

SECTION – 1

SECTION -1: Introduction to Environmental Education

Introduction:

School education is a sector of fundamental importance to both individual and national progress. With the thrust given to Environmental Education in the New Policy of Education (1986) and the directive of the Supreme Court (1991), attempts have been made to include EE in the school curriculum and reorganize the content and methodologies of teaching at the school level to bring in the environmental focus.

However, it needs to be realized that salutary effects of these attempts will not be sustained unless coupled with intensive teacher training both at the pre-service and in-service levels. In order to impart effective teacher training in EE, an understanding of the aims and objectives of EE, its contents and approaches, efforts made in the field etc., become a fundamental prerequisite.

This section is planned to provide you with such an understanding. It is organized under 3 sessions. Session I, while introducing you to the concept of environment, gives you an overview of some of the basic concepts related to it. Session 2 helps you to appreciate the place of humans and their relationships with the environment, impact of their activities on it, problems arising out of it, the threats perceived, etc. This session concludes by stressing the urgency and the need for protecting and conserving our environment and the ways of doing it.

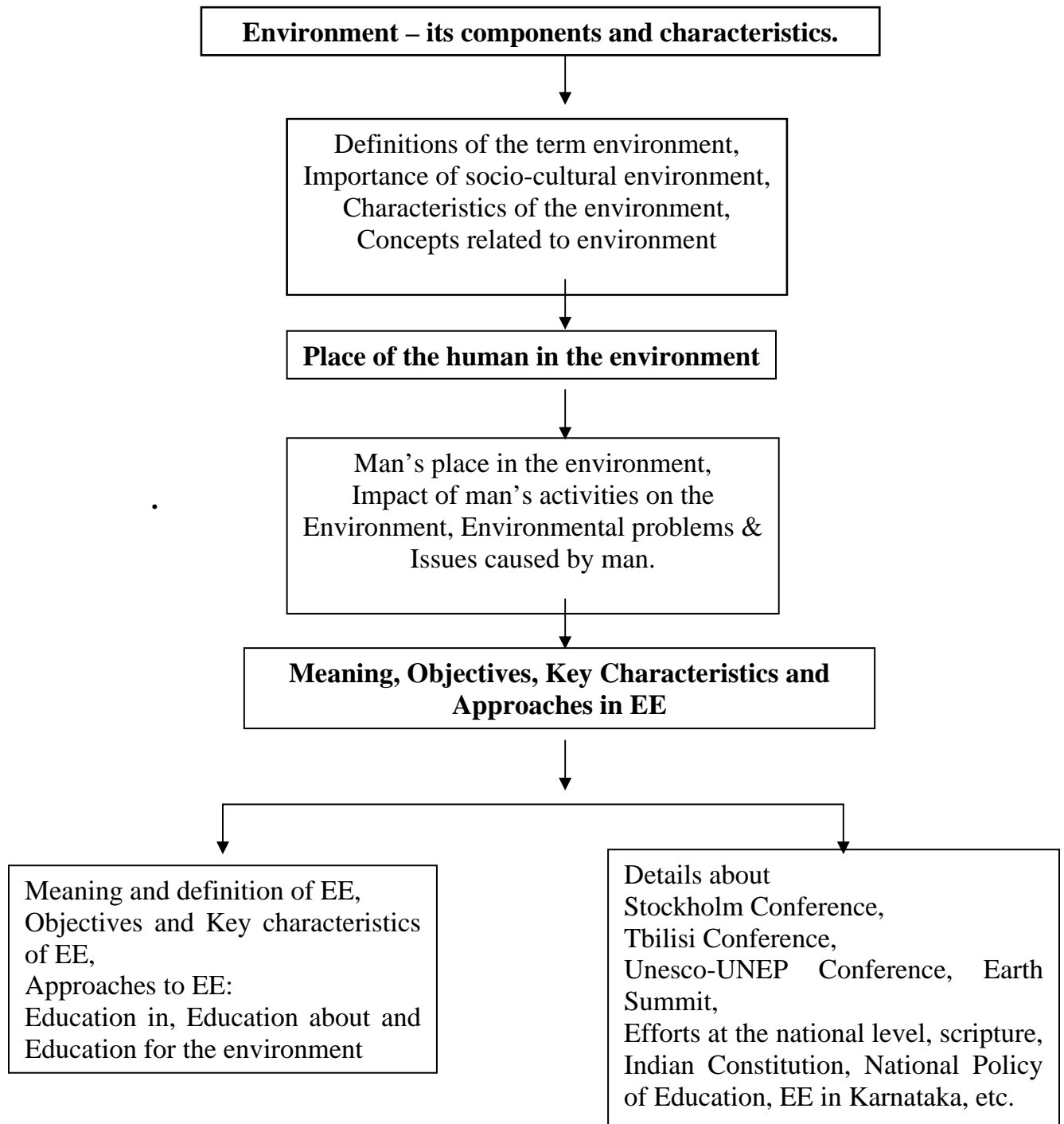
Appreciating the need to conserve environment and the role of education in it, in session 3, you will get to know the various components of environmental education, historical background, meaning and importance, its principles / approaches, etc. This session also aims to give you an overview of the significant efforts made in the country by government and non-governmental agencies in promoting environmental education.

You could use three sessions, each of one and half-hour duration, for providing this understanding. In the workshop schedule, these sessions have been indicated as :

- **Meaning and scope of Environmental Education**
- **Place of humans in the environment.**
- **Objectives, characteristics and approaches to EE**

An overview of the contents covered in the three sessions has been provided in the flowchart.

Overview :



Before you begin the Section, ENSURE that:

- You have read this section carefully taking down the important points for highlighting, details of the activities to be conducted and transparencies to be used during the various sessions.
- You have all the TRAN Sheets, appended at the end of this section, photocopied on transparency sheets and sequentially arranged (Transparency sheets are available in any stationery shop). The process of photocopying is like any other paper that is Xeroxed.
- You have arranged to overhead projector, trial run one or two transparencies to ensure proper focus of the visuals.
- You have all the materials required for playing the game Web-of-life.
- You have copies of Handouts -2 and 3 for distribution to the groups.

Session 1: Meaning and Scope of Environmental Education

As this is the first session in the workshop on Environmental Education, give the teachers an overall introduction to the workshops and its objectives.

Explain to them that the workshops is aimed to :

- Provide them with an understanding of the need for Environmental Education, its scope and importance.
- Help them in analyzing textbook contents for infusing EE perspective.
- Help them in employing effective methods of teaching for imparting EE.
- Help them in organizing EE activities in their schools.
- Provide them with an understanding of the various audio-visuals that they could prepare and use in imparting EE.

Introduce the teachers to the subject on Environmental Education (EE) by focusing a few of the local / state / national environmental problems, the status of our environment, how it is getting deteriorated day-by-day, impact of the deterioration of environment on life in general, national and international efforts done to create environmental awareness in the general public for protecting and conserving environment.

Trace the historical perspective of EE and the concerns at the International and national levels using **TRAN-1** and *Additional Notes – 1*. Generate a discussion on some of the individual and collective efforts done to protect environment.

Conclude the discussion by explaining how an understanding of our environment, its various components and principles governing it forms a pre-requisite for appreciating the relevance of teaching EE at the various level of educational system.

Activity

Take the teacher on a nature walk in the campus.

Ask them to make a list of all the things (elements) they observe during their walk and classify them on the basis of some characteristics.

Assemble them back in the class. Help them to generate a comprehensive list of the elements observed by them on the black board and classify them in terms of living and non-living, natural and man-made or using any other classificatory system.

- Keeping the list of elements observed by them help the teachers to identify the various aspects of environment, namely, physical, biological, cultural, economic, religious, etc.
- On the basic of the various aspects identified, encourage the teachers to define the term environment in their own words.
- Use **TRAN-2** to focus a few of the standard definitions on environment.
- Ask the teachers to read and understand the definitions and analyze them for the key terms used, perspectives and comprehensiveness of the definitions in terms of the various aspects of environment each one covers.
- Using **TRAN-3**, help the teachers consolidate their analyses and arrive at a definition of environment.
- Using the **Hand out – 1**, organize the game “ Web of Life”. Help the teachers to infer from the game the concept of interdependence and inter-relatedness of various elements in the environment.
- Using **TRAN-4**, discuss some of the key principles of environment.
- Conclude the session by recapitulating the main points.

Session 2: Place of Humans in the Environment

- Recapitulate the session on environment, its components and principles through appropriate questions..
- Using TRAN-5, explain some of the pressures on India’s environment. Generate a discussion on how these increasing pressures are upsetting the balance in the environment, leading to a variety of environmental disasters – warming up of the climate, changes in the monsoon patterns, flash floods, droughts, spread of diseases, etc.

Activity

Divide the group into three or four smaller groups.

- Let Each group discuss and identify a few problems of environment – at the local or immediate environment, state and national level. Ask them to identify the main causes of these problems and list them.
- Let the groups, for each of the problem, identify the main causes and human activities associated with it.
- In other words, the negative impact of human activities on the environment. Use **TRAN – 6** for the purpose.
- Using TRAN-7, explain the various environmental problems we are facing today and how they have been the result of human activities.

Activity

Let the teachers divide themselves into 3 or 4 smaller groups, as formed earlier. Provide each group with a copy of the report on Bhopal Gas Tragedy (Hand out-2) or any such case report. Ask each group to :

- a) Identify the main issues or problems caused by the gas leakage.
- b) Discuss, from an environmental perspective, which actions have caused the greatest damage to the environment.
- c) Discuss the consequences of the activities of man on the environment.
- d) Mention how humans, in turn, are affected by these environmental problems.

- Conclude the discussion on the impact of man's activities on environment by elaborating on how it is the greed rather than the need of humans which has led to environmental disasters. Help the teachers, through appropriate questions; arrive at the need and relevance of creating environmental awareness in people and the importance of Environmental Education.
- Conclude the session by re-focusing the main points such as, how man has been responsible for creating all the environmental problems, how these problems are having their repercussions on the life in general, and how education is a potential tool for creating environmental awareness in people enabling them to act for safeguarding the environment.

Session 3: Objectives, Characteristics and Approaches to EE

- Explain that **Education** as an important sector of the society plays a crucial role in imbuing people with the knowledge, the sense of purpose and the confidence essential for building a dynamic, vibrant and cohesive nation capable of providing its people with the wherewithal for creating better, fuller and more purposeful life.
- Explain how Environmental Education (EE) has been recognized all over the world as a viable tool for creating environmental awareness in people and motivating them to act for the environment.
- Explain that EE offers teachers a rich and diverse array of activities and opportunities to enrich their classroom teaching and help children develop positive attitudes and behaviours towards environment.
- Keeping the various potentials of EE discussed, encourage the teachers to reflect on what constitutes EE.
- Using **TRAN-8**, focus some of the definitions of Environmental Education. Ask the teachers to analyze each of the definitions and identify the main aims or objectives it projects.
- Use **TRAN-9** to consolidate their discussions on the objectives of EE. Explain each category with suitable examples.

- Recall to them that for effective teaching, these broad objectives of EE need to be specified in behavioral terms.
- Help them recall the different categories of behavioural objectives as enumerated by Benjamin Bloom-Knowledge, Understanding, Application, Analysis, Synthesis and Evaluation – and how sub-categories under each of them are used for specifying teaching objectives (Bloom’s Taxonomy).
- Conduct the following activity to enumerate how the broad objectives of EE can be specified for teaching purposes.

Activity

Let the teachers divide themselves into 3 or 4 smaller groups, as done earlier. Give each group one of the categories of the EE objectives such as Awareness, Knowledge, etc.

Let the members discuss the objectives in detail and identify the behaviours it suggests, key terms in it, whether they can be specified in behavioural terms, etc.

By choosing a topic from the textbook, let the groups specify the objective in behavioural terms for the chosen content. (The green textbooks supplied to you in the workshop can help you in identifying topics for the group exercise.

- Reassemble the groups and list the various behaviours envisaged by the groups on the black board.
- Using the exemplar given in **TRAN-10**, consolidate their understanding on specifying the EE objectives in behavioural terms.
- Explain that to attain these objectives, a teacher has to plan and organize a variety of teaching-learning experiences. Mention that, like other disciplines, EE also has several key characteristics which help in choosing appropriate teaching methods for realizing these objectives.
- Using **TRAN-11**, discuss the key characteristics of EE and their importance in planning EE experiences.
- Conduct the following activity to enumerate how they could apply their understanding of the characteristics in their teaching

Activity

Divide the teachers into 3 or 4 smaller groups, as done earlier.

Allot each group with 3 or 4 key characteristics and ask them to analyze these characteristics for their significance and relevance.

Let the groups, for the content chosen from the textbooks earlier for enumerating the specific objectives, apply these characteristics and examine how they can be incorporated in its teaching.

- Reconvene the groups and consolidate their discussion by focusing the various approaches used EE, namely, *Educational in, Education about and Education for*.
- Organize the following activity to help the trainees understand the importance of these approaches.

Activity

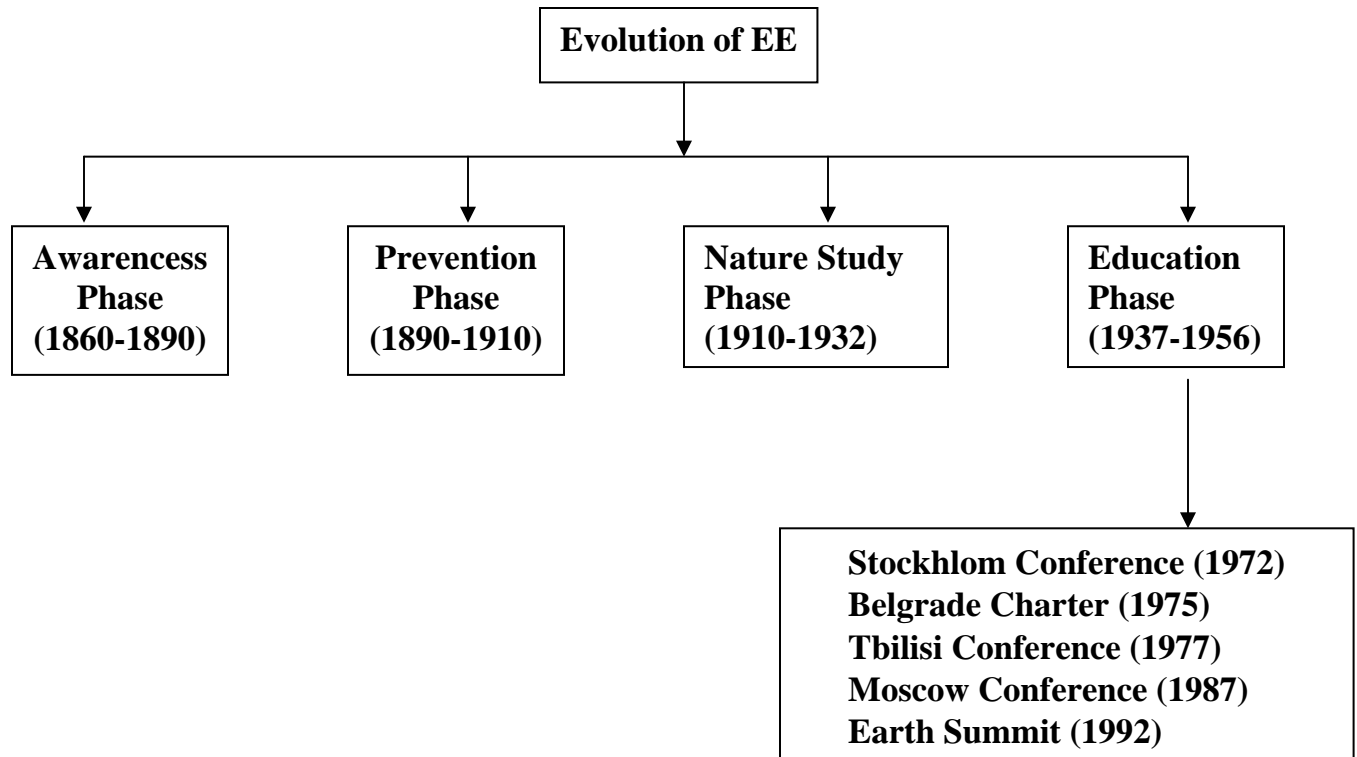
Divide the teacher into two smaller groups.

Provide each group with one of the exemplar approaches provided in **Hand out-3**.

Let the group analyze the approached critically for the :

- the approach/s each one suggests
 - their potential in achieving various EE objectives
 - their appeal to students
 - practicality and feasibility in terms of time
-
- Using **TRAN-12**, consolidate their understanding on the approaches to EE.
 - Conclude the session by debriefing the teachers on :
 - The importance and relevance of EE at the School stage.
 - Role of man in conservation of the environment.
 - The different objectives which EE aims at, its key characteristics and approaches.

Environmental Education – Historical Perspective



Definitions of Environment

“ Environment is the sum of all external conditions and influences affecting the organisms. The environment may be divided into a biotic (nonliving) and biotic (living) components. The environmental components act as a whole”.

[Essential Leanings, CEE]

Environment includes all that is “within” and “without” us. It is our surroundings. It includes all the living and the nonliving objects as well as the situations and factors which affect them directly and indirectly.

[Anonymous]

“Environment is not only the sum of all the material things that constantly interact with each other and which make up the mosaic of the country side landscape. It is much more than this. It also includes the economic structures and the outlook and habits of the people in different parts of the world”.

[UNESCO, 1990]

“Environment includes a complex of natural, built and social components in the life of humanity and that the social components constitute a set of cultural, personal values and interrelations”.

[Tbilisi, 1997]

“I need to inspiration other than nature’s. She has never failed me as yet. She mystifies me, bewilders me, sends me to ecstasies”.

[Mahatma Gandhi]

Dictionary meaning of Environment

“Environment is the complete range of external conditions, physical and biological, in which can organism lives. Environment includes social, cultural, and (for humans) economics and political considerations, as well as the more usually understood features such as soil, climate and food supply”.

[Oxford Dictionary]

TRAN- 4

Principles of Environment

1. Environment consists of abiotic and biotic components and they interact with each other.
2. Environment is dynamic and nothing remains static in it.
3. In environment an action may have more than one consequence.
4. There is stability and balance of elements in nature.

TRAN – 5

Pressures on India’s Environment

Population	India’s population is going to cross one billion. It has put a high premium on the natural resources and life supporting systems.
Land	Total land area of India is 329 million hectares. Over 175 million hectares of land is degraded in one way or the other. Degradation is caused by water and wind erosion, salinity and alkalinity and river erosion. Per capital availability of land is only 0.48%. Mal-land ration (arable) is less than 0.27%.
Soil	Almost 6000 million tones of soil is eroded every year, bringing down the productivity of the land.
Loss of Wildlife	Excessive loss of habitat is leading to extinction of plant, animal and microbial species. Over 1500 plant species are threatened. 81 species of mammals, 47 species of birds, 15 varieties of reptiles, 3 species of amphibians and a large number of butterflies, moths and beetles are endangered.
Number of animals of feed	Exceeds 500 million. There is excessive over grazing and pressures on the grassland.
Pollution	‘Most of the water bodies, which are major constituents of our life support systems, are polluted. There is widespread pollution of other natural resources like air, land, etc. Pesticides and fertilizers has caused degradation of precious wet lands. On an average 0.33 to 0.35 kg/per person/ per day of garbage is generated, which is causing pollution of land and water bodies.

Human activities with their negative impact on environment

Activities	Negative impact
Agricultural	
Hunting and aquaculture	
Construction of buildings	
Industrial	
Mining	
Logging	
Energy harnessing	
Transportation	
Socio-Cultural	

A Few major environmental Problems

- Pollution
- Biomagnification
- Greenhouse effect and Global warming
- Ozone depletion
- Urbanization
- Industrialization
- Deforestation
- Desertification
- Depletion of natural resources

Definitions of Environmental Education

The goal of EE is “to develop a citizenry which is aware of and concerned about the total environment and its associated problems and that has the knowledge, attitudes, motivation, commitment and the skills to work individually and collectively towards solutions of current problems and prevention of new ones”.

[Belgrade Charter, 1975]

EE is an across the curriculum approach to learning which helps individuals and groups to understand the environment with the ultimate aim of developing caring and committed attitudes that will foster the desire and ability to act responsibly in the environment. EE is also concerned not only with knowledge, but also with the feelings, attitude skills and social action.

[Australan Association of EE].

The Tbilisi conference, 1977 summarizes Environmental education as an integral part of the educational process. “EE should be centered on practical problems and be of an interdisciplinary character. It should aim at building up a sense of values, contribute to public well being and concern itself with the survival of the human species. Its force should reside mainly in the initiative of the learners and their involvement in action and it should be guided by the both immediate and future subjects to concern”.

[Tbilisi, 1977]

EE is the interdisciplinary process of developing a citizenry that is knowledgeable about the total environment – including both it natural and built aspect – that has the capacity and the commitment to engage in inquiry, problem- solving, decision – making and action that will assure environmental quality.

[Disinger, 1993]

Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter relatedness among man, his culture and his biological surroundings. Environmental education also entails practice in decision making and self formulation of a code of behaviour about issues concerning environmental quality.

[Nevada Conference, 1970]

Objectives of Environmental Education

- Awareness:** To help the individuals and social groups acquire awareness and sensitivity to the total environment and its associated problems.
- Knowledge:** To help the individuals and social groups acquire basic understanding of the total environment and its associated problems.
- Attitudes:** To help the individuals and social groups acquire a set of values and feelings of concern for the environment and motivation for actively participating in environmental improvement and protection.
- Skills:** To help the individuals and social groups acquire the skills for identifying and solving environmental problems.
- Evaluation :** To help the individuals and social groups evaluate environmental measures and educational programmes in terms of ecological, political, economic, social, aesthetic and educational factors.
- Participation:** To help the individuals and social groups with an opportunity to be actively involved at all levels in working towards resolution of environmental problems.

Exemplar on specifying objectives

Concept: Energy

Sub Concepts: Potential energy, kinetic energy, Sun as the source of energy, transformation of energy, law of conservation of energy, energy loss, and renewable, non-renewable and alternative sources of energy.

EE Objectives	Instructional Objectives
Awareness	Awareness of : <ul style="list-style-type: none"> - The different sources of energy, - The importance of Sun as a source of energy, - The need for reduced consumption of fossil fuels and conservation of the exhaustible resources, - Benefits of using alternatives sources of energy, - Energy conserving practices, etc.
Knowledge	Knowledge : <ul style="list-style-type: none"> - About energy flow in food chains, - Different biogeochemical cycles, - Research in the fields of alternative sources of energy.
Attitudes	Favourable attitudes : <ul style="list-style-type: none"> - Towards adopting energy saving practices in their homes, schools, work places etc. - Towards Solar energy as an inexhaustible source of energy.
Skills	Skills : <ul style="list-style-type: none"> - Of developing and using energy saving devices.
Evaluation	Evaluating : <ul style="list-style-type: none"> - The efficiency of energy saving devices and their capacity to conserve energy
Participation	Participating in : <ul style="list-style-type: none"> - Environmental awareness campaigns. - Camps conducted to increase the efficiency of vehicles, automobiles etc.

Key characteristics of EE

1. **Interdisciplinary and Multidisciplinary** – EE should be a part of every subject taught.
2. **Multilevel** – EE should be taught at all grade levels from kindergarten to grade twelve and beyond.
3. **Global views** – EE involves the development of an integrated environmental ethic.
4. **Concepts** – EE entails awareness and understanding of basic ecological & environmental concepts (e.g. limiting factors, carrying capacity).
5. **Process development** – EE involves development of cognitive, affective and skill behaviour processes, especially for the development of attitudes and values which motivate people of become involved in environmental problem solving.
6. **Problem solving** – EE involves helping students develop processes of thinking which could be more effective in resolving complex environmental problems.
7. **Values clarifying** – EE involves exploring personal assumptions, values, and feelings towards self and society as well as relationship of these to the natural world.
8. **Systems thinking** – EE implies that one must learn to think in terms of systems interacting factors that is to think not only rationally about the parts of a complex system but to develop an intuitive feel for the dynamic behaviour of such a system as a whole.
9. **First-hand experiences and activities** – EE teaching requires a commitment to the development and utilization of all situations where learning can be best nurtured through first-hand experiences and activities which foster a deep respect and love for the natural world.
10. **Environmental issue oriented** - EE entails use of local environmental issues, as well as case studies, role playing, simulations and games which provide opportunities to examine and participate in the complexities of decision making, understanding of personal and alternative values and the actual operation of systems natural and manmade.

TRAN-11 (Contd.)

11. **Present and future orientation - EE** does not exist in the reactive sense only but continually assesses the present and promotes an ideology which examines desirable images of the future.
12. **Active participation** – The breadth of EE and variety among students implies that individual learning programmes involving certain degrees of independent study of a diverse number of interdisciplinary environmental problems will be appropriate.
13. **Individual learning** – The breadth of EE and a variety among students implies that individual learning programmes involving certain degrees of independent study of a diverse number of interdisciplinary environmental problems will be appropriate.
14. **Team approach to teaching / learning** – EE involves teacher participation in environmental problem solving learning situations as team members.
15. **New productive student-teacher relationships** – Personal responsibility and group interaction – EE places an emphasis on problem solving which implies many things including recognition of the values and biases of oneself and other and responsibility of working individually and collectively in a process of informed environmental decision making.
16. **Community oriented** – EE involves the entire community as a learning environment in the achievement of environmental education objectives.
17. **Field studies (urban and natural environments)** – EE includes provision of field experience – that group of first – hand experiences which are best suited to areas outside the classroom and school.
18. **Communications networking** – EE entails communication skills as a process which can provide more complete and accurate images about environmental problems. It is important to understand how environmental information flows through networks linking the members of a system together.
19. **Coordination and cooperation – International, national, regional, and local** – EE promotes the value of and necessity for local to international cooperation in the solution of environmental problems.

TRAN-11 (Contd.)

20. **Flexible administrative organizational patterns** – Institutional flexibility is required to copy with evaluation and provide adequate instruction, given the interdisciplinary problem – solving nature of EE.
21. **Reform of educational processes and systems** – EE implies modification of existing educational structures.
22. **Curriculum development base** – EE, because of its programme component and support elements and strategies, implies active involvement in the development of the new curricula.
23. **Curriculum evaluation base** – Evaluation is required for effective program development in EE so as to guide selection of adequate EE programmes, examine all processes that lead toward achievement of intended outcomes, and judge its appropriateness for support or adoption.
24. **Research Base** – EE requires more objective evidence of its benefits and effects in order to buttress rhetoric with instances of success and failure.
25. **Teacher education** – EE involves continued improvement in professional development through in-service and pre-service channels to assist in the development of an environmental ethic.

TRAN – 12

Approaches to Environmental Education

Education in the Environment

Experience provided in the environment, be it in a street, a park, outside the school campus, school garden etc, This can be used to give reality relevance and practical experience to learning. It enables direct contacts with the environment.

Education about the environment

This will include all those experiences provided to enable children understand how natural systems work and the impact of human activities upon them.

Education for the environment

Education for the environment aims to promote a willingness and ability to adopt life styles that are compatible with the use of environmental resources.

Web of Life

Place: A big room or playground.

Group size: 15-25 participants or even more.

Materials required:

- A roll of strong string measuring 100-200 meters
- Name tags, safety pins

Time needed: 45 minutes

Background knowledge: The game can be played effectively if the participants have knowledge of the various abiotic and biotic elements in nature.

Organizing the game

Step 1 Ask the participants to go out of the classroom and observe as many things as possible in the environment. Let them record all the things observed.

Step 2 Re-assemble the participants. Develop a list of all the elements observed by them. A sample list is provided below. You can add anew more elements to the list. Ensure that primary elements like Sun, soil, air and water are always present in the list. Similarly ensure that there is human being in the list as he is responsible for all the damage caused to the environment.

Sun	Soil	Sparrow	Turtle	Mosquito	Air	Tree	Fish	Insect	Lizard
Water	Fruit	Eagle	Frog	Leaf	Shrub	Monkey	Spider	Snake	Mongoose
Wood	Buffalo	Human	Being						

Step 3 Allow each of the participants to identify himself or herself with one element in the list and prepare a name tag by drawing a sketch of the element with its name. A sample name tag is provided in the box.

Step 4 Ask the group to sit in a circle displaying their name tags on their dress. If the group is too large, you can select 20 to 25 participants to play the game.

Step 5 Give a big-roll of string to the participant wearing the name tag Sun.

Step 6 He/she winds one end of the string to the index finger and throws the ball to any other element of nature with which he/she sees a relationship. For example, the participant representing Sun winds the string to his/her index finger and passes in to the element Tree, as trees depend on Sun for manufacturing their food. Similarly, the element Tree may pass on the thread to an insect with which its sees a relationship. This procedure continues till all the elements are connected. By the time the roll reaches everybody a web like pattern is formed.

Step 7 Ask the participants to hold the whole web tightly at chest high, so that it remains tight even when pressed down in the middle. Focus their attention on the intricacies of the pattern formed. Ask the participants to lower the web so that every body can see the intricate pattern of the web.

Step 8 Reassemble the group develops a discussion using the following questions.

- What pattern did you notice on the completion of the game?
- What is the significance of starting the game with the Sun?
- What conclusions can you draw from the game?
- Why and how is the balance in nature being disturbed by man
- List some suggestions for promoting the interrelationship seen in nature.

Bhopal Gas Tragedy – A Case Report

Bhopal Gas Tragedy (1984)

The MIC gas leakage which happened in Bhopal in 1984 has been regarded as the worst industrial accident related to air pollution. Bhopal is a small but densely populated industrial city in Madhya Pradesh. Around 200,000 Bhopal residents were affected by the leakage of the poisonous gas from the Union Carbide Pesticide factory or plant there. At least 5000 people were killed and the doctors estimated that more than 50,000 people have been seriously affected in one way or the other and many may go blind.

MIC, a short form for Methyl-isocyanate, is a toxic gas used in the manufacture of pesticides. It reacts quickly with water and causes the lungs to swell and eyes to develop vision problems and subsequently cataract. Many died in Bhopal because of the choking of their lungs with the gas the excessive body fluid.

Bhopal's victims continue to suffer and die. Out of every 3 children born to women who were pregnant on the night of the disaster and were exposed to the gas, only one survived. In the subsequent years, out of 1,350 new born babies, 16 were physically deformed and 60 were premature births. Deformities included children suffering from congenital hearts, impaired sight and mental retardation. High levels of thiocyanates were detected in water in Bhopal and continued exposure to this way cause adverse functioning of organs like thyroid, which in turn may effect pregnancy.

The vegetation in an area of 3.5 sq. kms. Around the Union Carbide factory at Bhopal was severely affected. Leaves bore the brunt of the damages. Consumption of fruit from the trees in affected localities – especially ber, mango, papaya, and tamarind was avoided for that season. Cultivated plants were more damaged than the wild plants. Plants submerged in water were less affected than the plants exposed to the gas.

Approaches to Environmental Education – a few classroom experiences

Below is given a description of the teaching-learning experiences provided to students by two different teachers on Waste management. Read these carefully and analyse them for their merits in terms of the extent to which they area a) achieving the objectives of EE and b) reflecting the key characteristics of EE. Compare the approaches for their relative advantages.

Approach 1: This is a description of the lesson planned by Ms. Rama for her class. The lesson involved taking the students to a near by garbage site.

At the site, the students were made to observe a) different types of things dumped into the garbage bin, b) different types of animals found near the garbage, c) the unhygienic atmosphere – smell, ugly site of things being spilled all around, breeding of flies and mosquitoes – the garbage, has created in the locality. A few students were also made to segregate a portion of the garbage into dry, wet, toxic wastes. They were also asked to classify them further as bio-degradable, non-biodegradable, recyclable/non-recyclable, reusable, etc.

Back in the classroom, Ms. Rama summarized all the different observations of the students on the black board. She helped them to analyse and trace the sources of the different things that constituted the garbage. At the end of the class period, she gave the following questions to the students of ponder.

- Which of the several things disposed (observed during the visit) as waste could have been reused or recycled ?
- How to minimize garbage production ?
- What are some of the ways by which the garbage could be safely disposed ?

As a home assignment, Ms. Rama asked the students to observe things in their homes which are dumped as garbage and how they are disposed. Also, the students were asked to discuss with other members in their family the problems associated with garbage. The students were asked to write the steps that could be taken to segregate the waster in their homes and how it could be safely disposed. Most importantly they were asked to indicate which among the several steps discussed in the classroom, they would be able to implement in their homes.

Approach 2: This is a description of the lesson planned by Mr. Patel for his class. The lesson involved conducting a survey to collect information on the different types of wastes generated and how they were segregated in the neighborhood.

The survey focused on the following area:

- a) Different types of things that constitute waste;
- b) The nature of the wastes – dry, wet, toxic and non toxic;
- c) How often the dust bins are cleared? ;
- d) Is there regular collection of the waste in the locality;
- e) Do the residents know what happens to the waste once it is removed from their area.

Back in the classroom, Mr. Patel asked the students to present their findings in the form of a report. He later consolidated the information collected by the students on the black board. Their understanding were reinforced by showing them a documentary and discussing the different aspects of garbage disposal.

As a home assignment, Mr. Patel asked the students to prepare charts and present their reports in the form of a table so that it would present a comprehensive picture about the locality.

Evolution of Environmental Education

Kirk (1985) has tried to analyse how two separate movements, namely conservation and nature study movement and the outdoor education movement have acted as the foundation for modern education. He has described four major chronological phase. Each phase has contributed to the evolution of the next phase.

Awareness Phase: (1860-1890)

Various powerful writers awakened many to recognize that man was not a single and solitary figure above all the living and nonliving systems, but rather an integral part of the systems.

Preservation Phase: (1890-1910)

In this phase several writers popularized a need for the conservation of the environment and the natural resources. National Conservation commissions was established in some countries. Forests were conserved not merely for their products but also resources for recreation relaxation and for research study.

Nature study phase (1910-1932)

The greatest catalyst was the establishment of the American Nature Study Society (1908). In this phase efforts were made to develop an understanding and appreciation of beauty, majesty and mystery of the nature. Valuable materials were also prepared which served as a tool and guide for aspiring teachers and naturalists.

Education Phase (1937-1956)

In this phase, people became aware of the importance of learning about the inter relationships of and interactions between living and non living things. Efforts were made to train teachers in the use of natural areas as an extension of their classrooms. Several conservation agencies were established which began to publish materials for the conservation of the forests, wild life and soil.

Such a world wide concern regarding the conservation and improvement of the environment for the human kind promoted United Nations to convene a conference on the Human Environment in Stockholm (5th June 1972).

Stockholm Conference, 1972

This was the first U.N. Conference on Human Environment, which was a resultant of the 1963 decision of the General Assembly that action at the national, regional and international level was needed to limit the impairment of the human environment and protect and improve man's natural surroundings. It was attended

by 11 nations, UN agencies and non governmental organizations. This was an important event in the history of Environmental education because for the first time several countries from all over the world assembled together to work out a practical plan of action for the benefit to all mankind.

The conference made 109 recommendations which related to five important themes.

1. Environmental aspects of natural resource management
2. Planning and management of human settlements for environmental improvement.
3. Identification of major pollutants and their control.
4. Educational socio cultural and informational aspects of environmental issues and
5. Environment and development.

While formulating the action plan, the recommendations were categorized under three sections, Environment assessment, Environmental management and support management.

It was this conference that initiated the idea of observing the world environment day on June 5th every year to create awareness among people through organizing various activities concerning the environment.

The recommendations numbering 95-101 of the conference emphasized the need of Environmental Education and provided impetus, since it was realized that Environmental Education would help every individual to acquire the essential knowledge and skills and would develop proper attitudes and commitment to improve the environmental quality.

The UNESCO-UNEP- International Environmental Education Programme (IEEP)

In response to one of the recommendations of the Stockholm conference, a special agency namely United Nations Environmental Programme was formed. Recommendation 96 contributed to the foundation of and provided the frame work for a co-operative effort in international Environmental Education. As a result the international programme in Environmental Education was launched by UNESCO-UNEP in 1975. It aimed at promoting the exchange of information and experiences, research and experimentation, training of personnel, development of the curricula and support materials, and international co-operation in the field of Environmental education. IEEP also hosted an international workshop on Environmental education at Belgrade in 1975.

Belgrade Charter

IIEP in fact was responsible for the many developments in the field of EE because of its constant and consistent efforts. It sponsored a large number of discussions at the regional levels allowing for the exchange of view and information related to the policies and strategies needed to facilitate assessment and to conceptualize all aspects of Environmental Education. The various information obtained regarding the state of the environment made the experts conduct a series of meeting which culminated in the international workshop held in Belgrade 1975.

Sixty five countries participated in this workshop. This was followed by the regional and sub-regional meetings which covered the main regions of the world.

The deliberations of the workshop came out in the form of a document popularly known as “The Belgrade Charter”. The charter emphasized the need for Environmental Education and proposed a number of guiding principles for Environmental Education programmes to suit the universal and socio-economic goals.

The charter also stressed that EE should:

- Be a continuous and life long process.
- Be interdisciplinary and multidisciplinary in nature.
- Consider the environment in its totality.
- Emphasize active participation in preventing and solving environmental problems.
- Examine major environmental issues from a world view point giving due importance to regional differences on Belgrade charter.
- Promote the value of local, national and international cooperation in solving environmental problems.
- The efforts should be reviewed periodically to assess the progress and plan out further action.

Before the conference at Tbilisi, the IIEP has conducted number of workshops and meetings on Environmental education at various parts of the world. Some of them included a workshop at:

- **Brazzaville, Africa, 1976**
- **Kuwait, Arab Countries, 1976**
- **Bangkok, Asia, 1976**
- **Helsinki, Eurpoe, 1976**
- **Bogota, Latin America, 1976**
- **Saint Louis, North America, 1976**
- **Tbilisi Conference, 1977**

These meetings helped in preparing the ground for Tbilisi conference. The outcomes of these meetings documented, and these along with several other major recommendations served as the resource material for the Intergovernmental Conference on Environmental Education held at Tbilisi, Georgia in 1977. This

conference brought together representatives from government as well as non government agencies and organization to discuss and recommend appropriate measures for protecting environment at all levels. It gave a global thrust to Environmental Education, recommending further intensification and expansion of the Environmental Education programmes. It endorsed the goals and objectives formulated in the Belgrade workshop. The conference also charted an action plan at the national and international level for the promotion and development of Environmental Education. It reinforced the major goals of Environmental Education which were to deepen awareness and concern among the world's population about the ecological, economic, political and social interaction and interdependence in the environment and their problems.

The 41 recommendations of the conference provided a basic frame work for planning, guiding and improving Environmental education at all levels. It emphasized that suitable opportunities should be provided to the people to acquire knowledge and skills and to develop proper values and attitudes towards the environment.

The objective of Environmental education established by the conference were to develop the following qualities in individuals and in social organizations .

- The objectives of Environmental education as given in the Tbilisi conference;
Basic understanding to knowledge of the environment and its interrelationship with the people.
- Social values and attitudes which are in harmony with the environmental quality.
- Skills of solving environmental problems.
- Ability to evaluate environmental measures and educational programmes and
- A sense of responsibility and urgency towards the environment so as to ensure appropriate actions to solve environmental problems.
- To meet these objectives the conference also outlined a number of guiding principles :
- It emphasized once again what should be the nature of EE – as a forward looking and an continuous life long process, consider environment in its totality, follow a problem solving and interdisciplinary and multidisciplinary approach.
- It outlined the strategies for the promotion of Environmental education at the national level.
- It emphasized the pre-service and the in-service training of teachers in Environmental education, preparation of teaching material, dissemination of information through mass media.

Subsequent to this, in the Nairobi Conference, 103 nations met on the 10th anniversary of Stockholm conference (1982) to reaffirm their commitment to the Stockholm declaration and plan of action.

Lang-kawi Declaration on environment:

The Lang-kawi Declaration on the environment was drawn up by the heads of government of the Common wealth countries in conjunction with the conference held in Kuala Lumpur, Malaysia 1989. They were deeply concerned with the deterioration of the environment and the threat it had posed on the well being of the present and the future generations. They resolved to act collectively and individually to protect the environment and to carry on programmes and activities that would help in sustainable development, including the development of new and better techniques in integrating the environmental dimension in economic decision making.

The Earth Summit Conference at Rio DE Janerio, 1992 and the Agenda 21

The concept of sustainable development was emphasized further at great length in the Earth Summit Conference held at Rio De Janerio, 1992. It put forward a proposal based on the declaration and the recommendations of the Tbilisi conference.

It gave a new angle, a new orientation to education by stressing the need for sustainable development. The conference emphasized that Environmental Education and Development Education should deal with the dynamics of both the physical / biological and socio-economic environmental and human development. It should be integrated in all disciplines and should employ formal and non-formal methods and effective means of communication.

It should increase public awareness and sensitivity to environmental and developmental problems and involvement in solving them. It should foster a sense of environmental responsibility and greater motivation and commitment towards sustainable development.

Thus we see that the Environmental Education has emerged with international introspection and through the formal approval of the entire community as an essential tool to protect not only the present environment which is facing a number of serious threats but for the survival of the human life itself.