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Environmental Education for Quality Enhancement of Sustainable Development

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Abstract

As we enter a new century and millennium, environmental educators must come up with new knowledge and techniques that address the demands of a constantly evolving social and technological landscape, while ensuring that environmental education stays relevant to the needs and interests of the community. These challenges to environmental education require that we re-examine the way we do research and train environmental professionals and educators, as well as the way we communicate environmental information to the general public. Great strides have already been made in strengthening environmental education for the general public. This is particularly true in terms of defining environmental education and its objectives (Ruskey and Wilkie 1994). In the past few years, the North American Association for Environmental Educators has spearheaded an effort to develop mechanisms both to strengthen standards for environmental education and to make it possible to achieve them. A solid base for environmental education already exists. In the United States, there are many leaders in the field, and these individuals have had an extraordinary impact on environmental education. As scientists and educators, we have the opportunity and the responsibility to utilize and expand this resource base. Environmental education is concerned with those aspects of human behavior that are more directly related to man's interaction with the biophysical environment and his ability to understand this

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interaction. One of the most glaring problems, which the world faces today, is environmental pollution. Man has exploited nature excessively at the cost of the environment. There is an immediate need to make people aware of environmental degradation. Education and public participation may change and improve the quality of the environment.

Keywords: - *Environmental Education, Sustainable Development, Formal & Non-Formal Education, Level of Environmental Education.*

INTRODUCTION

The prosperity and well-being of a nation depends on the effective utilization of human and physical resources through industrialization based on science and technology. But there is a perennial controversy between development and environment. The question is whether we shall go for industrial or modernization or we shall protect the environment. In one hand, we know that development of a nation depends on industrialization and on the other hand, rapid industrial and agricultural development entails much adverse effects on the environment of the countries concerned.

So, we have to apply our wisdom in striking a balance between these two contradictory factors. According to UNESCO, "Environmental education is a way of implementing the goals of environmental protection. It is not a separate branch of science but the lifelong interdisciplinary field of study." It means education towards protection and enhancement of the environment and education as an instrument of development for improving the quality of life of human communities.

Objectives or Necessary Steps for Environmental Education are

1. **Awareness:** To help the social groups and individuals to acquire knowledge of pollution and environmental degradation.

2. **Knowledge:** To help social groups and individuals to acquire knowledge of the environment beyond the immediate environment including the distant environment.

3. **Attitudes:** To help social groups and individuals to acquire a set of values for environmental protection.

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4. **Skills and Capacity Building:** To help social groups and individuals to develop skills required for making discriminations in form, shape, sound, touch, habits, and habitats. Further, to develop the ability to draw unbiased inferences and conclusions.

5. **Participation:** To provide social groups and individuals with an opportunity to be actively involved at all levels in environmental decision making.

There are Four Areas of Decision Making

1. The types of environmental issues on which decisions might be made;
2. The physical setting of the prospective environmental decision, including its spatial scale;
3. The types of social groups and individuals who might interact in a process leading up to an environmental decision; and.
4. The time frame within which the decision must be made.

Aims of Environmental Education

UNESCO has highlighted the following aims of environment al education.

- The aim of environmental education is clearly to show the economic, social, political, and ecological interdependence of the modern world, in which decisions and actions by different countries can have international repercussions.

- Environmental education should, in this regard, help to develop a sense of responsibility and solidarity among countries and regions as the foundation for a new international order, which will guarantee the conservation and improvement of the environment.

- The main aim of environmental education at the grass-root level is to succeed in making individuals and communities understand the complex nature of the natural and the built environments.

- Further, to acquire the knowledge, values, attitudes, and practical skills to participate in a responsible and effective way in anticipating and solving social problems, and in the management of the quality of the environment.

According to D.H. Meadows', environmental educators on every continent develop materials and methods as varied as the different cultures and

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ecosystems on earth. He lists some key concepts, which underlie all environmental education. These are food for thought, levels of being, complex systems, population growth and carrying capacity, ecologically sustainable development, socially sustainable development, knowledge, uncertainty, and sacredness.

GUIDING PRINCIPLES OF ENVIRONMENTAL EDUCATION

Resource Principles

- Resource use demands long-term planning if we are to achieve truly sustainable development.
- Rationale utilization of a renewable source is a sensible way of preserving the resources while obtaining maximum benefits from it.
- A mode of life heavily dependent upon rapidly diminishing nonrenewable energy sources (i.e. fossil fuel) is unstable.

Soil Principles

- The protection of soils and the maintenance of sustainable agriculture are essential factors into the survival of civilizations and settlements.
- Soil erosion is the irreversible loss of essential resources and must be prevented.
- A vegetation cover (grass, forest) is important for the balance of nature and for the conservation of soil, besides being exploitable natural resources.

Wildlife Protection Principles

Wildlife population is important aesthetically, biologically and economically.

- Nature reserves and other protected wilderness areas are of value in protecting endangered species because they preserve their habitats.
- The survival of humanity is closely linked to the survival of wildlife both being dependent on the same life-supporting systems.

Environmental Management Principles

- Sound environmental management is beneficial to both man and the environment.
- Management of natural resources should be done in a rational manner.
- Elimination of wastes through recycling and the development of clean.
- Human activities and technologies influence considerably the natural environment and may affect its capacity to sustain life, including human life.

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Other Principles

- The relations between humans and their environment are mediated by their culture i.e. Cultural, historical and architectural heritage are much in need of protection.

Organizing Environmental Education System

Some of the major ways to organize environmental education system are as follows-

Formal Education

Formal education is given in schools, colleges, and universities, etc., limited to a specific period, and has a well-defined and systematic curriculum. The best approach in any awareness program is to propagate through children and youth as they quickly take to new ideas and are the future activists. Formal environmental education should begin at the primary school level. The curriculum should be constructed taking into account the class and age of the students. The content at the primary stage must be easily accessible to the young minds and so the emphasis should be on building up environmental awareness in the child. By lower secondary level, the child is conscious of the physical, social, and aesthetic aspects of the environment. At this stage and beyond, an inter-disciplinary approach must be adopted and so the emphasis must be on increasing the knowledge about environmental problems, conservation, and sustainable development. The medium of imparting environmental education is not only through books but also through first-hand experiences in field activities and eco-development camps etc. The activities in the environmental education system vary from place to place as the environmental conditions and needs vary from place to place.

The National Council of Educational Research and Training (NCERT) have developed a curriculum framework based on which many good textbooks, charts, and other teaching aids have been designed. University Grants Commission (UGC) has the main responsibility of environmental education at the postgraduate level. The environment is a part of the curriculum of mainly the biology courses in Universities and is taught as environmental engineering in many engineering colleges, polytechnic colleges, and most Indian Institutes of Technology (IIT,,s). Environmental engineering includes subjects like civil engineering, town and country planning, environment improvement of urban slums, human settlements, landscaping, industrial

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design, designing environmental-friendly technologies, and environmental impact assessment for sustainable development. At the post-graduate level, environmental education also includes social ecology i.e. human ecology, sociology, psychology, counseling, cost-benefit aspects, environmental ethics, etc. Case studies must be constructed at identified areas as dissertation and fieldwork reports and research must be conducted on specific environmental problems related to the local environment.

Environmental legislation is also a part of the curriculum and it includes environmental policies and environmental protection laws etc. Environmental management includes subjects like land use, agriculture, waste management, wildlife management, conservation of natural resources, forestry, national parks, water-resources management, biosphere reserves, etc. Besides these main subjects, there are topics dealing with the health and welfare of human beings, for instance, hygiene, toxicology, occupational health, nutrition, chemical engineering, etc. At the postgraduate level, environmental education also includes social ecology i.e. human ecology, sociology, psychology, counseling, cost-benefit aspects, environmental ethics, etc. Case studies must be constructed at identified areas as dissertation and fieldwork reports and research must be conducted on specific environmental problems related to the local environment. Environmental legislation is also a part of the curriculum and it includes environmental policies and environmental protection laws etc.

Present Situation of Formal Environmental Education in India

There are nearly two hundred departments of environmental studies in the universities and colleges all over India. They offer degree or diploma programs covering all aspects of environmental sciences and engineering. There are also diplomas, bachelor‟s degree, M.Sc., M.Phil. and Ph.D. programs in environmental sciences or environmental studies. Besides these, M.E. M.Tech. And Ph.D. programs in environmental engineering are offered by Civil Engineering and Chemical Engineering departments. Postgraduate degree programs in environmental management and courses, which lead to M.Sc. in environmental chemistry/ biology / geology or environmental toxicology, are also available. Environmental education at the doctoral level is also available in a large number of autonomous Research and Development (R & D) institutions founded by the central government, state

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governments, and agencies such as CSIR, ICAR, and ICMR i.e. formal education in environmental science or engineering is available in India up to the highest possible level. What needs to be done is the restructuring of environmental studies programs so as to produce instead of generalists, professionals whose forte is Environmental Botany or Environmental Zoology/Chemistry/Economics/Sociology, etc. These courses should have relatively specific curricula having provisions for training students in specializations such as forest ecology, Limnology, marine ecology, environmental analysis, pollution studies, environmental toxicology, etc.

Non-formal Education

For a majority of the population that still does not have adequate access to formal education, environmental education and awareness can be acquired by programs that fall outside the formal education system. Environmental education needs to be a lifelong affair rather than a matter of formal schooling. This realization has resulted in an increase in non-formal education, which includes activities outside the framework of the established formal education system. The process of non-formal environment education is experience-based involving exercises of solving environmental problems. This gives the students an out-of-school exposure, which involves the students in natural processes of enquiring, exploring, conjecturing, comparing, inferring, evaluating, and decision-making regarding environmental problems in their surroundings. The flexibility of approach is the most fundamental characteristic of non-formal environmental education programs.

Non-formal education includes organization of extra-curricular activities like eco development camps, posters and essay-writing competitions, exhibitions, seminars, nature camps, nature-club activities, audio visual slides, mobile exhibitions etc. Eco-development camps aim at creating awareness about basic ecological principles and solving environmental problems after identifying the causes of the ecological problems. Tree-plantation, trenching, fencing, seed-banks, cleaning water-bodies, hygiene and promoting the use of nonconventional energy sources are the activities included in these camps.

The Vikram Sarabhai Community Centre, Ahmedabad, involved children in carrying out experiments and surveys, and, the centre for environment education has evolved a water monitoring kit for

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secondary school students under the Ganga Pollution Control Programme. Arts and Crafts, folk dances, ballet and street plays are also used to impart informal environmental education by many organizations such as Bal Bhawan Society, Shantiniketan .

How is Environmental Education Important in the Attainment of Sustainability?

- Environmental education is the mechanism and a tool for the development of sustainability.
- Environmental education helps the environment in a number of ways. Added to that, it helps society by providing a critical likeness of the world. This is specifically its failings and awful injustices and by the way of endorsing greater consciousness and awareness, analyzing new terms and vision, and discovering fresh techniques and tools.
- It is that environmental education is the superior expectation of humanity and the most efficient means to accomplish sustainable development.
- It is that environmental education might not be associated with schooling education or formal environmental education alone.
- This includes the non–formal and informal medium of instruction and learning and also comprises of the conventional knowledge that are obtained in the home and community

Environmental Issues in India

There are many environmental issues in India such as Air pollution, water pollution; garbage, domestically prohibited goods and pollution of the natural environment are all challenges for India. Nature is also causing some drastic effects on India. The situation was worse between 1947 through 1995. According to data collected and environmental assessments studied by World Bank experts, between 1995 through 2010, India has made some of the fastest progress in addressing its environmental issues and improving its environmental quality in the world. Still, India has a long way to go to reach environmental quality similar to those enjoyed in developed economies. Pollution remains a major challenge and opportunity for India. Environmental issues are one of the primary causes of disease, health issues and long-term livelihood impact for India.

There is Major Environment Issues are:

1. **Climate Change:** Climate change is a great concern in today‟s scenario. This problem has surfaced in the last few

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decades. Greenhouse gases are the major cause of climate change. Environmental changes have several destructive impacts such as the melting of glaciers, change in seasons, epidemics, etc.

2. **Global Warming:** The burning of fossil fuels, emissions from automobiles and chlorofluorocarbons add to the greenhouse gases in the atmosphere. This has led to an increase in the earth‟s temperature causing environmental changes. This increase in temperature across the globe is known as global warming.

3. **Ozone Layer Depletion:** The ozone layer is a layer of concentrated ozone gas. It protects us from the sun‟s harmful ultraviolet rays. This very important layer is being destroyed by CFCs (chlorofluorocarbons), which are used in industries and everyday life (e.g. aerosol cans). The chlorine in these compounds destroys the ozone layer. The hole in the ozone layer leaves humans and wildlife exposed to harmful UV rays resulting in several skin diseases including cancer.

4. **Water Pollution:** The introduction of harmful substances into rivers, oceans, lakes and ponds, which changes the physical, chemical or biological condition of the water, is called water pollution. The polluted water lacks oxygen and therefore the organisms die. Water is the main source of life and therefore it is our prime duty to prevent it from any kind of pollution.

5. **Air Pollution:** Air pollution is the result of emissions from industries, automobiles, and the increasing use of fossil fuels. The gaseous emissions have added to an increase in the temperature of the earth. Not only this, but it had also increased the risk of diseases among individuals.

6. **Solid Waste Management:** Solid-waste management is defined as the discipline associated with the generation, storage, collection, transfer and transport, processing, and disposal of solid waste in a manner that it does not have a harmful effect on the environment.

7. **Deforestation:** Deforestation is the depletion of trees and forests at an alarming rate. The trees provide us with oxygen and several raw materials and also maintain the temperature of the earth. Due to the depletion of trees

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for commercial purposes, there has been a drastic change in the earth‟s climate. Forests are an abode to a large number of wild animals and plants. Destruction of forests has led to the elimination of a large number of plants and animal species affecting biodiversity.

8. **Overpopulation:** The earth‟s population is increasing drastically. It is estimated to be more than seven billion. The increasing population has led to a shortage of resources. If this continues, it will be very difficult to sustain such a huge population. The other environmental issues including pollution, waste management, deforestation, climate change and global warming are all associated with overpopulation.

Importance of Environmental Education in India

India is a highly diverse country in terms of its climate, geography, geology, ethnicity, flora, and fauna, society, and economy. Therefore, environmental education in the country has to be location-specific. Education in schools relating to "environmental „science studies „aims at improving the quality of the environment and creating an awareness regarding environmental problems and conservation. At the level of the university, the University Grants Commission looks after environmental education. A high-powered committee has been set up to suggest areas of environmental education to be taught at the postgraduate level. Ten universities currently teach courses in environmental areas. There are other research institutes and professional institutions like the premier Indian Institute of Technology (IIT) and engineering colleges and schools of planning and architecture, which have courses in environmental engineering. The post-graduate courses include environmental engineering, conservation and management, environmental health, and social ecology. The Ministry of Environment and Forests launched the Environment Education, Awareness, and Training Scheme in 1983-84 to enhance people„s understanding regarding the human-environment relationship and to enhance skills and capabilities to protect the environment and improve it. It gives importance to the promotion of non-formal environmental education and creating environmental awareness among the people through seminars, workshops, symposia, training programs, the National Green Corps, and eco- clubs. The National Museum of Natural History, New Delhi,

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set up in 1978, promotes non-formal education in various aspects of the environment through exhibitions and educational programs, and activities for children and people in general. The Indian Council for Forestry Research and Education is the focal point of forestry education and extension development in India.

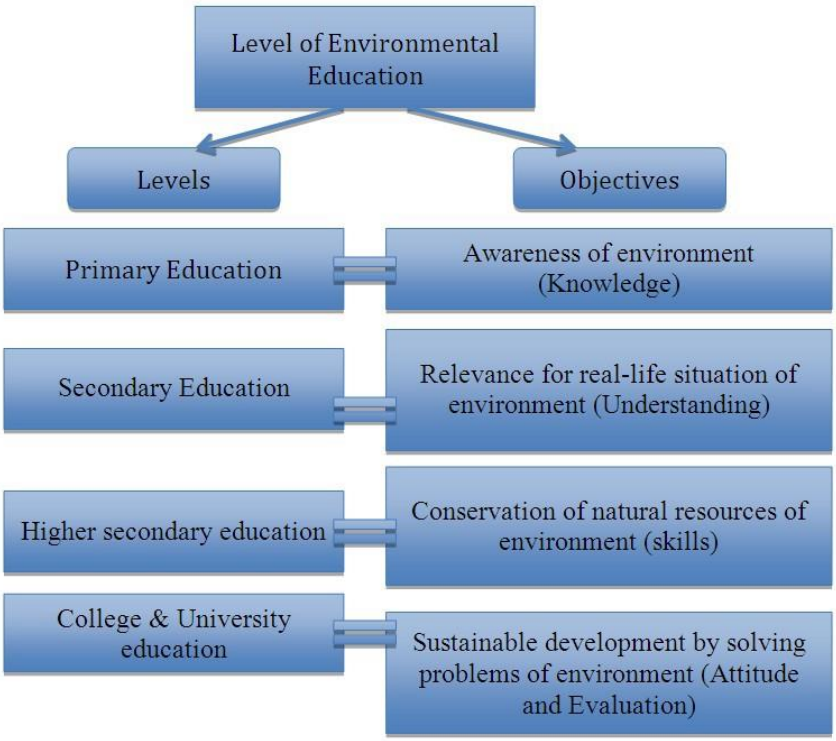
The Forest Survey of India, the Wildlife Institute of India, and others offer training on various aspects of environmental education and conservation. The Ministry of Environment and Forests has set up nine centers of excellence to increase „awareness, research, and training in areas of environmental science and management. In the context of environmental education, it needs to be pointed out that environmental education opens up many career opportunities. With increasing awareness and stress on the study of the environment and on its impact at various levels, there is a growing need for environmental educators and professionals. Professionals to deal with hazardous waste problems, lawyers and other specialists to develop government and industry policy, laws and regulations to protect the environment, engineers to develop technologies and products to prevent environmental degradation are the need of the hour. Increasingly, economists, geographers, and social scientists would be required to evaluate the costs of environmental pollution and depletion and come up with solutions that are socially, economically and in other ways suitable for the world. Business too needs a new class of environmentally literate and responsible leaders who can study how products and services affect our environment. Environment-related jobs would occupy a prominent place in the years to come. So environmental education, as a discipline and as an aspect linked to all other disciplines, is not only vital in it but also has a tremendous scope in terms of job creation.

Role of Teachers in Environmental Education

- To arouse the children‟s interest in the environment and to raise challenging problems.
- To discuss the approach to problems or topics
- To arrange visits.
- To provide materials needed for practical work.
- To arrange for visiting speakers
- To initiate and develop discussion and debate; and
- To provide facilities for displays and exhibitions of the work carried out.

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Providing Environmental Education at Different Levels of Education



What is the Flaws Existing in the Current Environmental Education Patterns Adapted at Present in Indian Educational Institutions?

- It was seen that in educational institutions, a lot of time is not allocated for the teaching of the sustainable environment as a subject to students.

- The management of the educational institutions finds it difficult to avail funds for offering high-quality sustainable environmental education and they also find it difficult to access resources necessary for offering high-quality sustainable environmental education.

- Some of the other challenges that exist in the current environmental education patterns present in the Indian educational institutions are that the teachers/lecturers are not at all offered adequate resources by the management to impart sustainable environmental education and also most of the teachers/lecturers lack sufficient knowledge to impart sustainable environmental education.

- Added to that, students also do not give importance in the learning

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environment as a subject since they consider it to add no academic value to them.

SUGGESTIONS TO IMPROVE ENVIRONMENTAL EDUCATION IN INDIA

1. **Content of Environmental Education Should be modified:** At present, the content of Indian environmental education is not much attractive and informative for the students. It should be enhanced in such a way that it expresses a clear association to the environment and environmental concerns. The content must help highlight an incorporated thematic or an interdisciplinary approach in which the ideas are uttered through big ideas and unifying themes rather than the isolated segments. The content should associate the learning with the actual world. Personally, it has to be applicable to the learners and include issues that are significant to the society and also it should equip the learners with adequate skills in order to continue learning all through life.

2. **Design of the Course Material:** The course material should be intended so that it is practical by nature, specific to the locale and endorses a holistic understanding of the particular area"s environment. Also the material should establish an association among the day–to–day life and actions of the students and that of their environment.

3. **Development of Sustainability:** The sustainability of the program depends on the recognition by the teachers and their capability to provide the course efficiently. The training of the teachers should be considered as a main concern within the proposal. Camps should be arranged in order to train the teachers from time to time. Also a manual should be offered to teachers in order to enable them to guide the students in their practical work and also the self–contained and self–explanatory workbooks should be provided.

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