people's set of values with the issues of sustainability upon which they can make judgments about appropriate ways to promote sustainable development.

Framework for educational institutions' cultural change should 1) include programmes to develop the capability of university faculties to teach environmental literacy to all undergraduate, graduate and professional school students, and 2) set an example of environmental responsibility by establishing institutional ecology policies and practices of resources conservation, recycling, waste reduction and environmentally sound operations. (The Talloires Declaration, 2000)

McKeown (2002) described five components (i.e. knowledge, skills,

perspectives, values and issues) that must need to be taken care in a formal curriculum of existing education of all disciplines (i.e. natural science, social sciences and humanities) to address sustainable development in the way as discussed here.

- (i) **Knowledge** : People should provide basic knowledge about the principles of SD, and make them understand that how these principles can be implemented and values involved in their traditional disciplines support ESD.
- (ii) **Issues** : Education system should focus on environmental issues (like social-economic problems, conservation and management of resources, role of major groups in community and availability of means of implementation of environmental policies).
- (iii) **Skills** : Education for SD should give people practical skills that will enable them to think about environmental issues/problems, think critically about values, and move from awareness to knowledge to action.
- (iv) **Perspectives** : Environmental education should carry with it perspectives that are important for understanding global issues as well as issues in a global context.
- (v) **Values** : Values understanding analysis and clarification are useful for designing environmental education for sustainable development.

To achieve the basic objective of this research paper, that is, "Interdisciplinary Teaching of Environmental Education", educational institutions need to reorient their existing/traditional curricula through the designing of innovative educational curricula. For this different ways/methods have been identified here.

1. **Introduce Formal Methods of Environmental Education** : In this direction emphasis should be given to introduce environmental education at the school, colleges and universities levels through interdisciplinary curricula.
2. **Introduce Non-formal Methods of Environmental Education** : For this Environmental awareness campaign; use of ICTs for environmental action; organization of training programmes, seminars, conferences and workshops are required.
3. **Link the Environmental Educational Curriculum and Campuses** : Making the link between curriculum and campuses is the need of the hour as environmental education is a learning process that increases people's knowledge and awareness about the environment and

- associates challenges, develops the necessary skills and expertise to address the challenges, and foster attitudes, motivations, and commitments to make informed decisions and take responsible action.
4. **Develop Environmental Management Programmes for Institutional Change :** Campuses are overflowing with examples of ecologically irrational practices that are often economically and socially unsound as well. By identifying and analyzing such practices, formulating responses, participating in their implementation, students should be empowered and emboldened to take on issues of institutional change.
 5. **Interdisciplinary Forums and Brain Storming Discussion Groups :** A common platform for students and faculties belonging to diverse fields can brainstorm to provide fruitful concepts, contents and frameworks to ameliorate the current environment problem and forestall its future degradation.
 6. **Introduction of Environment Discipline or Environment Subject in every Discipline :** A full fledged environment discipline can address the multiple issues confronting society and nations on environment aspects. Again the environment subject can be introduced in each and every discipline where the students can be asked to comprehend the issues from their disciplinary angle and propose solutions.
 7. **Strengthening National Education Policy by Refocusing on Interdisciplinary Aspects :** One major factor that can go a long way in providing impetus the proposed framework is a national determination and inclination towards environment education. Unless a national policy stresses the environment issue in its entirety, nothing concrete and unified can occur barring scattered efforts.

CONCLUSION

Humanity depends on various living and non-living elements of environment, and not vice versa. Such environmental problems cause disequilibrium in relationship, advances in science and technology, industrialization and huge energy utilization etc. had caused serious environmental problems. So, humanity needs to be educated for the understanding, solution and prevention of such problems. In this direction, the Ministry of Environment and Forests emphasizes on the promotion of formal and non-formal environmental education and awareness among all sections of society through diverse activities using traditional and modern media of communication. So, environmental education is the need of the present time which empowers people and develops a sense of ownership among

them to address environmental problems and to develop issues in their own communities.

References

- Paltasingh, Shreyashi, "Influence of Socio-demographic Factors on Environmental Education Awareness of People in an around Kolkata City", published in book titled, "Environmental Awareness (A Need of the Hour)" by Lingaraj Patro.
- Chaudhury, Suman Kalyan, "Environment Management", published in book titled "Environmental Awareness (A Need of the Hour) by Lingaraj Patro.
- Josh, Madhavi (2005), "ESD in India: Current Practices and Development Plans, Paper presented at the International Conference at Sarawak (September, 2005).
- Indoshi, Francis, C., "Education for Sustainable Development: Challenges and Opportunities for the Secondary School Environment Education in Kenyan," published in book titled, "Environmental Protection and Sustainable Development" published by Bani Dey and Sandhya Gihar.
- Seaton, Andrew, "Awakening a Sustainable, State of Being: Education for Deep Intelligence," published in book titled, "Environmental Protection and Sustainable Development" published by Bani Dey and Sandhya Gihar .
- Sharma, Monika, "Environment Education: Indian Context," published in book titled, "Environmental Protection and Sustainable Development" published by Bani Dey and Sandhya Gihar .
- Chalishaonka, Deepa, "ICT and Environment," published in book titled, "Environmental Protection and Sustainable Development" published by Bani Dey and Sandhya Gihar .
- Komi, Teshome, Tola and Jyothi, T. Nirmala, "Developing Environmental Consciousness Through Education" published in book titled, "Environmental Protection and Sustainable Development" published by Bani Dey and Sandhya Gihar .
- Wamutitu, Joseph Mworira, "Environmental Literacy and Essential Concepts for achieving Positive Environmental Attitude." published in book titled, "Environmental Protection and Sustainable Development" published by Bani Dey and Sandhya Gihar .
- Clarke, Amelia, C. (2002), "Campus EMS for the Implementation of a University Policy: Dalhousie University as a Case Study", Theris Halifax, Nova, 2002, Sctoia,