



ENVIRONMENTAL EDUCATION - ROLE OF COLLEGES AND UNIVERSITIES

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Abstract

Environmental Protection Act (1986) defined, "Environment as the sum total of water, air and land, their interrelationship among themselves and with the human beings, other living beings and property. Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions (United States, Environmental Protection Agency). Environment is degrading at a much faster pace than our imagination. Most of this mess is caused by human activities. The damage is both at global and regional level. Depletion of ozone layer and increase in the emission of greenhouse gas are the examples of the damage at global level whereas ground water pollution, soil erosion are some of the regional consequences of human activities and their impact on environment. To protect and manage environment it is imperative to have a sound environmental education. It is a way to teach people and societies on how to use the present and future resources optimally. Through environmental education the students of schools, colleges and universities can gain knowledge to handle the fundamental issues leading to local pollution and environmental related hazards. Colleges and Universities in India mostly focus on teaching, research and training moreover imparting theoretical knowledge in environmental education. Regardless to say the students of colleges and universities spend most of their time in watching television, listening to music, playing video games, surfing internet, spending valuable times through social networking or using computer. They have no time to travel around and to explore the natural world around them. This not only impacts the health of students but also detach them from their surroundings and nature. The role of the colleges and universities is to encourage and integrate towards environmental education through various ways and means right from the beginning from their college education.

Key Words: *Environmental Science, Climate Change, environmental education, Role of colleges and universities.*



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What is Environmental Science?

The study of how humans interact with their environment. Our environment is everything that surrounds us, both natural and man-made.

Environment: the total of our surroundings

- All the things around us with which we interact:
- Living things
- Animals, plants, forests, fungi, etc.
- Nonliving things
- Continents, oceans, clouds, soil, rocks
- Our built environment
- Buildings, human-created living centers
- Social relationships and institutions

Natural resources: vital to human survival

Natural resources = substances and energy sources needed for survival

Renewable resources:

- Perpetually available: sunlight, wind, wave energy
- Renew themselves over short periods: timber, water, soil
- These can be destroyed

Nonrenewable resources: can be depleted

- Oil, coal, minerals

“...the earth enables our people to survive, the environment must be respected and maintained. As long as the earth remains healthy, the people remain healthy.” (Long and Fox, 1996)

Environmental science: how does the natural world work?

Environment ← impacts → Humans

It has an applied goal: developing solutions to environmental problems

An interdisciplinary field

- Natural sciences: information about the world
- Social sciences: values and human behavior, politics, economy, etc.

What is an “environmental problem”?

- The perception of what constitutes a problem varies between individuals and societies

Ex.: DDT, a pesticide



- In developing countries: welcome because it kills malaria-carrying mosquitoes
- In developed countries: not welcome, due to health risks

The “ecological footprint”

- The environmental impact of a person or population
- Amount of biologically productive land + water for raw materials and to dispose/recycle waste
- Overshoot: humans have surpassed the Earth’s capacity

We are using 30% more of the planet’s resources than are available on a sustainable basis!

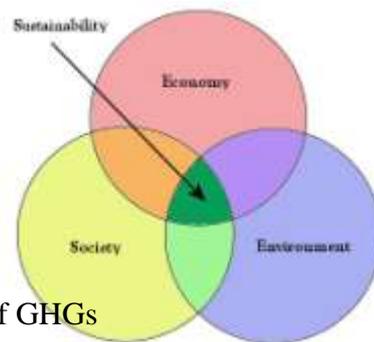
Sustainability: a goal for the future

- How can humans live within the planet’s means?
- Sustainability
- Leaves future generations with a rich and full Earth

- Conserves the Earth's natural resources
- Maintains fully functioning ecological systems
- Sustainable development: the use of resources to satisfy current needs without compromising future availability of resources

Will we develop in a sustainable way?

- The **triple bottom line**: sustainable solutions that meet
- Environmental goals
- Economic goals
- Social goals



Climate Change

- A major concern of the 21st century
- Primarily due to the increase in the concentration of GHGs
- The concentration of CO₂
- Present level of CO₂ in atmosphere: 387 ppmv
- Projected estimate for the year 2100 : 540 to 970 ppmv
- This will lead to an increase of temperature, precipitation may increase or decrease, there will be change in stream flow, floods, droughts, water temperature and quality will also be affected

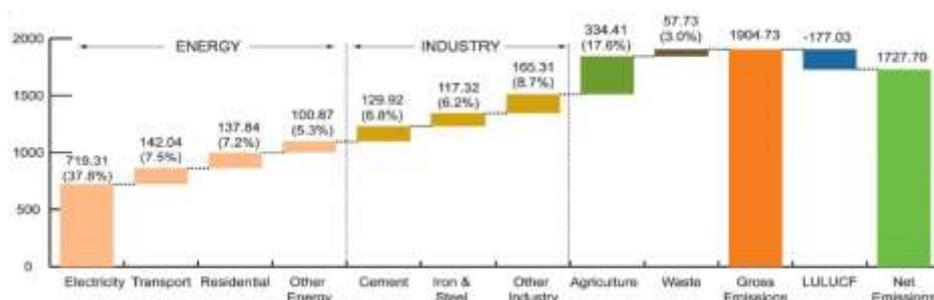
Climate Change: Humanity's Biggest Test

❖ Observed changes in climate over the Indian region:

- An increase of 0.4°C in the last 100 years
- Substantial changes in precipitation on a spatial scale
- An increase in intensity of heavy precipitation events
- Rise in sea level along the Indian coast @ 1.06-1.25 mm/year over last 40 years
- Climate projections indicate-
- Rise in temperature by 2-4°C by 2050s
- Decrease in number of rainy days

- ❑ Increase in intensity of rain fall
- ❑ Adverse impacts on key economic sectors and vulnerabilities of climate sensitive regions

❖ **GHG emissions by sectors**



Per capita emissions and global share of emissions

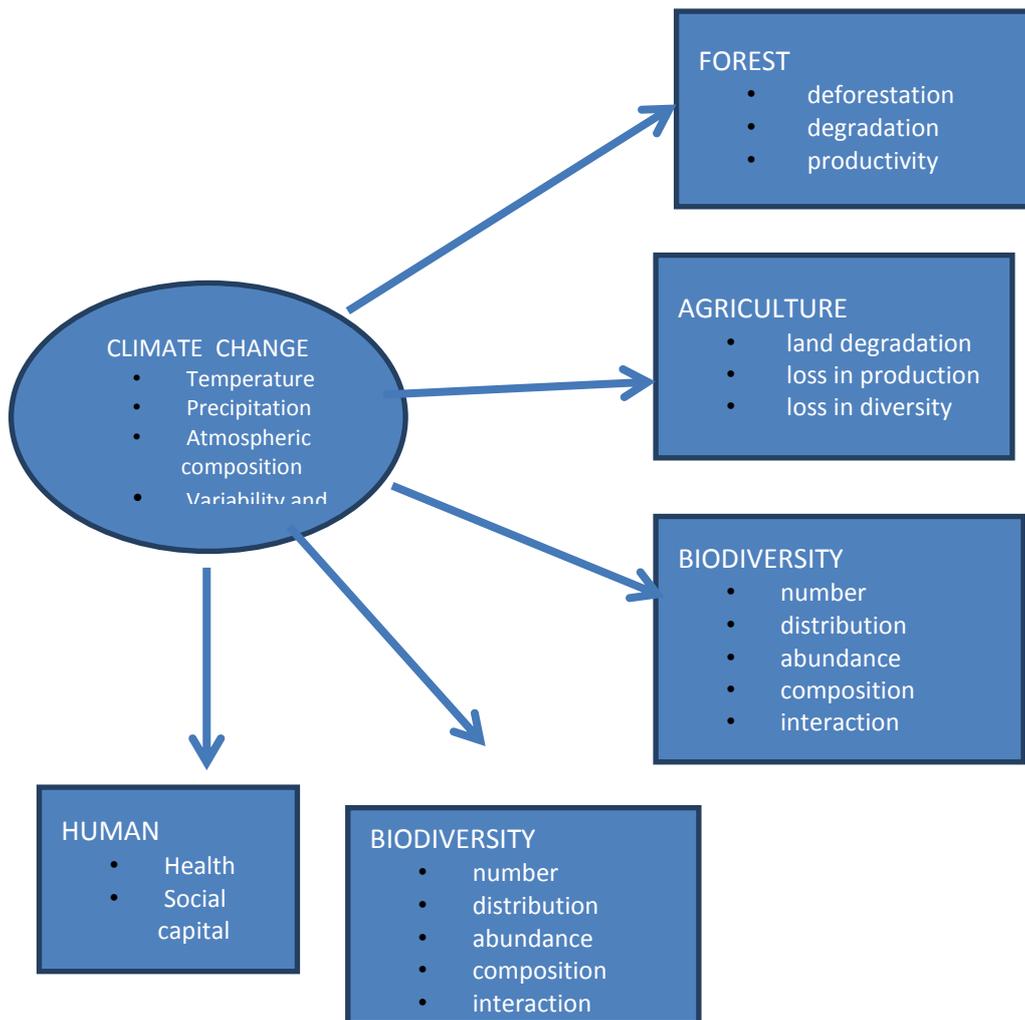
Country	Per capita CO2 emissions (in tonnes)	% of global share of CO2 emissions
World	4.5	
OECD	11.5	
Developing Countries	2.4	
USA	20.6	20.9
UK	9.8	2
Germany	9.8	2.8
Japan	9.9	4.3
Canada	20	2.2
China	3.8	17.3
Brazil	1.8	1.1
South Africa	9.8	1.5

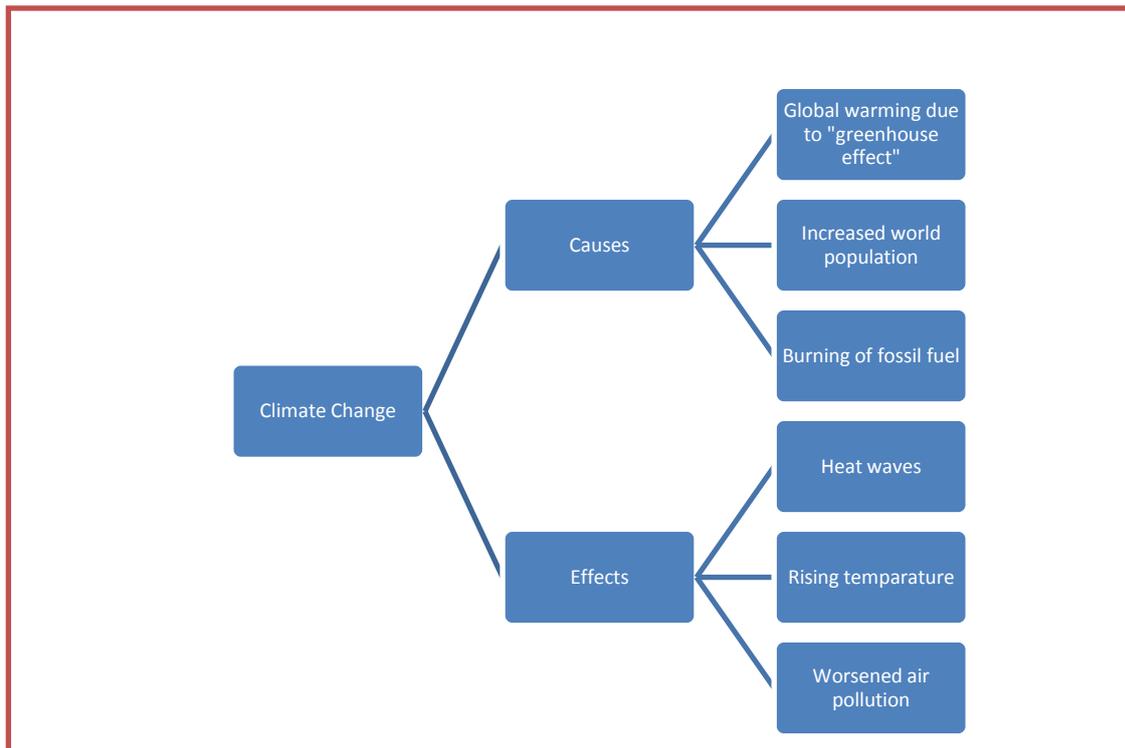
India	1.2	4.6
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(Source: HDR 2007)

Possible impact of CLIMATE CHANGE on Key Sectors:

NATURE cannot be compartmentalised Understanding CC 's impact on the interactions is paramount for success





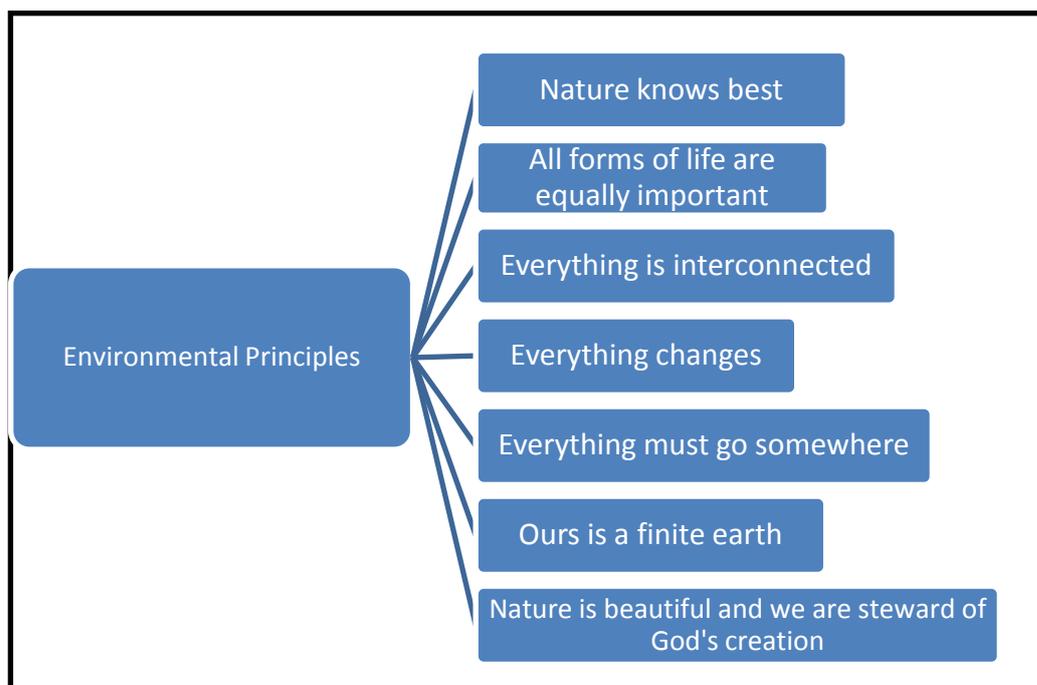
What is environmental education?

Environmental education is a process by which people develop awareness, concern and knowledge of the environment and learn to use this understanding to preserve, conserve and utilize the environment in a sustainable manner for the benefit of the present and future generations.

It entails the will to take personal initiatives and social participation to achieve sustainability.

- The way natural environment works and how humans should behave to manage ecosystem to sustain environment is part of the environmental education.
- It imparts the required skills and expertise to handle the associated challenges.
- The main focus of the study is to impart knowledge, create awareness, inculcate an attitude of concern and provide necessary skill to handle the environment and environmental challenges.

- EE gained importance at global level after the Stockholm Conference on Human Environment, organized by UNESCO in 1972. Soon after this Conference, the UNESCO launched the International Environmental Education Programme (IEEP).



History of environmental education

In 1970 the International Union for the Conservation of Nature and Natural Resources [IUCN] held a working group meeting on Environmental Education in the school curriculum in Nevada, USA. The deliberations of that conference continue to be a major influence on the development of Environmental Education. Disinger (1983) claimed that at the international level the term 'environmental education' was used in Paris in 1948, at a meeting of the International Union for Conservation of Nature and Natural Resources. ' The first recorded use of this term in Britain may be traced to a conference held in 1965 at Keele University Staffordshire. Malhotra (1985) identified that the necessity of environmental education was Goiced by the IUCN way back in

the sixties and reiterated over the years in many conferences. Two major United Nations reports- the Brundtland Commission 's Our Common Future (United Nations, 1987) and UNEP's, The State of the World Environment (UNEP, 1989) have dramatically drawn attention to the pressing need to devise and put into practice, in all countries and all parts of the world, long- term environmental strategies for achieving sustainable development. Agenda 21 of the Earth Summit 1992 gives primordial interest on education, public awareness and training. The programme areas described are;

- (1) Reorienting education towards sustainable development.
- (2) Increasing public awareness.
- (3) Promoting training.

The centre piece of the Rio agreement known as Agenda 21 is a major action programme setting out what nations should do to achieve sustainable development in the 21st century.

Environmental education in India

The concept of environmental education is now wide spreading national educational policies, curriculum documents, curriculum development initiatives and conservation strategies (Rickinson, 2002). World educators and environment specialists have repeatedly pointed out that a solution to environmental crisis will require an environmental awareness and its proper understanding which should be deeply rooted in the education system at all levels of school education (Shobeiri et.al., 2007). The environmental education (EE) has been thoroughly discussed at several national and international seminars, workshops, conferences after the deliberations at Fourx in 1971 and in United Nations Conference on Human Environment at Stockholm in 1972. The environmental scenario of India is very wide. Ours is a country highly diverse climatically, geologically, geographically, edaphically, floristically, faunistically, ethnically, lingually, socially and economically. International conference on

environmental education was held in New Delhi in March 1985. In several papers, environmental education programmes in primary, secondary schools, universities, engineering institutions and other non formal education programmes were discussed. The environmental education at higher level in India is provided by the Universities, Research Institutes, Schools of Planning and Management, Agricultural Universities, Engineering Colleges and a number of other agencies. Some of them have defined programmes of environmental education and the others have included some components of environment in their curricula. The introduction of environmental education programmes requires the involvement and participation of teachers, students and administrators etc. (Swain, 1997). Gujarat has initiated on firm footing a comprehensive environmental programme and this is one among the first states to introduce environmental / education in India (Ravi, 1987). Both formal and nonformal environmental education programme was started in 1980. The Centre for Environment Education (CEE), Ahmedabad is involved in increasing consciousness about the environment among children and the general community. Souza (1987) states that environmental education need to be given priority from a tender age i.e., the level of elementary schools. The present educational system has some bias towards environmental education but this need to be enlarged. Khoshoo (1984) appeals to teachers to organize, motivate and catalyse the student community to undertake ecological studies of the region in the vicinity of the schools colleges and universities. Saxena (1999) suggests that the nature of environmental education requires a different teaching methodology than the ones used in other disciplines. A study by Yogamoorthi (1992) stressed the need for environmentally trained teachers for environmental education.

Importance of Environmental Education

- To increase student engagement in science.
- To improve student achievement in core subject areas.

- To help address “nature deficit disorder”.
- To make people aware of the impact of their activities on the environment.
- To motivate students to get involved in community action and participate in various environmental and management projects.
- To enable people to understand the complexities of the environment and adopt eco-friendly habits for sustainable development.
- To integrate different approaches of the humanities, social sciences, biological and physical sciences and apply them in the investigation of environmental problems.

Goals, Objectives and Aims of Environmental Education

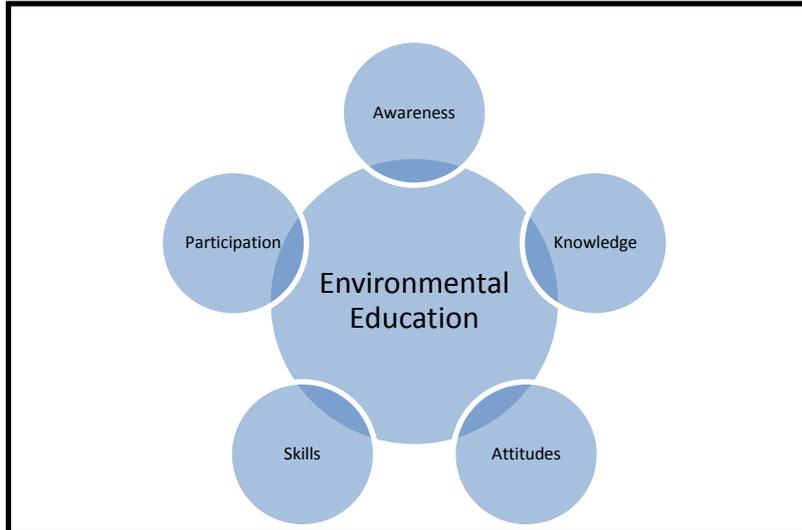
The goals of Environmental Education are:

1. To improve the quality of Environment
2. To create awareness among the people on Environmental problems and conservation
3. To create an atmosphere so that people participate in decision making and develop capabilities to evaluate the developmental programs.

The Objectives of Environmental education are classified as follows:

1. **Awareness:** Acquire an awareness of and sensitivity to the total environment and its allied problems.
2. **Knowledge:** gain a variety of experiences and acquire a basic understanding of the environment and its associated problems.
3. **Attitudes** – acquire a set of values and feeling of concern for the environment and the motivation for actively participating in environmental improvement and protection.
4. **Skills** – acquire skills for identifying and solving environmental problems.

5. Participation – to provide social groups and individuals with an opportunity to be actively involved at all levels working towards the resolution of environmental problems.



Recommendations

Universities, Colleges & Schools should celebrate the following programme for enhancing environmental awareness

1. World environment day- 5th June
2. World forestry day- 21st March
3. World Soil day- 5th December
4. Wildlife week- 1st -7th October
5. National Cleanliness day 30th January

What needs to be done?

- Teacher's can play a pivotal role in transmitting knowledge and creating awareness about the environment through curricular activities.
- Teachers should take initiatives in designing the program of environmental education.
- Collaborative ventures could be created between the teachers and community.

- Technology mediated learning can play a major role in dissemination of knowledge. Non formal channels of education like t. v., radio, press and satellite technology can be effectively utilized for capacity building of environment educators.
- Various co-curricular activities related to environmental awareness such as essay competition, debate, drama, song, etc should be organized through out the year.
- Swachha Bharat Abhiyan' should be implemented in all universities.
- A forestation with selective tree species like *Albizia lebbeck*, *Zizibhus jujuba*, *Cassia fistula* should be initiated as they are tolerant to air pollution.
- *Some tree species are mitigating the air particulate like Mango, Tamarand, Ashoka, Pongamia, Ficus religiosa and Azadirachta indica*
- Proper waste disposal mechanism should be adopted in Universities
- Smoking and chewing tobacco and Gutka and alcohol should be prohibited in the campus.
- Polythene bags in the campus (Hostels, staff quarters, office) should be totally banned
- Parking zone for two and four wheelers for preventing sound and air pollution

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