UNIT 1

ENVIRONMENT EDUCATION

CONTENTS

MEANING OF ENVIRONMENT

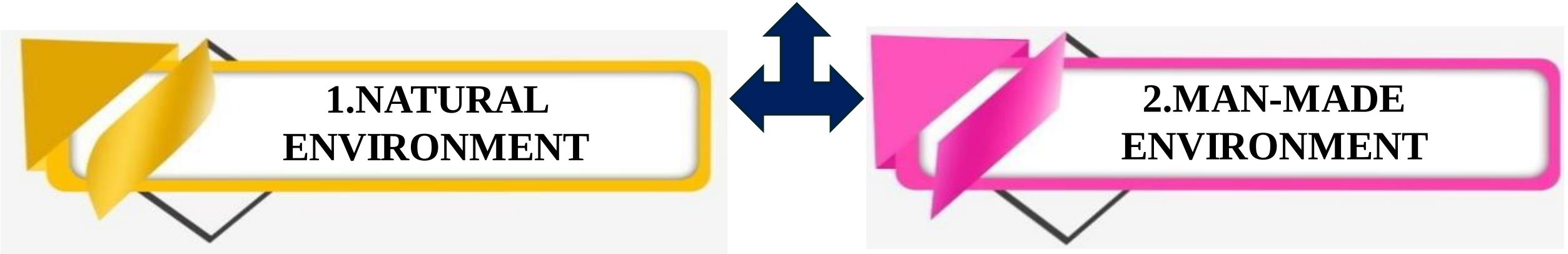
The dictionary meaning of the word 'Environment' is a surrounding; external conditions influencing development or growth of people, animals or plants; living or working conditions etc. A. Goudie (1984) in his book "The Nature of the Environment" has taken environment as the representative of physical components of the earth wherein man is an important factor affecting the environment".

Our immediate concern is the quality of space we live in, the air we breathe, the food we eat, the water we drink and the resources we draw from the environment to support our economy. As such only 'air-land-water-plant' are to be included in the concept of environment, thus excluding man and human, society from the ambit of environment.

DEFINITION OF ENVIRONMENT

- 'Environment is anything immediately surrounding an object and exerting a direct influence on it- P. Gisbert
- "Environment is everything that affects the individual except his genes"- Anastasi
- "The term environment is used to describe in the aggregate, all the external forces influences and conditions which affect the nature, behaviour and the growth, and maturity of living organisms" development"- Douglass and Holland

2 TYPES OF ENVIRONMENT



1.NATURAL ENVIRONMENT

This consists of air, water, land, forests mountains, radiations, living organisms such animals, birds, reptiles and micro organisms like bacteria, viruses and fungus as its components. It has a homeostatic mechanism i.e, any change in one component of the ecosystem is counter balanced by changes in the other components of the environment. Thus different components of the environment are independent as well as interdependent, maintaining a reciprocal relationship among themselves. The natural environment could be further classified as follows:

1) Biotic or Living Component
2) Abiotic or Physical Component

Components of Biotic Environment

The biotic component of the environment could be classified as those organisms living on the land (Terrestrial) and those living in water (Aquatic).

Terrestrial organisms could be further sub-divided into three kinds-

(i) Flora (Vegetation like Plants): It consists of different species of vegetation like plants, grass, bushes, forests etc. Which do not have the ability to move.

(ii) (ii) Fauna (Animals): It consists of mammals and other species like birds, reptiles, fishes, sharks, whales etc. These organisms have the ability to move by themselves.

(iii) Others: This consists of micro-organisms like bacteria, viruses, fungus etc.

Components of Abiotic Environment

Abiotic or Physical environment has three components. They are

(i) Lithosphere: This refers to the crest of the earth constituted by rigid rocks and soil.

(ii) Hydrosphere: It consists of Oceans, seas, rivers, streams, lakes, polar ice-caps, glaciers, ground water etc.

(iii) Atmosphere: Atmosphere is a gaseous envelope extending to a height of 20,000 K.M. from the earth surface. It consists of Nitrogen, Oxygen, Carbondioxide, Hydrogen, Argon etc.

There are 5 layers in the atmosphere which are :-

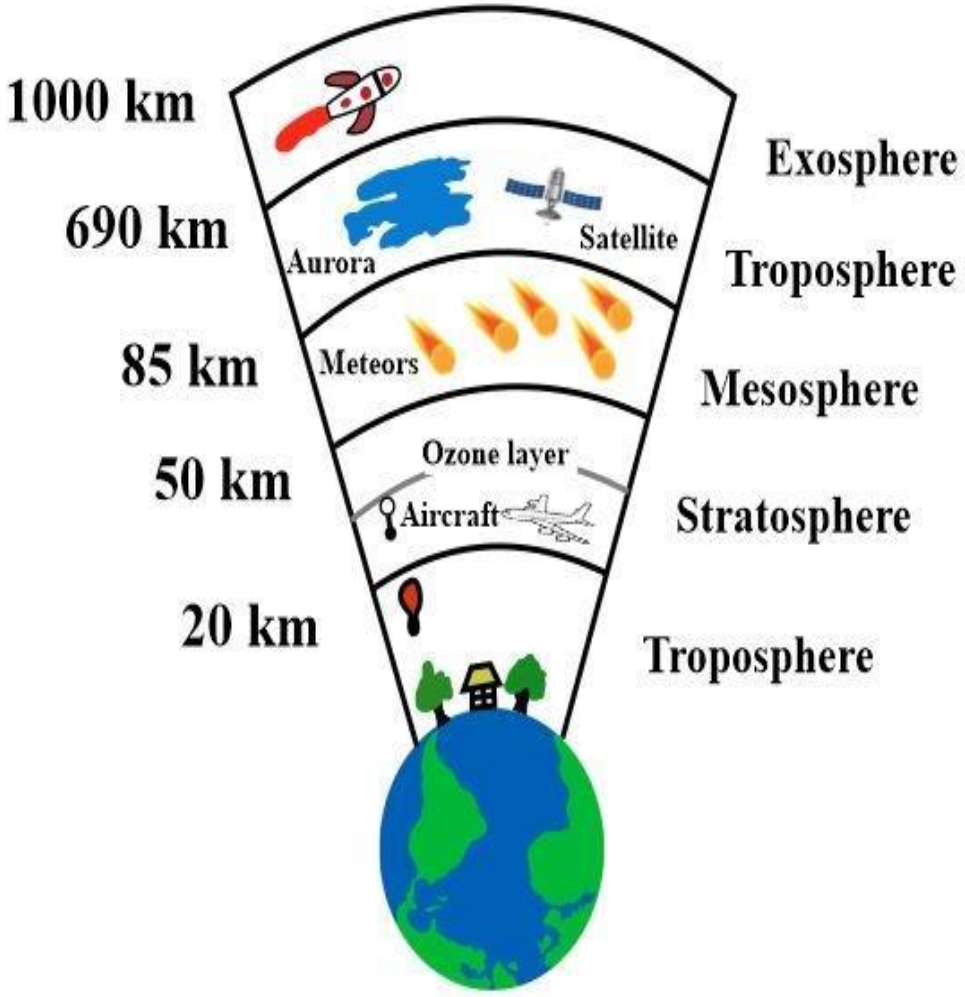
a) Exosphere: This is the topmost layer of atmosphere lying at 400 to 20,000 K.M. Of height from the surface of the earth where temperature ranges from 1000°C to 10,000°C

b) Thermosphere: This layer of atmosphere is lying at 85 to 400 K.M. Of height from the surface of the earth and the temperature in this layer is above 1000°C.

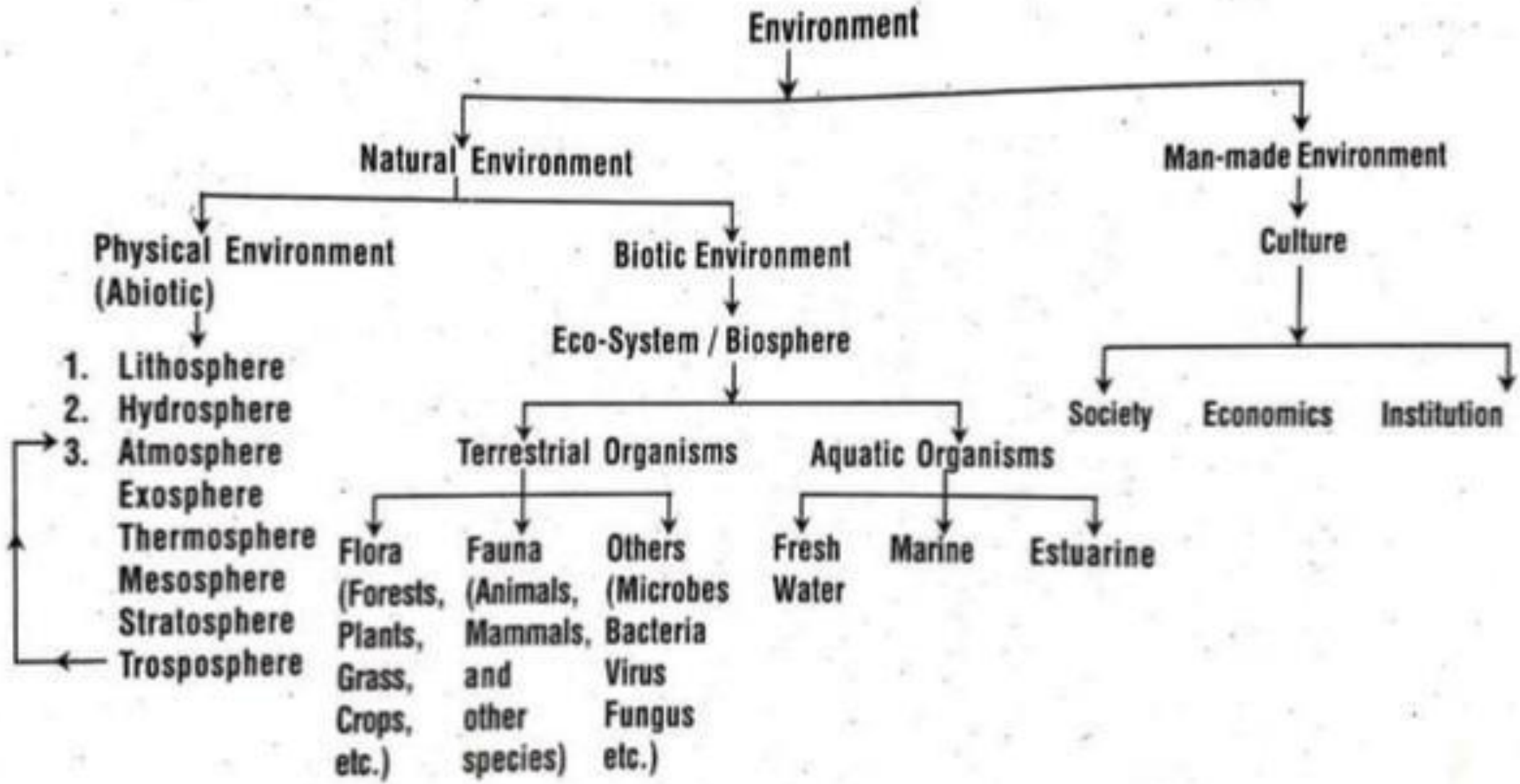
c) Mesosphere: This layer lying above 'Stratosphere' extends from 50 to 85 K.M. of height from the surface of the earth. In this layer, as the height increases, temperature decreases and reaches -80°C level.

d) Stratosphere: This layer just above 'troposphere' extends from 15 to 50 K.M. of height from the surface of the earth. In this layer, as the height increases, temperature also increases and reaches the maximum temperature of + 90°C.

e) Troposphere: This is the bottom layer of the atmosphere which extends to a height of 10-15 K.M. from the surface of the earth. In this layer, as the height increases, temperature decreases and reaches -60°C level.



1.3.3.Chart showing the Types and Components of Environment



2.MAN-MADE ENVIRONMENT

This refers to the artificial environment created by man. Man has superior modern technologies with the help of which he could create an environment as desired by him. He is able to expand transport facilities, build dams and extend the irrigational areas, increase housing facilities, etc. with the help of advancement in science and technologies. This involves Social, Cultural and Institutional components.

ENVIRONMENTAL AWARENESS

The terms Environmental education and environmental awareness are used interchangeably for the same meaning but there is significant difference in these two terms. The study of physical and biosciences, geography, agriculture etc.. provides the environmental awareness. But the awareness does not help in developing skills and attitudes for improving environment. Environmental awareness may be defined to help the social groups and individuals to gain a variety of experiences in and acquire a basic understanding of environment and its associated problems. Educators and Environmental specialists have repeatedly pointed out that any solution to the environmental crisis will require environmental awareness and understanding to be deeply rooted in the educational system at all levels.

ENVIRONMENTAL ATTITUDE

Environmental attitude refers to one's attitude towards preservation of the quality environment and utilization of environmental resources. Environmental attitudes are important because they often, but not always, determine behaviour that either increases or decreases environmental quality. Pro-environmental attitudes rise and fall with current events and vary with age, gender, socioeconomic status, nation, urban-rural residence, religion, politics, values, personality, experience, education, and environmental knowledge.

Environmental education aims to improve environmental attitudes but has mixed results. The mass media have been both helpful and harmful. Two prominent theories for explaining environmental attitude-behaviour relations are the theory of planned behaviour and value-beliefs-norm theory.

Researchers have, for example, suggested additions to the theory of plannedbehaviour, noting that pro-environmental behaviours vary in their effort to complete, which influences the attitude-behaviour relation, and that many barriers to behaviour-change exist.

ECOLOGICAL INTELLIGENCE

Ecological intelligence denotes one's knowledge, understanding and attitudes developed towards environment and maintaining its balance. Ecological intelligence help us to comprehend different natural systems in all their complexity as well as the interplay between natural and man-made worlds. Ecologists tell us that natural systems operate on multiple scales.

At the macro-level there are global biogeochemical cycles like that for the flow of carbon, where shifts in the ratios of elements can be measured not just over the years but over centuries and geologic ages. At the micro-level, cycles run their course on a scale of millimeter or microns, in just seconds. How we just perceive and understand all these makes a crucial difference and reason for their difference is what we refer 'Ecological intelligence'.

The store of knowledge about different ecological systems, with all their complexities, as well as the interplay between natural and man-made worlds and their resultant impact is huge that no single human brain can store it all.

Psychologists conventionally view intelligence as residing within an individual. But the ecological abilities we need to survive today must be a 'Collective intelligence'; one that we learn and master as a species and that resides in a distributed fashion among the far-flung net-works of people. How far one has acquired this collective intelligence denotes his ecological intelligence.

ECOLOGICAL SENSITIVITY

Environmental sensitivity describes the ability of an individual to perceive and process information about their environment. It is a fundamental and basic trait found in many organisms and is crucial because it enables an individual to adapt to different environmental conditions. Levels of Environmental Sensitivity often vary considerably from individual to individual, with some being more and others less sensitive to the same conditions. Such differences have been observed across many species such as pumpkinseed fish, zebra finches, mice, non-human primates and humans, indicating that there is a biological basis to differences in sensitivity.

ENVIRONMENTAL EDUCATION

Environmental Education, is an interdisciplinary process that aims at equipping people with the knowledge, attitudes, skills and motivation that they need to help resolve environmental issues.

Unlike the formal education, Environmental Education aims at effecting behavioural change. Knowledge acquired through Environmental Education should lead to change in people's values and attitudes.

DEFINITIONS OF ENVIRONMENTAL EDUCATION

1. "Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitude necessary to understand and appreciate the interrelated-ness among man, his culture and his bio-physical surroundings. It also entails practice in decision making and self formulation of a code of behaviour about problems and issues concerning environmental quality" - UNESCO (1970) Working Committee2.

2. "Environmental education appears to be a process that equips human beings with awareness, knowledge, skills, attitudes and commitment to improve environment".
- Mishra (1993)

3."Environmental education is problem-centred, interdisciplinary, value-oriented, community- oriented, and concerns with man's survival as species, based on student-initiated activities and involvements present and future oriented" - Cook and Hearn, 1971

CHARACTERISTICS OF ENVIRONMENTAL EDUCATION

- Environmental education is a process of providing learning experiences to obtain knowledge, understanding, skills and awareness.
- Environmental education must utilize diverse learning environments and a broad array of educational approaches to teaching learning about and from the environment.
- Environmental education also develops, modifies and improves upon existing attitudes and values towards one's environment.
- Environmental education should help learners to discover the symptoms and real causes of environmental problems and thus to develop critical thinking and problem solving skills.
- Environmental education should be a continuous life-long process, beginning at the pre-school stage level and continuing through all formal and non-formal stages.
- Environmental education should be interdisciplinary discipline in making possible a holistic and balanced perspective.

6 Focal Aspects of Environmental Education and Its Components

1. Natural resources, Problems and Solutions

(i) Inexhaustible resources and Non-renewable resources

(ii) Natural resources such as land, water, air, minerals, forests, food and energy resources.

(iii) Problems related to Natural resources:

a) Land Resources: Landslides, Soil-erosion, Loss of fertility, Desertification.

b) Forest Resources: Deforestation.

c) Water Resources: Over-exploitation of ground water, Pollution due to Industrial Effluents, Sewage and Agricultural discharges etc.

d) Mineral Resources: Over-exploitation of Mineral Resources.

e) Food Resources: Decrease in food production due to Farm land conversion, Mono crop culture, over fishing etc.

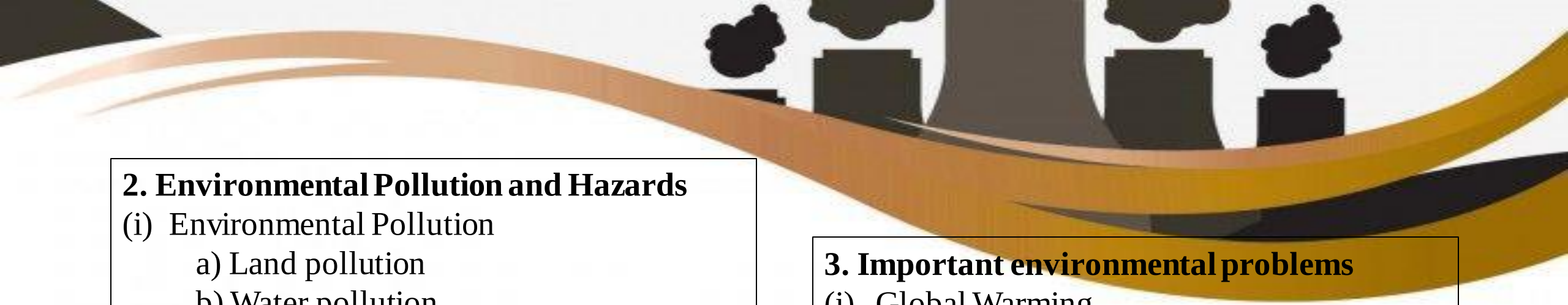
f) Energy Resources: Depletion of Fuel resources due to increasing demand for energy, not tapping the Non-conventional resources fully.

(iv) Role of Individual in conserving the natural resources:

a) Conserving the bio-diversity

b) Energy saving

c)Reducing the usage of papers. Avoiding plastic items. Other ways of conserving natural resources.



2. Environmental Pollution and Hazards

(i) Environmental Pollution
- a) Land pollution
- b) Water pollution
- c) Air pollution
- d) Noise pollution
- e) Light pollution

(ii) Various environmental hazards and disasters
- a) Earthquake
- b) Tsunami
- c) Landslide
- d) Volcano explosion
- e) Floods
- f) Cyclone
- g) Forest fire
- h) Nuclear accidents

(iv) Industrial accidents

3. Important environmental problems

(i) Global Warming
(ii) Green House Effect
(iii) Depletion of Ozone layer
(iv) Acid Rain
(v) Extinction of Flora and Fauna

4. Environmental Conservation Policies and Programmes

(i) Efforts taken in India for the conservation of environment and the laws enacted in this regard
(ii) Creation of Gene Banks
(iii) Solar Power Projects
(iv) Rain Water Harvesting.
(v) Development of Social Forests

5. Environmental Management and Protection

(i) Soil Management
(ii) (ii) Water Management
(iii) Waste Management
(iv) Disaster Management
(v) Establishment of International organizations for the Protection and Conservation of Environment.
(vi) Environmental Movements in India and the functioning of NGO's in the Protection of Environment.

6. Incorporation of 'Environmental Education' in the School Curriculum to develop environmental awareness, attitude and skills for solving environmental problems.

(i)Providing environmental education at various levels of education
(ii) Approaches in providing environmental education
(iii) Ways and Means of integrating environmental education in the curriculum
(iv) Guidelines to include environmental education at school level.
(v) Problems faced in imparting environmental education

Goals of Environmental Education

UNESCO has highlighted the following aims of environmental education:

The aim of environmental education is clearly to show the economic, social, political and ecological interdependence of the modern world. Environmental education should help to develop a sense of responsibility and solidarity among countries and regions.

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.

Therefore, necessary steps for providing environmental education are: Developing in students

(a) Awareness;student

(b) Knowledge

(c) Attitude building for motivating to protect environment.

(d) Evaluation of environmental measures.

(e) Skill and capacity building.

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

Objectives of Environmental Education

The course content of Environmental Education (EE) has been designed for both, the formal system and non-formal system of education. A department of environment has been set up in 1982 on Envirorimental information system for this purpose. There is a Centre for Environmental Education (CEE) at Ahmedabad. There are more than two hundred private organizations working for environmental education.

Objectives of environmental education have been formulated for both formal and non-formal education at all levels at the International Conference of UNESCO (1977) held at Tbilisi, These are as follows:

1) To develop an awareness of environment and sensitivity (feeling and attitudes) to the total environment and its allied problems.
2) To help acquiring knowledge and variety of experiences of the environment and associated problems.
3) To develop a basic understanding of structure, processes and problems of environment, interdependence of environmental components.
4) To help in acquiring skills for identifying and solving environment problems.
5) To develop attitudes, a set of values and feelings of concern for the environment and encouragement or motivation for active participation in protection and improvement of environment.
6) To develop an ability for evaluating environmental components of educational programmes in terms of ecological, economic, social, cultural, aesthetic and educational factors.

In the formal system of education, four different but interrelated components have been recognized which are noted as follows.

OBJECTIVES	LEVELS
Awareness of environment (Knowledge)	Primary Education
Relevance for real-life situations of environment (understanding)	Secondary Education
Conservation of natural resources of environment (skills)	Higher Secondary education
Sustainable development by solving problems of environment (attitude and evaluation	College and University Education

Need for Environmental Education

Some form of environmental pollution affects each and every nation though the issues differ. Environmental issues differ from developmental issues in their impact upon individual lives. Acid rain. desertification, global warming, ozone layer depletion, pollution of air, water and soil, radioactive contamination of large areas, and species extinction are some of the most urgent environmental threats to be dealt with now and in the future. These problems are serious, interdependent, and characterized in most cases by a dimension in space and time.

For more than twenty years, educational institutions all over the world have been making intense efforts to meet the challenges arising from politics, science and public opinion towards integrating environmental concerns. A popular slogan of the international ecology movement is "think globally and act locally".

Today, environmental education is an important segment within the educational system. In some countries, it also constitutes a political-pedagogical action programme to be developed and pursued by social groups, government, the scientific community and educational institutions. This programme includes all educational activities consciously confronting and attempting to overcome the environmental crisis. It is a programme with the following aspects:

- Goals, concepts and components of the specific educational measures.
- Relationship between environmental crises and environmental education.
- Subjects and actors - teachers and pupils and their qualifications.
- Target groups
- Local environment
- Educational institutions
- Conditions and access and participation.

Environmental education has a single, clearly defined and multifaceted object: the environmental crisis. Environmental learning is learning about the factors, causes and solutions to environmental crises. Learning about the environment is immediate reaction to concrete problems in the management of natural resources.

Importance of Environmental Education

Over recent decades, global problems relating to degradation of natural resources and pollution have increased dramatically. Natural resources are depleted by excessive use. Fresh water scarcity on a global scale, deforestation, degradation of coastland marine areas, soil erosion, loss of bio-diversity, pollution, etc., are some of the problems that have become a cause for concern. In such a scenario, the importance and need for environmental education can hardly be stressed.

In fact, sustainable development or economic development without affecting the natural resources should form the cornerstone of environmental education. This can be achieved by providing the disadvantaged with the means to advance themselves and their families. Environmental education is both valuable and necessary. Starting from very young age, children should be taught about the environmental awareness and knowledge of the area in which they live, should also grow. Their education should be integrated with core disciplines.

Environmental education provides the foundation for all future education and learning. Environmental education enables children to develop a storehouse of knowledge about the world and seek knowledge that they can use and develop throughout their lives. Environmental education empowers adults by enabling them to participate in a sustainable future. Environmental education thus lays the foundation for a lifelong learning.

In effect, the **importance of environmental education** can be stated as follows:

- It is essential for the self-fulfillment and social development of the child and the adult.
- It is essential for understanding the different food chains and the nature's ecological balance.
- It plays an important role in understanding and appreciating how the environment is used for making a living and promoting material culture.
- It enables one to appreciate and enjoy nature and society.
- It inculcates a concern for the systematic change of environment for the distant and the immediate welfare of mankind.
- It makes one conscious of the problems of population explosion, depletion of natural resources, global warming etc.

Scope of Environmental Education

The scope and content of Environmental Education can be studied in terms of four components:

1) Awareness
2) Real Life Situations
3) Conservation
4) Sustainable Development

1) **Awareness**: In this segment, an effort is made to make the individual conscious about physical, biological and cultural aspects of environment. The environment is linked with the life support system comprising 6 components:

a) Air
b) Land
c) Water
d) Flora
e) Fauna
f) Sunlight.

2) Real Life Situations: These situations link environment to life. As conditions are location-specific, problems and priorities of each area are different.

3) Conservation: This encompasses utilization of natural resources, not only by the present but also by the future generations. It does not include the process of exploitation.

4) Sustainable Development: This process aims at the sensible utilization of resources for development. All resources are finite and there is also a limit to the growth of the living system. In effect, one should utilize the limited natural resources wisely and with intelligence.

Regarding the scope of Environmental Education, the International Conference on Environmental Education put forth the following guidelines:

The environment should be considered in its totality, natural and built, technological and social.

Ensure that environmental aspects have a place in plans for the development and growth.

Environmental Education should adopt an interdisciplinary approach drawing on the content of each and enabling a holistic and balanced perspective.

Students should be enabled to get insights into environmental conditions in other countries by examining major environmental issues.

While historical perspectives should be taken into consideration, the focus should be on the current and potential environmental issues.

Environmental Education should be a continuous lifelong process, starting at the preschool level and continuing at all levels of education, whether formal or non-formal

Relate environmental sensitivity, knowledge, problem-solving skills and value clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years.

Facilitate the learners to have a role in planning their learning experiences.

Utilize diverse learning environments with due stress on first-hand experiences and practical activities.

Enable learners to discover the symptoms and real causes of environmental problems.

Stress the complexity of environmental problems and the need to develop critical thinking and problem-solving skills.

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Thank you