3. Perspectives of Environmental Education in Schools
   Inputs from Experts and Practitioners

A comprehensive consultation strategy was evolved by the NCERT keeping in view the paramount urgency of introducing Environmental Education (EE) as a compulsory subject in schools. The experts, environmentalists, educationists and organisations working in the field of environment and EE were approached to give their comments and suggestions on the seven specific issues identified as being critical to development of syllabus for EE.

An issue wise analysis of comments and suggestions received is given below:

1. Scope and dimensions of Environmental Education at elementary, secondary and higher secondary levels of school education

EE has generally been visualised as a multi-disciplinary area of study. The scope is broad based and encompasses physical, chemical, biological, social, cultural and human dimensions of study. All the dimensions are closely interrelated and influence one another. The themes, which emerge prominently, include interdependence of man and nature, ecologically and socially sustainable development, pollution and the problems it creates and the preservation and conservation of natural resources. The other themes that find a prominent place are population, human health, impact of science and technology, industrialisation, culture, ethics, agriculture and economics.

The main focus of EE is to expose students to the actual world they live in. They have to be acquainted with the environment related issues and problems. They must also be able to look at the environmental problems and concerns, analyse, evaluate, draw inferences and equip themselves to resolve them. To achieve this, the curriculum could be based on the three common aspects:

- Learning about the environment
- Learning through the environment _ implying a systematic exploration through a variety of activities
- Learning for the environment by developing a genuine concern for and sensitivity towards its protection and preservation

In order to realise the above, the objectives of EE need to focus not only on knowledge but more importantly on generating awareness, developing attitudes, values and skills, and promoting participation and action among children at all levels of school education. By implication, learning opportunities would not remain limited to the classroom alone but extend much beyond it.

On the issue of viewing EE as a compulsory subject with reference to the different stages of school education, i.e., elementary, secondary and higher secondary, the common consensus on the scope and dimension at each stage, as it emerged, is as follows:
• Elementary - Coverage be related to the child's surroundings, health and hygiene along with suitable field activities and observations.
• Secondary - Moderate exposure to various environmental concepts, plant and animal life, their interaction with the environment, pollution and other problems be given.
• Higher secondary - Greater exposure to all the topics covered at the previous levels be given and, in addition, some other topics could also be included.

Integration of topics, not only at the elementary level but also at the secondary and higher secondary levels could also be done. To facilitate this process, the basic inputs and ideas about the environment along with concrete examples could be given through components in the physical sciences and life sciences.

In addition to the above approaches, another view could be that of a mixed approach.

The underlying philosophy in determining the scope and dimensions of the syllabus could also be highlighted in a variety of ways. Gandhiji's concept of correlation in three spheres, i.e., self, society and nature, focuses on the inner man. The holistic framework focusing on 'man in nature' and education correlated to life and the total environment is to be thought of. At the same time, nature having its own value, regardless of its value to human beings, is important too.

The main purpose of EE is to acquaint and sensitise the young minds to the environmental problems and concerns, to inculcate in them healthy personal and social attitudes and behaviour towards environment. This will enable them to initiate work for its sustainability individually and collectively taking together peers and community.

2. Significant elements of the content and process including projects and activities for EE

EE as an interdisciplinary subject has not only to lay emphasis on content but also on the development of awareness, attitudes and skills, leading to action. The content and process including projects and activities are to be geared towards creating a sustainable world.

Themes: There is a nationwide commonality of perception regarding the major concerns and issues of EE. These include:

• Concept and meaning of environment
• Components of environment
• Natural resources
• Pollution and related problems
• Current environmental concerns and interdependence between man and nature
• Energy management
• Toxicology
• Health hazards
The topics suggested for inclusion in the syllabi are as given below.

- Natural resources (flora, fauna, air, water, land, minerals)
- Biological diversity
- Marine life
- Inter-dependence of man and environment
- Environmental degradation
- Environmental problems and hazards
- Environmental pollution _ air, water, soil, noise
- Waste management
- Disaster management
- Protection of human health conditions and quality of life
- Conservation of energy, soil, wildlife, forests, water
- Renewable resources
- Eco-friendly and indigenous technologies
- Water resources management
- Sustainable development
- Sustainable agriculture
- Environmentally sound management of biotechnology
- Environmental policies and programmes
- Environmental information resources
- Acts, laws and regulations
- Role of government and non-governmental agencies.

Pollution in its various aspects emerges as a very important concern and a critical area of attention. Equally prominent are the local indigenous methods and traditional practices to bring solutions and changes in the local context.

In order to make the content of EE relevant to the students' life, it should reflect local environmental concerns, problems and local specific needs and be responsive to local specific challenges.

EE is not merely the transfer of knowledge, it is an approach to learning by providing direct exposure to the environment, using active, hands-on discovery method with emphasis on learning by doing, exploring and problem solving.

**Process**: While planning and designing activities, the immediate environmental needs of the area like water conservation, plantation, pollution control, waste management, sanitation and organic agriculture, could be the main focus of the projects and activities
to be undertaken by the learners. The children experience the feeling of concern for the environment leading to environmental consciousness and positive action. Some of the common field based projects and activities suggested are:

- Segregation of waste
- Vermi composting
- Safe dumping
- Testing of water quality
- Safe sewage disposal
- Rainwater harvesting
- Tree plantation and maintenance of school gardens
- Protection of plants of medicinal and economic value
- Management of water bodies
- Pollution growth and environmental quality
- Food adulteration

In addition, some of the local environmental challenges, issues and concerns could be identified and prioritised.

The significant elements of the content and process of EE need to be worked out by schools individually on the basis of their local situations and requirements. Some activities could become part of the daily routine and some others can be undertaken on specific occasions, such as special orientation work camps or field visits. The teachers, learners and community could work together for climate building leading towards better and healthy environment. Transactional modalities have to be essentially activity oriented, project based and participatory in nature.

3. Modalities of introducing EE without increasing curriculum load

Regarding the introduction of EE at different stages of school, two separate approaches have emerged. The first one is about an integrated approach where teaching of environmental concerns and challenges becomes a part of science, social science, mathematics and other subjects. The second approach refers to EE as an interdisciplinary area and as a compulsory subject. This model lends a more definite shape and structure to the subject.

The implementation of EE so far has been through the infusion model. Some environment related activities or paragraphs are added to the chapters concerned with EE, but the results do not respond to the urgency of the situation. The holistic perspective is missing.

The prime requirement of a greater focus on EE demands for it a separate subject approach. However, the need for such an approach would require a symphony of separate subject and existing areas of study and would make EE an interdisciplinary subject. It should follow the principle of from immediate to remote, i.e., from local to global.
Introduction of EE as a compulsory subject would require reformulation of curriculum in other subject areas also. It would be necessary to avoid repetition, excess information, load of incomprehension and increase in curriculum load.

In addition, EE could also create opportunities for the learners to think, plan and act, and share responsibilities. Such opportunities be provided in the daily schedule of the school as well as in the activities organised specially for EE. It should be based on familiar examples of living entities such as common trees and animals from the learner's immediate environment. It needs to be made interesting and value-added with no homework for students to carry.

At the primary level, maximum use of school and home surroundings as well as other settings needs to be emphasised in order to promote awareness and appreciation about the local environment. At the upper primary level, children's participation in simple projects related to different environmental issues and problems has to find an important place. At the secondary level, children need to be introduced to real life situations and opportunities for community based environmental action. The schools may set up eco-clubs, health clubs, eco-corners and conduct cleanliness drives, nature study camps and field visits. At the higher secondary level, there is a need to move into real life settings where environmental problems are a reality and action through extension work in groups leading to improvement in the environment is to be initiated.

As regards the modalities of introducing EE, the following alternative approaches were suggested:

- Allowing the state governments to prepare their own syllabi based on a framework provided by the NCERT with each state ensuring that the syllabi cater effectively to all the eco-zones of the concerned state.
- Providing the states with separate syllabi for EE prepared by the NCERT.
- Formulating a broad framework for EE for schools which would help them plan their own detailed syllabi and strategies.

A large number of transactional modalities have been suggested which include:

- Narration of events, experiences and stories
- Assignments and projects
- Field trips and visits
- Establishing eco clubs
- Field studies and surveys
- Brain storming and quizzes
- Role play and drama
- Lectures and demonstrations
- Discussions
- Case studies
All the above transactional modalities/strategies need to use an open-ended, problem-solving approach in devising class work so as to promote knowing about, feeling for, loving and protecting the environment. A graded, action-oriented, value based course in EE for all classes/levels of schooling is to be formulated without adding to the curriculum load.

4. EE as an instrument for inculcating healthy personal and social attitudes towards environment and development

Development of healthy personal and social attitudes in learners will go a long way towards environmental sustenance, building a vigilant society, and promoting sustainable development, as well as maintaining a standard of health, hygiene and sanitation.

EE is viewed as an effective instrument for creating civic consciousness and inculcating positive attitudes among learners towards the environment, its protection, preservation and conservation. These need to be promoted in an effective way through the school-parent-community involvement. Though habits have a limited influence directly on the environment, environmental degradation has raised persistent questions concerning health such as getting pure drinking water, clean air and unadulterated food.

In developing healthy personal and social attitudes and habits among learners there is a shift in focus at different levels of school education. At the elementary level, the students need to learn from their environment and thus develop an understanding about it. They need to be educated about healthy living habits and their relevance to the fitness of body and mind. At the secondary and higher secondary levels, students need to be introduced to the problems of the environment they are living in, the social responsibility of the community in maintaining it and making it healthy. This focus is required since the living conditions of people have become complex due to rapid technological advancement, urbanisation and increase in population.

A focus on the social environment would lead to better and healthier relationships. It is emphasised that proper appreciation of these relationships is very vital to human survival and development. School projects and activities could be used as an instrument for developing healthy personal and social attitudes towards environment.

EE is to sensitise the learners by giving a better understanding of the way the environment functions towards peaceful and harmonious co-existence of all life forms in nature. Through the experiential learning the students will act as pro-active future citizens of the country and create a vigilant society for better and healthy environment, thus leading to a sustainable future.

5. Role of the community in imparting effective EE in schools

School alone cannot develop a comprehensive, healthy, personal and social attitude towards environment. So, a partnership between the school, family and community needs
to be established and strengthened so as to develop proper attitudes. This would lead to positive action in learners towards the total environment.

The role of parents is crucial. Parents need to be consulted and involved in the total curriculum transaction. The basic role of the community is to provide help and support to schools in planning, organising and conducting projects, schemes and activities involving both teachers and students. This will enhance the awareness of children about their surroundings; help them realise the importance of projects as well as promote conservation efforts. When the child carries out a project with the guidance of her/his parents, it will develop an emotional bond with the environment as well as with the society.

A number of important areas identified for interaction between school, community and other organisations are there to help learners. These include:

- Understanding the local environmental problems and finding out their solutions;
- Keeping the local environment clean and healthy;
- Using natural resources in a judicious manner;
- Sensitizing the community about environmental concerns; and
- Participating in environmental conservation and protection activities.

The community can contribute in the following areas:

- Sharing knowledge and information, and participating in actions related to environmental improvement;
- Sharing basic resources _ material and human;
- Joining hands in cleanliness campaigns, adoption of local parks and playgrounds, ponds and rivers, gardens and orchards, local monuments;
- Celebrating festivals, national and international day functions;
- Supporting and participating in nature clubs, fairs, cultural and social activities;
- Participating in meetings and forums to ensure consideration of community needs;
- Monitoring of water and air quality, rain water harvesting and practices for conservation of water; and
- Creating awareness about the legal provisions for environmental protection.

Active community participation will enable children to realise their social and environmental responsibilities. To achieve this partnership, it is necessary that different agencies from the community such as the Panchayat, Municipal Corporation bodies, NGOs, social workers and scientific and research institutions be involved. The media could arrange exhibitions, films/video shows, awareness programmes and reading
materials for dissemination among students. The role of women as powerful allies in conservation programmes as well as that of non-governmental organisations in implementing projects at the grassroot level is extremely important.

Proactive involvement of the community in the entire process of EE is necessary. Dynamic networking and cooperation among the various individuals, community, organisations, and the schools could produce the desired results.

6. Strategies of evaluating EE and its place in public examinations

A variety of quantitative and qualitative techniques have to be evolved for evaluating students' performance in scholastic and co-scholastic areas.

In order to assess and evaluate learners' knowledge and awareness, attitudes and skills, continuous and comprehensive evaluation (CCE) is necessary. The objectives of the evaluation process are to:

- assess the learners' awareness and knowledge at different stages;
- assess behavioural changes in learners focusing on the development of skills and attitudes and the inculcation of habits and values;
- diagnose difficulties/weaknesses in learning and, thereby, teaching; and
- serve as a mechanism for improving the EE delivery system.

EE could be assessed on the basis of field activity notes, project findings, presentations and reports prepared by students and also through the question-answer type tests. Grading of children's performance is preferred in assessing the qualitative aspects of the subject.

At the elementary stage, evaluation is to be continuous and comprehensive, based on both knowledge and activity. The knowledge aspect may be assessed through written tests whereas the practical aspects could be assessed through other techniques. At the secondary stage, EE will focus on both the theory and practical aspects. The theory aspect is to be assessed through external examination while the practical aspect is to be internally assessed. At the higher secondary stage, both the theory and practical aspects of EE are to be assessed externally.

There are two alternative views regarding the strategies of evaluation in EE. The dominant view supports this evaluation to be at par with that in other subject areas considering EE as a compulsory subject. It recommends its own evaluation system with weightage given to theory and practical aspects both in school and public examinations. The other view puts emphasis on internal evaluation. It further underlines that there is no necessity for conducting any public examination, since the very spirit of the subject would get lost in this exercise. So, variety of techniques need to be adopted for continuous and comprehensive evaluation of the cognitive, affective and conative aspects of the learners at different stages of school education.
7. Implications of EE for Teacher Education

A general need for properly and adequately trained teachers for all the stages of school education in order to achieve the objectives of the subject does exist as teachers' role is pivotal in imparting EE. To realise this, the curriculum of teacher education needs to provide the basic knowledge and conceptual understanding of EE as well as to develop relevant skills and attitudes in student-teachers and the existing cadre of teachers. This calls for proper development of skills for competency-based teaching, continuous and comprehensive evaluation, organising and conducting projects and activities related to local specific conditions and the daily life of learners.

The basic strategies required for strengthening both pre-service and in-service teacher education programmes include:

- Reviewing and modifying the existing pre-service and in-service education programmes in view of the need for making EE their integral part and providing theoretical and practical inputs specifically focusing on environment related issues and concerns;
- Familiarising teachers and student-teachers with planning, organising and conducting of projects, activities and case-studies in EE and enabling them to generate desired action amongst learners;
- Providing exposure to different kinds of projects already in progress in the community;
- Developing skills to establish closer school-community contacts; and
- Using co-scholastic activities in other subjects as a medium of teaching EE.