Status of environmental education in school education

The education system in India had incorporated certain aspects of environment in school curricula as early as 1930. The Kothari commission (1964-66) also suggested that basic education had to offer EE and relate it to the life needs and aspirations of the people and the nation. At the primary stage, the report recommended that " the aims of teaching science in the primary schools should be to develop proper understanding of the main facts, concepts, principles and processes in physical and biological environment” Environmental education at primary, secondary, higher secondary levels was treated in a different way. Environmental education is an essential part of every pupil's learning. It helps to encourage awareness of the environment, leading to informed concern for active participation in resolving environmental problems. It was introduced without any delay from class –1 as EVS, as a subject so that right from their childhood, the right attitudes towards environment will be nurtured in the young minds.

It is important that we capture this enthusiasm and that no opportunity is lost to develop knowledge, understanding and concern for the environment through school education. The curricular, cross-curricular attempt of environmental education also should be a joy for the learner. In this direction, NCERT has published in collaboration with the Centre for Environmental Education, Ahemadabad a book titled "Joy of learning” with lot of environmental activities, a handbook for teachers. Similarly, several workshops were conducted to orient school teachers and educational functionaries of the state boards on various aspects of environmental education. Strategies for successful implementation of EE in schools were discussed in detail in these interactions.

A curricular framework of environmental education:-

• It envisages the place of EE in the school curriculum.

• Place of EE vis-à-vis other subjects of study.

• Mode and strategy of inclusion of chapters at different levels.

• EE in terms of time and allocation of marks.

• Development of syllabi and instructional material for dissemination at different levels of school education.

In order to supplement the analysis of individual and institutional consultations it was decided to organise two face-to-face National Consultations on Environmental Education in Schools. The First Consultation on the academic aspects of Environmental Education (EE) in schools was organised by NCERT on 13-14 February 2004 in New Delhi . Seventy participants comprising eminent scientists, environmentalists, officials of central and state govt. departments dealing with environment, senior academicians attached to Departments/Centres of environmental studies, environmental science, environmental ecology, botany, regional development, geography, marine biology, etc. of different universities, teacher educators, principals of teacher training colleges, prominent Non-Governmental Organisations (NGOs) and NCERT faculty took part in deliberations. The second consultation on the implementation of EE in schools was held on 13th March 2004 . Seventy-two officials comprising Presidents/Chairpersons of Boards/Councils of school education, Directors of State Councils of Educational Research and Training (SCERTs), Directors of Education in the states, eminent scientists, environmentalists and NCERT faculty participated. The initial draft prepared by NCERT faculty presented in the First Consultation was revised as per the suggestions received. This revised version was presented in the Second Consultation and suggestions for further improvement were received. Various issues were deliberated in these Consultations through plenary presentation, open house discussion, interaction in groups and consolidation of recommendations.

Aims & Objectives of environmental education:-

The objectives of environmental education is to increase public awareness about environmental issues, explore possible solutions, and to lay the foundations for a fully informed and active participation of individual in the protection of environment and the prudent and rational use of natural resources.

The resolutions provide the following guiding principles for environmental education:

• The environment as a common heritage of mankind.

• The common duty of maintaining, protecting & improving the quality of environment, as a contribution to the protection of human health and safeguarding the ecological balance;

• The need for a prudent and rational utilisation of resources;

• The way in which each individual can, by his own behavior and action, contribute to the protection of environment;

• The long-term aims of environmental education are to improve management of environment and provide satisfactory solutions to environmental issues.

• Provide opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment.

• Encourage pupils to examine and interpret the environment from a variety of perspectives-physical, geographical, biological, sociological, economic, political, technological, historical, esthetic and ethical.

• Arouse pupil's awareness and curiosity about the environment and encourage active participation in resolving environmental problems.

• Environmental education is closely linked to the other cross circular themes of other subject areas.

For effective transaction of environmental education following objectives related to knowledge, skill, and attitudes are essential:

Knowledge :-

As a basis for making informed judgments about the environment people should develop knowledge and understanding of

• The natural processes which take place in the environment.

• The impact of human activities on the environment.

• The comparison between different environments both in the past and present.

• Environmental issues such as: (i) The greenhouse effect. (ii) Acid rain and (iii) Air pollution.

• Local, national and international legislative controls to protect and manage the environment;

• How policies and decisions are made about the environment.

• How human life and livelihood are dependent on the environment.

• The conflicts, which can arise about environmental issues like river water sharing.

• How the environment has been effected owing to past decisions and actions.

• The importance of planning and design and an esthetic consideration.

• The importance of effective action to protect and manage the environment.

Skills:-

Six crosses curricular skills have been identified which are necessary for environmental education.

They are:-

• Communication skills.

• Numerical skills.

• Study skills.

• Problem solving skills.

• Personal skills.

• Social skills & information technology skills.

Attitudes:-

Promoting positive attitudes towards the environment is essential if pupils/students are to value it and understand their role in safeguarding it for the future.

Encouraging the development of attitudes in personal qualities listed below will contribute to the process.

• Appreciations of care and concern for environment.

• Concern for other living things on earth.

• Independent thought on environmental issues.

• Respect for others opinion.

• Respect for rational argument and evidence.

• Tolerance to face others views.

Environmental education can be thought of as comprising three linked components:

• Education about the environments (Knowledge).

• Education for the environment (Values, Attitudes & Positive actions).

• Education through the environment (A Resource).

Environmental education is a process that aims at the development of environmentally literate citizens who can compete in global economy, who have the skills and knowledge and inclinations to make well informed choices concerning the environment, and who exercise the rights and responsibilities of the members of a community. Environmental knowledge contributes to an understanding and appreciation of the society, technology and productivity and conservation of natural and cultural resources of their own environment.

Environmental education has an ability to solve the societal needs, the needs of a community problem and their solutions and workforce for tackling cooperative minds. We need the school children to share and develop the motivation from school about various environmental issues, which are the challenges of today and prepare them for the future.

Environmental education must become a vehicle for engaging young minds in the excitement of first hand observation of the nature and understanding the patterns and processes in the natural and social worlds in order to take care of the habitat and its surroundings which becomes a major part of EE in both primary and upper primary stages of school education. In the secondary and senior secondary stages also some of the major issues such as environmental protection, management and conservation are to be dealt in more detail.

Primary stage :-

EE is imparted as EVS, which forms a common component of syllabus, prescribed by the States and CBSE. In Karnataka textbooks and workbooks from classes I to IV, environmental studies are in use. The textbooks for environmental studies which are prepared by N.C.E.R.T has taken cross curricular approach to teaching environmental concepts through language, mathematics about the environment. In classes I and II there is no separate EVS book. For classes III and IV, EVS textbooks are available. EE has been further reinforced under the art of healthy and productive living (AHPL) for which a single teacher's handbook has been developed for classes I to V.

The contents and concepts covered in these books are as follows:

• Familiarisation with one's own body;

• Awareness about immediate surroundings;

• Need for food, water, air, shelter, clothing and recreation;

• Importance of trees and plants;

• Familiarisation with local birds, animals and other objects;

• Interdependence of living and non-living things;

• Importance of cleanliness and sanitation;

• Importance of celebration of festivals and national days;

• Awareness of sunlight, rain and wind;

• Caring for pet animals;

• Awareness about air, water, soil and noise pollution;

• Need for the protection of environment;

• Knowledge about the source of energy;

• Importance of the conservation of water resources and forests and

• Indigenous and traditional knowledge about the protection of environment.

The textbooks lay emphasis on raising awareness levels and sensitising children about environmental concerns. Emphasis has also been laid on the need to organise learning in local specific contexts, which will provide more meaningful experiences to children. Aspects of indigenous knowledge have also been introduced. There are references and suggestions for conducting activities in and outside the classroom. The NCERT textbooks for environmental studies generally take a comprehensive view of the natural, physical, social and cultural environment.

It is evident that the textbooks represent relevant ideas commensurate with the age and developmental level of children so as to provide them the necessary understanding about their immediate environment. However, there is a scope for inclusion of more activities to enable children to translate awareness into effective behavioral action.

Upper Primary stage:-

The contents of textbooks present an extension and elaboration of the concepts introduced at the primary stage. The textbooks in Rajasthan and Madhya Pradesh (Classes VI-VIII) and in Karnataka (Classes V-VII) contain environmental concepts by and large in the textbooks of science and social science. The textbooks of Karnataka for class V in the subjects of science, social science and language have environmental ideas infused with these subjects. The State of Orissa , deals with the environmental concepts and concerns in its textbooks for science and geography. These are also included in a single textbook of history and civics. The NCERT textbooks of ‘Science' and ‘Social Science' have incorporated such concepts in the textbooks .

The major concepts dealt with in these textbooks are:

• Adaptation of living beings in environment;

• Natural resources;

• Water cycle;

• Food chain;

• Importance of plants and trees in keeping the environment clean;

• Classification of plants;

• Role of plants and animals in environmental balance and soil conservation;

• Ecosystems;

• Necessity of clean air for healthy living;

• Animals and their characteristics

• Effects of environmental pollution and the consequences of air pollution-(i) Greenhouse effect, (ii) Ozone layer depletion and, (iii) increase in carbon dioxide;

• Role of microorganisms in the environment;

• Dependence of the community on the environment;

• Basic knowledge about the Earth and its atmosphere;

• Physical features of the country;

• Population and environment;

• Care and protection of livestock;

• Necessity of wildlife protection;

• Impact of deforestation;

• Impact of industrialisation on environment; and

• Role of civic society in protection of the environment, personal and public property including monuments.

While most of the areas of EE have generally been covered, there is a need for the inclusion of more individual and group activities and project work in order to promote both the effective and cognitive domains of learning. Co-scholastic activities including organisation of plays, cultural programs, debates, mock parliament, discussions and community activities may help further in achieving the objective.

Secondary stage :

The concepts of EE have been provided in the textbooks of science and social sciences in the states of Rajasthan and Madhya Pradesh. In Orissa, there are textbooks, namely science part-I (physical science), Science part-II (biological sciences) and geography. The environmental concepts both are at concrete and abstract levels. The concepts covered are:

• Biosphere;

• Greenhouse effect;

• Ozone layer depletion;

• Use of fertilisers and pesticides;

• Wildlife protection;

• Soil chemistry;

• Management of domestic and industrial waste;

• Pollution of noise, air, water ad soil and control measures;

• Ecosystem;

• Management of non-degradable substances;

• Edible and ornamental plants;

• Sewage disposal and cleaning of rivers;

• Nuclear energy;

• Radiation hazards;

• Gas leak;

• Wind power;

• Bio-energy; and

• Environmental laws and acts.

• Environmental concepts also extend to subject areas like languages and social sciences, which reinforce learning and internalization of all such concepts.

Higher Secondary stage :-

Ths is the stage of diversification. Students opt for either the academic stream or the vocational stream. The treatment of concepts becomes deeper and more discipline oriented since the content caters to the demands of the concerned subject, as an independent discipline a comprehensive view about EE is not available in the textbooks. Majority of the concepts are found in the textbooks of biology, chemistry and geography, which are optional subjects. Students opting for any one of these subjects would accordingly benefit in different aspects of EE.

The coverage of EE concepts in the textbooks of various subjects includes:

• Environment and sustainable development;

• Atmospheric pollution- global warming,

• Greenhouse effect,

• Acid rain,

• Ozone layer depletion;

• Water pollution- international standards of drinking water,

• Importance of dissolved oxygen in water,

• Bio-chemical oxygen demand,

• Chemical oxygen demand,

• Land pollution,

• Pesticides,

• Ecology.

Some of the activities pertaining to EE from Primary, Upper Primary, and Secondary & Higher Secondary classes on a sample basis a few have been give here.

Teacher Education (Te) and Environmental Education (EE)

In order to help students grow in knowledge, skill and value, attitudes and awareness relevant to environment teacher is expected to be not only dispenser of information and knowledge but also managers to teaching learning situations. The ways of classroom organization have also to be drastically changed. Teacher preparation assumes greater significance as teachers, with the right attitude and will to equip the future generation moulded during this period. In the present study the investigators highlight the need to understand one’s immediate surroundings and the right attitude to preserve our local environmental resources at all costs. The effectiveness of EE relies heavily on the knowledge, skills and attitudes of the educator.EE is not only a change in 'what' is being taught (the content), but also a new perspective on'why' (the objectives and goals) and how (the approaches and attitudes).The key to anychange in the formal educational system is the teacher, and unless the teacher is convincedabout and feels competent to handle this, very little will change. The teacher has tointernalize a change in his/her role from one of 'giver of knowledge ‘to one of 'facilitator inthe learning process'.

If teachers are to be effective facilitators in bringing EE into teaching and learning theircapacities in understanding and internalizing the characteristics of EE and skills in transactingthese need to be built and strengthened. One way to do this is through pre-service and in-service orientation and training.

EE in Pre-service Teacher education (Primary level)

Pre-service teacher education for primary school teachers is a two-year course. It covers foundation subjects as well as methodology subjects including educational philosophy and psychology, educational administration, methods of teaching etc. The detailed guidelines andsyllabus for the course has been developed by the National Council for Educational Researchand Training (NCERT). The State Departments of Education in the respective statesadminister the institutions for pre-service teacher training courses. The teaching Environmental Studies (EVS) is placed under both science and Social Studies syllabirecommended by the NCERT. Context related to EVS teaching takes up a large part of thefirst year syllabus. Training in EVS covers a total of 80 hours in the two-year course.

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EE in Pre-service Teacher Training (Secondary level)

Teacher Training for secondary level is offered by B. Ed. Colleges affiliated to universities.Several universities have introduced environmental education as one of the optional orelective papers at the B. Ed. Level. This course covers a total of 40 hours and is graded for100 marks. The course content includes basic concepts and processes of environment andecology, as well as teaching-learning methodologies in EE, evaluation techniques etc.Practical and assignments are also part of the course. In some universities EE is integrated asan exclusive chapter under one of the foundation courses called 'Education in EmergingIndia’. The National Council of Teacher Education has recommended EE as a chapter in itsoverall syllabus and guidelines for B. Ed. Colleges in the country.

At the post-graduate level (M.Ed.)

Some universities have introduced EE as a special paper, while a few have given it the statusof a fully fledged course of two semesters.EE in In-service Training The NCERT, StateCouncils of Educational Research and Training (SCERT) and the District Institute oEducational Technology (DIET) are largely involved in in-service training in India. The in-service training/orientation programmes range from one week to one month. Several of theseinclude an orientation of EE as part of the general course. In recent years, some non-governmental agencies with focus and expertise in EE have been invited to run short course