Classes VI – VIII

Aims:

1. To understand facts and concepts concerning various aspects of the environment.
2. To recognise dependence of human life on the environment.
3. To identify local and region specific environmental problems.
4. To understand the role of individuals, society and the government in protection, preservation and conservation of environment.
5. To develop awareness about rules, regulations and legal provisions for protection, preservation and conservation of the environment.
6. To develop skills for observation, collection, comparison, classification, analysis and communication.
7. To make judicious use of resources.
8. To adopt proper ways for management and disposal of waste.
9. To develop awareness, desirable skills and attitudes and appreciation for the protection, preservation and conservation of the environment and cultural heritage.
10. To imbibe values like love and respect for nature and its laws, respect for the rights of others including animals.

The content of Environmental Education will have to be further strengthened in its cognitive, affective and conative components by providing additional inputs in the form of investigations, projects, co-scholastic activities and the like. This will facilitate development of necessary awareness, attitudes and skills for promoting positive participatory action.

Class VI

I. Knowing the Environment

- The environment – social and natural.
- Human dependence on the environment.
- Interdependence of plants and animals.

II. Natural Resources and their Utilisation

- Natural resources – air, water, land (soil and minerals) and sunlight (energy); significance for growth, development and survival of all organisms.
- Utilisation of resources for developmental and social activities – production of food, electricity and fuels, construction and other infrastructure.
- Overutilisation of resources.

III. Waste Generation

- Generation of waste and its sources.
- Types of waste – solid, liquid and gaseous.
- Hazards of waste accumulation.
- Waste, community health and sanitation.

IV. Management of Waste

- Waste and its disposal – solid waste (physical removal and dumping), liquid waste (drainage and sewer system) and gaseous waste (discharged directly into air).
- Conditions for proper waste management – co-operation of individuals and community; proper functioning of governmental and local bodies.

Suggested list of Activities

The activities suggested below are neither exhaustive nor prescriptive. Teachers may design their own set of activities keeping in view the overall objectives of teaching and learning of Environmental Education at this stage. They will have to make use of local flora and fauna and the available resources and facilities and take cognisance of local environmental problems. The students should be encouraged to initiate action on their own.

1. Identify various sources from which items of daily use are obtained and group these as:
   - plants and animals;
   - soil, air and water;
   - fuels;
   - metals;
   - plastics.
2. Visit a nearby locality (market/colony/village pond) and collect information about:
   - prevailing sanitary conditions (littering or accumulation of garbage, absence or choking of drains);
   - system for disposal of solid waste managed by the residents and civic agencies;
   - flies, mosquitoes and other insects, rodents and stray animals thriving on the accumulated garbage/stagnant water.

   This may be followed by participating in discussions on the sanitary conditions of the visited site to infer possible impact on the environmental conditions. Suggestions for improving the situation may also be put forth.
3. Motivate residents to use dustbins or garbage pits.
4. Find out about the various agencies responsible for maintaining civic facilities in the area and seek their attention for maintaining cleanliness.
5. Visit a nearby river, pond, well or community water tap/hand pump and collect information about:
   - the extent of wastage of water;
   - possible sources that may contaminate or pollute water;
   - condition of cleanliness and drainage.

   This may be followed by discussions to initiate appropriate follow up action to improve the situation.
6. Check for leakage of taps in school and at home and take appropriate measures to minimize wastage of water.
7. Switch off electric lights, fans, TV and other gadgets when not in use.
8. Participate in debates/discussions/exhibitions/talks on environment issues in school.

Class VII

I. Environment and Natural Resources

- Water – a precious resource; essential for life and life activities, a habitat of plants and animals (fresh and marine), sources of water (fresh and marine) – rain, snow, ponds, wells, lakes, rivers and seas.
- Air – atmosphere as reservoir of air; role of atmosphere – a blanket for the earth, for maintaining humidity and temperature, a source of gases and medium for dispersal of gaseous wastes.
- Soil – a medium for growth of plants, types of soil, habitat for organisms, facilitator for percolation and retention of water.
- Forests – a habitat for plants and animals, an agent for percolation and retention of water; maintaining ground water level; prevention of soil erosion; maintaining air humidity; a source of firewood, timber, fruits, lac, resins and medicinal plants.

II. Man and Environment

- Response of living beings to changes in environment – adaptation in plants and animals.
- Modification of environment by human beings to protect themselves against changes and to meet their needs.
- Effect of human activities and population growth on agriculture, harnessing of energy, housing, industrial development and other areas of consumption and social activities (an elementary idea).
- Consequences of human activities – stress on land use, water sources, energy and mineral resources; forests, ocean life; environmental degradation.
- Role of individuals in maintaining peace, harmony and equity in nature; good neighbourly behaviour; use and misuse of common property resources.

Suggested list of Activities

The activities suggested below are neither exhaustive nor prescriptive. Teachers may design their own set of activities keeping in view the overall objectives of teaching and learning of Environmental Education at this stage. They will have to make use of local flora and fauna and the available resources and facilities and take cognisance of local environmental problems. Students should be encouraged to initiate action on their own.

1. Collect samples of soil from various places and study similarities and differences between them based on their physical characteristics.
2. Visit nearby localities and study the relation between the types of vegetation and the nature of soil.

3. Collect samples of rainwater in the beginning and midway through a rain spell and compare the samples for impurities present.
4. Collect information from different sources for two weeks (newspapers, radio and television) about temperature, humidity and rainfall and study the pattern of change in respect of each parameter.
5. Collect information from different sources (elders in the community, newspapers, television, Internet and official records) about the water bodies like ponds, wells, *jhohars* lost in the locality, village or region. Find out the reasons (like silting, disuse, filling for reclamation of land). Participate in discussions on the impact of these changes on availability of water, vegetation, habitat and social life.
6. Collect information about changes in land use, availability of water, forests, livestock and mineral resources of the locality/village/region from different sources (elders in the community, newspapers, television, internet and official records) and have discussions on the same.
7. List the crops grown in your area and prepare a record about the sowing season, duration of maturity, sources and periodicity of irrigation and yield of each crop.
8. Collect information about the prevalent methods of growing plants for forestry in the region.
9. Plant trees in the school compound (or any other area) and look after them (this may be done as a class/group activity as a part of *van mahotsva* programme, wherever possible).
10. Visit nearby localities to observe how plantation prevents soil erosion.
11. Identify and collect relevant information about commercial, industrial or social activities at the local level that may have an impact on the environment. Disseminate information through hand-outs and school bulletin board.
12. Make a collection of clippings of news items, features, photographs, posters, cartoons, advertisements or any other format, about various issues of environment, including community hygiene, sanitation and pollution. Collate and disseminate information through charts, posters, collages, bulletin boards or through any other mode.
13. Participate in co-scholastic activities like observance of world environment day and *van mahotsava,* eco-clubs, study tours, debates, exhibitions and quiz competitions.

Class VIII

I. Balance in Nature

- Eco-system – interaction between living and nonliving components, structure and function.
- Energy flow through ecosystem(food chain, food webs); examples of terrestrial and marine food chains.
- Balance in nature – importance of eco-system.

II. Impact of Population on Environment

- Impact of population growth on – eco-system, human settlements, land distribution.
- Stress due to population growth on – common social facilities and civic services.
- Increase in consumption, encroachment on monuments.

III. Harnessing Resources

- Sources of energy – renewable and non renewable sources, availability and potential (Indian context).
- Renewable sources – solar, wind, hydro-energy, ocean (tidal), biomass including bio wastes.
- Non-renewable sources – coal, petroleum and its products, natural gas.
- Agriculture and animal husbandry – impact on environment.
- Utilization of resources for industry – processing and production of goods; need for planning and management; adoption of efficient and environment friendly technologies, industrial waste management practices.
- Environmental concerns – regional and national.

IV. Environmental Pollution - Cause and Effect

- Emerging lifestyles in modern societies – overutilisation of resources; increasing consumption of energy (electricity and fuels), materials and facilities; synthetic materials – plastics, detergents, paints and refrigerants; advantages and disadvantages of using them.
- Factors affecting environment – overexploitation of resources, population growth, industrialisation, use of synthetic materials.
- Pollution of soil, air and water – sources, impact on physical environment and all forms of life, control and preventive measures (modern and traditional).
- Noise pollution – sources, impact and preventive measures.
- Disasters – natural and man-made, major types and their causes, impact on environment and human life.

- Impact of environmental degradation on – natural habitats, living forms (endangered and extinct species) and domestic animals.
- Impact of environmental pollution on human health – indoor and outdoor pollution, pollution related diseases (respiratory, dietary, physiological, genetic, psychological), occupational hazards and disorders (local examples).
- Role of individuals, community and government in planning, decision-making, legislation and social action for prevention of pollution and improvement of environment.

Suggested list of Activities

The activities suggested below are neither exhaustive nor prescriptive. Teachers may design their own set of activities keeping in view the overall objectives of teaching and learning of Environmental Education at this stage. They will have to make use of local flora and fauna and the available resources and facilities and take cognisance of local environmental problems. Students should be encouraged to initiate action on their own.

1. Collect samples of water from different available sources – potable water, drain water, water stagnant in pits, industrial or factory discharge. Compare the physical characteristics and presence of suspended impurities and living organisms, in the water samples collected.
2. Conduct surveys in nearby localities on number of trees, types of trees, the products and other benefits obtained from them.
3. Observe and find out advantages and disadvantages of growing crops by transplantation and sowing seeds.
4. Make plans for kitchen garden or school garden. Identify suitable plants/trees, undertake plantation and look after them.
5. Prepare a list of local cottage industries and collect information about the types of raw materials, modes of procurement and disposal of waste. Infer the possible impact of these activities on the environment through discussions.
6. Prepare charts depicting different types of food chains or food webs.
7. Visit some of the sites like agricultural fields, factories, fairs, ponds, seacoast, tourist spots, garbage dumps in the locality and record the prevailing environmental conditions.
8. Identify commercial, social and cultural activities that may have a short term and/or long term impact on environment. Interpret the collected information to infer its impact on the environment. This may be done through discussions. The possible sources of information could be news items, features, photographs, posters, cartoons appearing in newspapers, magazines, journals or through questionnaires and personal interviews about one or more of the following:
   - air, water, land and noise pollution;
   - per capita availability/consumption of water, electricity and land;

- sources of potable water, water treatment plants and wastage of water;
- quantity of solid, liquid, degradable, non-degradable waste of the city;
- methods of disposal of wastes – drainage systems, sewer treatment plant, industrial effluents;
- sources of electricity, losses during transmission and utilisation of electricity;
- sources of pollution of water bodies including oceans;
- droughts, floods, cyclones, and their impact on environment;
- environmental problems caused due to developmental activities such as construction of roads, buildings, large dams;
- poaching/hunting of wild animals, illegal trading of animals' skin, paws, horns, ivory, cruelty towards animals;
- damage to forests by fires and diseases;
- deforestation, extinction of species especially that of wildlife;
- impact of overgrazing in a given area/region;
- programmes/projects related to protection and conservation of environment, success stories on these efforts;
- maintenance of wild life park, sanctuaries and forest reserves;
- rules, laws, legislations concerning environmental issues enacted by the government from time to time;
- agencies engaged in tackling environmental problems.

Communicate your findings through appropriate modes (like posters, charts, collages, cartoons, handouts, writing letters, street plays, rallies, campaigns) to all concerned. Brief individual or group report needs to be prepared for discussions.

9. Participate in campaigns organized by different agencies like NGOs, welfare associations, media, to draw attention of the community and/or local authorities to improve environmental conditions.
10. Participate in co-scholastic activities like observance of world environment day and *van mahotsava*, eco-clubs, study tours, debates, and quiz competitions.

Teaching Learning Strategies

The teaching-learning strategies for Environmental Education at this stage are to be designed in keeping with the local environmental conditions, both natural and social. At the same time, it should also aim to help students to develop a global perspective of the environment and problems related to it. The most important parameter, however, to be considered while designing teaching-learning situations would be to provide adequate emphasis on the development of positive attitude as well as love and respect towards environment. This implies that a conscious effort has to be made to provide enough opportunities to the students to participate in a variety of activities.

In order to transact Environmental Education effectively at the upper primary stage, an appropriate combination of the following strategies may be adopted:

- Focusing on mastery of basic skills by frequent drills and repetition of relevant exercises.
- Creating and arranging situations for observation of natural phenomena.
- Organizing demonstrations and involving students in discussions.
- Providing opportunities to identify simple environment related problems and studying them through surveys and projects.
- Helping students to acquire interpersonal and social skills to accomplish tasks through group learning.
- Providing opportunities to students to use their imagination and visualize their roles in attempting to find alternate solutions to environmental problems.
- Organizing group activities and group discussions.
- Organizing activity based learning.
- Providing hands-on experience sessions.
- Providing opportunities to develop skill of communicating their perceptions and ideas in verbal, written and visual forms like pictures, cartoons, maps, charts.
- Organizing field visits and field interaction followed by discussions.
- Utilizing various types of resource materials, both in print and non print, as well as expertise available in the community.

Evaluation

The assessment of students' achievement in Environmental Education would encompass all the three aspects of development i.e., cognitive, affective and conative. Both process and product evaluation techniques will need to be used. These will help in ascertaining the growth patterns, identification of strengths and weaknesses as also in utilizing systematic feedback for development of environment friendly habits, positive attitudes and desirable values amongst students.

Continuous and comprehensive evaluation using students' profiles and assigning grades would be desirable.

Proper records of students' progress would need to be maintained and their profiles so developed, would be utilized for effecting improvement leading to desirable understanding and behavioural actions towards the environment.

A multi-pronged approach to evaluation meeting local needs would have to be evolved by the teachers in the context of Environmental Education. Multiple approaches and instruments can be used for monitoring and assessment of desirable behavioural changes in the students. This could be accomplished by carefully observing students individually as well as in groups during participation in field activities, excursions, discussions project work and co-scholastic activities. In addition, assessing students' progress by peers, parents, teachers and community members could also be undertaken. It would also be desirable to undertake institutional evaluation.