# CHAPTER-I

## INTRODUCTION AND IDENTIFICATION

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1.0 INTRODUCTION:

Environmental education is a learning process that increases people's knowledge and awareness about the environmental associated challenges, develops the necessary skills and expertise to redress these challenges and fosters attitudes, motivations and commitments to make informed decision and take responsible actions. Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his bio-physical surroundings. It also entails practice in decision making and self formulation of a code of behavior about problems and issues concerning environmental quality (UNESCO Working Committee, 1970) Environmental education is the study of nature and its aim is to help pupils to understand their surroundings in which they have to live and how it came to be, so that they may become responsible citizens. It aims at promoting critical thinking and a readiness for social change. The subject of the Environment which deals directly with man and the society in which he lives, carries special responsibility of preparing young children to become well informed, constructive participants in society and capable of developing healthy social relationships.

The Stockholm Conference (UN) on Human Environment (1972) initiated efforts to establish programmes of Environmental education at all levels-primary, Secondary and Tertiary levels of our educational system and also to motivate the public in rural and urban areas about Environmental awareness. This was followed by Belgarde (1975) and Tbilisi (1977) conferences on Environmental Education. This laid stress on developing basic concepts of quality of life plus Environmental knowledge, awareness, attitudes, skills and participation. In India, the first International Conference on Environmental Education was held at New Delhi in 1981 and the second conference also at New Delhi in 1985. These showed keen interest taken by India in Environmental Education. The Bhopal Disaster of 1984 sounded the wake-up call for India to take note of the crisis situation and realize the need of Environmental Awareness and Education at all levels of the society, particularly in educational institutions.
Environmental Education in Educational Institutions:

Concerned the hazardous ecological imbalance created by the human activities, many educators and experts have advocated introduction of Environmental education in educational institutions to promote Environmental protection. This is also reflected in the National Policy on Education (1986) which emphasizes that “there is an urgent need to create a consciousness of the environment. It must permeate all ages and all sections of society beginning with the child. Environmental consciousness should inform teaching in schools and colleges. This aspect will be integrated in the entire educational process”. Similar concerns were shown by Hon’ble Supreme Court of India in its order issued on 22nd November 1991 stating that “the awareness of the environment and its problems related to pollution should be taught as a compulsory subject. We would require that every education board has to take immediate steps to enforce compulsory education of this requirement up to Matriculation stage or even intermediate college”. National Curriculum Framework for School education (2000) also mentioned that “understanding of the environment in its totality both natural and social and their interactive processes, the environmental problems and the ways and means to preserve the environment” as general objective of the education. With this consideration, environmental education has been made a compulsory subject for classes I to XII by the Central Board of Secondary Education, New Delhi and NCERT, New Delhi, to be effective from the academic session 2005-2006 for class XII. Many universities in India have set up P.G. Departments of Environmental Science and some have started courses in Environmental Science at Undergraduate level.

Strategies for Effective Environmental Education:

In formal education, at all levels, Curriculum should be prepared on interdisciplinary approach. It should include science, humanities and cultural contents (history, geography, sociology, ecology, economics, languages, biology, and chemistry) to make the students understand various aspects of environment and its problems. The content of the curriculum should be
rigorous. It should lay emphasis on three C’s – Connection, Concern and Care. The topics covered should be Specific to learning stages and ages.

Environmental education during early years of the schooling should be based on the sense of wonder and joy of discovery. Children should be given an opportunity to bond with the nature and feel it. They should develop a sense of kinship with the natural world.

At the Secondary Stage, Curriculum should lay emphasis on awareness, life experiences, and Conservation and action skills. Since major aspect of environmental education is experience and relationship, experimental learning should be major teaching strategy at secondary stage, emphasis should be on hands-on-grounded in direct experiences, applied learning, learning by doing etc. students should be given opportunities to get involved and contribute to improving the environment. It should to sense of hope, accomplishment and sense of responsibility. Moreover, there should be relevant connection between the subject matter presented and the students’ day to day lives. Students are likely to find learning experiences more valuable if it is connected to their own lives. Innovative teaching learning strategies like role playing, simulation exercises can be used by the teacher.

At the secondary stage, Co-curricular activities can be effectively organized for action with participation of students in environmental related activities. The following co-curricular activities can be organized under NSS and SUPW programmes:

(i) cleaning environment, (ii) growing plants, (iii) cleaning public places, parks etc., (iv) digging pits for the wastage in the village, (v) constructing recharge pits for rain water, (vi) developing sense of sanitation among the villagers and (vii) organizing programs related to Population Education and Adolescent Education.

Besides educational institutions, NGOs and Govt. bodies can collaborate in organization of activities related to environment awareness like essay competitions, on the spot painting competitions, modeling and poster designing etc. The voluntary organizations like WWF-India, NGC, Green Ray Foundation-Goa set up Eco-clubs in schools.
1.1 SIGNIFICANCE OF THE STUDY:

It is well known fact that the population on earth has increased rapidly. The speed of development of Science and Technology can hardly copes with the increasing population to meet their needs. The remarkable problem which draws the attention of the elite class is environment. The natural cycle is broken knowingly or unknowingly by human beings for their own survival. If this continues for some years more and if some feasible solution is not found out, it will be very difficult to prevent ecological environment from deterioration. For this it is necessary to create awareness in the masses right from the school level through developing and implementing an effective curriculum on environmental education to suit the present needs of real life and to avoid the unwanted consequences of environmental explosion. Hence the investigator thought it is worthwhile to get the opinions of the experts and students from different disciplines on the present curriculum of environmental education and need to develop/improve it to suit for innovative teaching in environmental education at secondary school level.

1.1.1 THE GOALS OF ENVIRONMENTAL EDUCATION:

Environmental Goal:
The goal of environmental action is to improve all ecological relationship including the relationship of humanity with nature and people with each other.

Environmental Education Goals:
The goal of environmental education is - To develop a world population that is aware of and concerned about the environment and its associated problems, and which has the knowledge, skills, attitudes, motivations and commitment to work individually and collectively towards solutions of current problems and prevention of new ones.
The other goals are as under:

- to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;

- to provide every person with opportunities to acquire knowledge, values, attitudes commitment and skills needed to protect and improve the environment.

- to create new patterns of behaviour of individuals, groups and society as a whole towards the environment.

E. Rugumayo (1987) has aptly said in his article entitled “key issues in evolved environmental education” regarding the problems evolved in the area of environment.

“Environmental problems arise as a result of activities in various fields of human endeavor especially in scientific & technological fields and others arise as a result of natural forces of work. Since these problems are the result of multifaceted activities of both man and nature, their solution must be based on an interdisciplinary approach. In this approach biology has an important role to play.”

1.1.2 ENVIRONMENTAL CONSCIOUSNESS IN THE PRESENT CENTURY:

S.C. Bhatia (1980) in his book “Environmental Consciousness and Adult Education” noted that the extent to which individuals and groups are conscious of their life surroundings forms the basis of human response and responsibility to the damages of those surroundings for their sustains and longevity. The extent to which individuals and groups demonstrate a tendency to take things for granted is a characteristic of the neglectful attitudes towards our surroundings. It may not be altogether difficult to identify one of the two above stated tendencies when it comes to stating our care for environmental resources.

He has observed that the intensity of human response to such issues is determined by the effect they have as an individual or groups of people. Take for example, the human attitude to sanitation. Most people keep their own
residential place clean. However, the same cannot be said so definitely about their own street, by lane or back lane. It has often been seen that people throw garbage outside in the lane inside of keeping it in a regular dustbin or depositing it in the properly made garbage dump. While people are very particular about closing or repeating their leaking water taps, the same concern is very often not in evidence when it comes to the public taps; installed in the streets. The same can be said about wastage of electricity.

There are certain segments of our society but do not have the knowledge to maintain personal even though the desire to do so is very much there. Educational efforts have not yet reached these people. Simple habits like washing one’s hand and mouth prior to and after taking one’s meals have not been deeply ingrained in them either for want of proper environment in the home or for lack of education regarding the benefits of such a practice.

Road signs in the colonies, and in fact in many other parts of the city, are usually covered with posters and other advertisements in a manner that the original purpose of such signs is defeated. Newcomers trying to locate particular blocks and house numbers seem totally helpless. Such road posts are often damaged; children often test their physical prowess against there. Other forms of advertisement are very liberally plastered over the city walls, which may be public or private property. Transistor and radio sets are played at a deafeningly high volume without any regard to the exigencies of the situation in the next house in the neighbourhood. The T.V. set seems to be the most recent in this form of nuisance. Suburban resident in Bombay often play their stereo systems at a very loud volume with the intention of shutting out similar noise from the nearby building. A sense of insane competition seems to have gripped people in causing though unknowingly and unrealisingly hurt to themselves and others.

Apart from the above stated areas there are other threats to environmental protection. There seems to be greater awareness regarding drainage, garbage disposal solid waste disposal water unfit for human consumption adulteration of food products, etc. It cannot be said definitely that such awareness is evenly spread across groups or communities. The situation seems to very depending or a variety of variables like income levels, education levels, patterns of space utilization, health consciousness, civic
consciousness, etc. Here again great concern is in evidence for its effects inside one's house, then outside the home or on others.

The drainage system in the street will not attract the attention of the residents till the extent of its harm directly affects some one. Civic authorities often seem to find themselves solely struggling with such problems. Very few residents in resettlement colonies and other residential colonies are aware of the need to get drinking water tested at a proper place. It is only when Jaundice raises its fury that people realise to its harmful effects. Sometimes, it is too late then.

Many of the young instructors at the rural adult education centers realize the urgent need to clean wells around summer time water drawn from the wells seems to have a lot of dirt and is obviously unfit for human consumption. These are community wells and none seems to be specifically responsible for the periodic cleaning. Again, more trees are being cut than planted in our constant quest for utilization of energy. The harmful effects of such a practice on the environment and on human life are too many to be narrated here.

Environmental education makes one conscious about the need to understand the consequences of such human actions and the manner in which the degree of harm arising therefore can be reduced. It also enables an individual to engage himself in a set of activities which result in regeneration of environmental resources. Growing more trees and cutting trees in a manner which facilitates their speedy regrowth are two such instances.

The mass media has helped a great deal in highlighting the threats to human life and cultural properties from such projects as the Mathura Oil Refinery or the Silent Valley Project in Kerala. The Chipko Movement in Garhwal presents before us a brilliant example of indigenous wisdom in environmental protection. The literate and educated sections of society seem to have followed those issues with interest and at the same time it is doubtful whether such information has percolated into the minds of the illiterate and weaker sections of society. Here again these major examples can form a fascinating part of environmental education. An entire saga of heroism can be portrayed in literature based on the 'Chipko Movement' for its use in both formal and non-formal education. We do not seem to have done that so far.
There is apparently a pressing need to make people aware of their environment in general and the state of environmental resources in particular. Human and animal life seems to be on the verge of facing suffocation from gasses, fumes and fuel smells, endangered plants, dwindling wild life and disappearance of undisturbed natural areas. Many of us seem to be condemned to drinking dirty water for want of awareness regarding its deadening effects. We are building deserts for ourselves through incessant deforestation & thus effecting changes in climate, rainfall and causing heavy erosion of soil.

The people are not even conscious of what constitutes the environment. B.P.Pal, Chairman National Committee on Environment Planning and coordination points out that “When we talk of the environment we include the plants, the animals, the microflora, the air, water, minerals, metals, and last but not least, man himself. All these components of the environment are part of a complex, interlinked web of life. Destruction of any part of this web means damage to or even destruction of life itself.”

The involvement of youth in environment protection has thus to operate both at the level of consciousness and at the level of specific action oriented projects; consciousness has to be promoted both in terms of wider dimensions of the problem and in terms of specificity of action granting the pressing need of development in a developing country, can be identify threshold levels of environmental pollution. We cannot obviously ask for a total ban on the use of natural resources. Yet, we can ask for their use in a manner that it is less harmful. Such measures have to be based on two key parameters, practical and flexible. Alongside this consideration, consciousness needs to be promoted with regard to the gains accruing from such control. B.P.Pal points out that human life is dependent upon natural cycles and regeneration for our own healthy living and economic prosperity. Wild species of plant and animals have enabled man to breed domestic animals, crops and ornamental plants, and to obtain valuable medicinal products. Tourism as and industry has considerably grown in this country around wild species and wild places. Birds have an economic value apart from their beauty as consumers of insect pests. Similarly snakes control rodent populations which damages crops. Trees and other vegetation help to produce life giving oxygen and also protect soil from erosion by wind and water.
Educational efforts have to be planned on the assumption that conservation is a process of management which stands for the inevitability of change, not the maintenance of the status quo.

1.2 ENVIRONMENTAL EDUCATION - NATURE AND SCOPE:

Public awareness of these issues was raised world-wide by the United Nations Conference on Human Environment held in Stockholm in 1972. An important outcome of this conference was the creation of a new agency called the United Nations Environment Programme (UNEP). In response to, or in support of its declaration some governments created or gave increased support to environmental protection agencies and agencies to reverse the trends that were leading to ecological disaster. In the process, a discipline called Environmental Education has involved.

Its main characteristics as outlined in UNESCO’s Tbilisi conference on Environmental Education are: (a) problem-solving approach (b) an interdisciplinary educational approach (c) the integration of education into the community and (d) a life-long, forward-looking education.

UNEP has supported environmental education work in several United Nations agencies such as UNESCO and F.A.O as well as in the International Union for Conservation of Nature and Natural Resources (IUCN).

There is no specific mention of science and technology in UNESCO’s outline, but no other specific disciplines are mentioned either. It is therefore, the task of the exponents of science and technology education such as those who participated in the Bangalore conference, to invent new ways in which the concepts of Ecology, which lie at the heart of Environmental Education, can be infused into Education as a whole and into Science and Technology education in particular. Surely science should constitute the foundation on which proper ecological value-judgments are based and technology should provide the practical means of solving the ecological problems posed by industrial and other societies.

In an outline paper prepared at the early planning stage Mrs. Eniko Szalaz Marzso commented on the heterogeneity of the case studies.
that were being collected. She stressed the need for all teachers to be aware of
the holistic nature of the natural order including mankind, its intricately linked
pattern - product of millions of years of development, maintained in order by a
high use of energy, it is “a series of unique events, i.e. any intervention is
irreversible and any attempts to restore order once disturbed creates more
disorder”. The first objective therefore, is “to develop the knowledge, skills
and attitudes leading to a new system of order, values and conservation ethic
which will enable people to contribute to the wiser management of nature.”
The complicated task of the Social science and Arts is “to build up the same
image in youngsters as how to reach the same goal as resulted from the
Natural sciences.”

We have the task of persuading decision makers of the need for a new
type of in service training for teachers to help them relate together, the
natural and social environment. We have to find the best formulae for
environmental education at every level, and encourage people to think
horizontally as well as vertically.

The problems of environmental education in the developing countries
were a recurring theme at the Bangalore conference. Because India was the
host country it is appropriate to begin by looking at these problems through
the eyes of three Indian participants. M.S. Swaminathan in his plenary address
took a global view of the problem. T.N. Khoshoo considered the Indian
experience, and M. Wali now teaching in the United States, noted that an
environmental ethic, the need for which is at last being recognized. Several
other Indians will appear in subsequent parts.

Brown, L.R. (1981) pointed out that the environmental education cannot
be considered to be the teaching of a single subject-like Physics, Economics or
History. It is the adoption of a certain orientation towards all subjects. This is
the essence of its multi-disciplinary content, like the mechanical interpretation
of the world, or an evolutionary orientation to all subjects, there can be an
environmental approach to any study. The mechanical philosophy led to a
certain mode of interpreting and defining Physics, Biology, Psychology and
the Social sciences. Similarly it is possible to have an Evolutionary
Astronomy, Biology, History, Psychology or Linguistics. There can also be an
Environmental Astronomy, Physics, Chemistry, Biology, History or Economics or Technology.

Environmental Astronomy is concerned with astronomical phenomena that have environmental repercussions the influence of the sun and moon on the tides and other bodies in the solar system upon the earth's magnetic field. Environmental Chemistry can deal with the effects of man-made chemicals (pesticides, herbicides, pharmaceutical and industrial wastes) upon the earth's biosphere. Environmental Biology could concern itself with the ecological relationships that exist between the earth's organisms and environment. Environmental History and Geography involve the way historical and geophysical relationships have been modified by environmental influence. The environmentalist approach to Economics and the role of Technology in shaping the environment have already been considered. This pervasive orientation makes environmentalism a total orientation rather than a single subject of study. It is either a perspective that is possible on other subjects or one dimension that has to be added to all other studies.

Creativity is possible only in an atmosphere that allows for a plurality of views and approaches. This is why centralised institutions and large scale to technologies that suppress human faculties are not conductive to environmental enhancement. Apart from the economic aspects and the environmentally degradation aspects of centralised economies and technologies of scale, the creative needs of man demand a more decentralised network of institutions and a technology with a human face.

The above discussion makes evident the holistic nature of environmental education which is simultaneously ethical, aesthetic, cognitive and practical. The ethical dimension is called for because of the solution to environmental problems & demands the adoption of self-transcendent values. The aesthetic dimension is included in the nation of quality, the ability to identify quality is in par aesthetic, through in another sense it is ethical. The cognitive dimension is required to provide the knowledge of ecological and environmental interconnection and interdependencies. This is the archetype of scientific knowledge. However, the knowledge required here is of a holistic nature that traditional science has tended to ignore. Finally, the practical dimension emphasizes the role of action to actually enhance the quality of the
environment. Action has to constitute a part of environmental education because all theoretical knowledge is passive and only when action employs, the theory can transform the environment by qualitative enhancement.

Environmental education has to promote each of these components to the environment have to become an internalized part of the general population as a whole. This sort of education is not specialized or directed at particular individuals. It is directed at cultivating the ethical and aesthetic sensibilities of everyone. An environmental programme is not likely to be successful until there is a general population with a sufficient degree of environmental sensitivity and awareness to support it. The mass media and the school system could play an important role in heightening general environmental sensibility. This in turn would promote attitudes that would look at all human activities like agriculture, industry, technical innovations, economic etc. from an environmental perspective. Both an aesthetic and ethical attitude would be brought to bear upon them over and above the narrowly economic technocratic orientations so visible today.

Unlike ethical and aesthetic development cognitive knowledge demands different degrees of specialization. The environmental knowledge required for a chemist or an engineer or a farmer have to be necessarily in different directions. Nevertheless, given the holistic nature of environmental repercussions, it would be useful for each of them to have a general awareness of environmental inter connections. In the design of a chemical plant, for example, the wastes from the factory are disposed. However, each would require this general knowledge to be articulated in greater detail in specific areas pertaining to their specializations. This would also apply to the general population. The average person should have a broad knowledge of environmental issues so that he or she would be able to make ethical and aesthetic evaluations at a policy level without possessing the expertise to solve specific environmental problems. This could be furnished by specialists, but the wide sensibility of the population would pre-empt any political exploitation by experts.

This impinges on one of the broad areas of debate on the development environmental education. There are some who see the environmental education as being a part of all education and not as a specialized discipline in
itself. There are others who see a need for environmental centres that would promote research and knowledge in different environmental problems. Perhaps the difference here is one of the scope of environmental education—should it be for all, or should it promote expert knowledge. The answer has to be that both are required. We need a broad education to create awareness of environmental issues in the population at large, and we need specialized centres that can study the most important environmental issues confronting us such as deforestation, marine pollution, chemical pollution of the ground water etc. It is not a question of either/or, both are necessary. In this respect, environmental education is like all education we expect the general population to have a broad knowledge of more specific areas. Thus everyone can be environmentally educated, but we need environmental centres in which expertise to tackle crucial environmental problems that can develop.

1.3 NEED AND IMPORTANCE OF THE PRESENT STUDY:

There should be a greater awareness of environmental problems among our people, especially among the children. The children, in schools today, are going to be the enlightened citizens of the future. It is they, who have to protect and take care of the environment. School system provides the largest organized base for environmental education and action. With children in their plastic age, school offers an effective instrument for imbibing in them the desirable environmental ethics. In this stage, the students can imbibe, digest and form their habits.

At school, children pass through three levels of education such as Primary, Upper Primary and Secondary Levels. X class students are at the terminating point of their school education. They have had ample opportunities to imbibe knowledge, cultivate habits, inculcate values, and develop attitudes and so on for ten years in the school. They will be branching out in different directions, for academic studies, technical studies and training, entering family business or even earning their own lively hood. Their minds are set and it is definitely beneficial to know their state of mind with regard to such an important issue as conscious and awareness of environment. Their attitude is very important because they are the future citizens of the nation.
through whose hands the prosperity of our country will get shaped. Their participation is most essential to bring about the awareness and consciousness about the protection and conservation of environment. It is quite evident that only those will participate who have the required positive attitudes. Tuning the young minds for attending to environmental concerns pay rich dividends for the survival of the civilization on mother earth.

Our Central Government has also made it mandatory that from elementary level to college level environmental education need to be included. Since educational institutions are the places where the contact of the society is more it is possible to bring remarkable change in the mindset of the public. To protect children living in polluted regions, environmental education represents a relevant means of prevention because this type of education encourages learners awareness of their environment's ambient conditions, as well as their active participation in solving local problems. It is need for the hour to propose the environmental education with the essential elements of moral philosophy in Schools and Colleges. The younger generations, students are the effective media to bring the enormous change in the society and hence educating about the environment in these young minds in the right time with right type of curriculum is the need of today.

Keeping the above situations in mind, the researcher selected the following topic for the study with an objective of developing the present / existing secondary school curriculum on environmental education by improving it with necessary modifications based on suggestions of experts and students as per the guidelines of NCERT, New Delhi.

1.4 STATEMENT OF THE PROBLEM:

The present research has studied the following problem

Developing Secondary School Curriculum on Environmental Education on the basis of Expert and Student Opinions.
1.5 TECHNICAL TERMINOLOGY:

(a) Developing

According to Oxford advanced learner’s dictionary of current English- grow larger, fuller or more mature, organized.

As per The Reader’s digest-Oxford word-finder-(developing) bring or come to an active, visible state or to maturity.

Dictionary of Psychology defined-(development) as qualitative, gradual, permanent changes in mental and/or physical aspects.

Acc. to Chambers 21st century Dictionary-to make or become more mature, more advanced, more complete, more organized, more detailed etc.

Acc. to Macmillan English dictionary for advanced learners-to gradually add details to an idea, plan, story etc, to make it more clear or complete.

(b) Secondary School

As per D.K. Illustrated Oxford dictionary-(of education, a school etc.) for those who have had primary education, usually from 11 to 18 yrs.

Encyclopedic dictionary and Directory of Education defined-(Secondary education) as the second stage in the system of public education, usually beginning with 6 and ending in class 10 of a high school.

Acc. to Chambers 21st century Dictionary- A School, specially a state school, for pupils aged between 11 and 18.

Acc. to Macmillan English dictionary for advanced learners - A school for children between the age of 11 and 16 or 18.

(c) Curriculum

As per The Reader’s digest-Oxford word-finder- the subjects that are studied or prescribed for a study in a school, any programme of activities.
Encyclopedic dictionary and Directory of Education defined as the total learning activities or educative experiences offered by an institution through its total institutional programme designed to achieve the prescribed objectives. The term ‘curriculum’ ordinarily used by specialists indicates roughly a plan for the education of learners and to identify a field of study. But, Beauchamp (1968) proposes that “a legitimate use of the curriculum is to refer to a system within which decisions are made about what the curriculum will be and how it will be implemented.” A curriculum conceived of as “planned learning experiences” is one of the most prevalent concepts among specialists in the field today. Curriculum refers to “all the means employed to provide learners with opportunities for desirable learning experiences” (Krug, 1956).

It is reasonable to conclude, that the curriculum as a blueprint for education, consists ultimately of the experiences, that it is planned for learners to have. But any definition of curriculum will necessarily vary accordingly to the purposes, which are to be accomplished. The term “curriculum” in its broadest sense refers to all the planned learning activities or experiences provided by an educational programme to a group of learners or target audience. As such it may include objectives, content, learning activities, materials, teaching aids and evaluating techniques and tools. A curriculum, in order to be relevant, must reflect the felt as well as the real needs of the target groups and also be within the framework of national goals for non-formal and adult education programme.

“Curriculum is the tool in the hands of the artist (the teacher) to mould his material (the pupils) according to his ideals (aims and objectives) in his studio (the school)”.

---- Cunningham

d) Environmental Education:

"Environmental education is problem centered interdisciplinary, value-oriented, community-oriented, and concerns with man's survival as species, based on student initiated actives and involvement present and future oriented."—Cook and Hearn (1971)

Encyclopedia of Educational Research (Mifzel 1982) defined:

'Environmental Education' is not an easy task. Unlike other curriculum areas, the specific content of E.E. has never been well defined. It is universally agreed, however, that environmental education should be interdisciplinary, drawing from biological, sociological, anthropological, economic political and human resources. It is also agreed that a conceptual approach to teach E.E. is best.

"Environmental education appears to be a process that equips human beings with awareness, knowledge, skills, attitudes and commitment to improve environment."

-- Mishra 1993

"Environmental education refers to the awareness of physical and cultural environment and perceive its relevance for real life situation. The problems and issues are to be identified. The imbalances of environment are to be improved in view of sustainable development."

- R.A.Sharma (1996)

The Report of a conference of African Educators, EDC and CREDO held at Nairobi in 1968 says:

"To Create awareness and an understanding of the evolving social and physical environment as a whole, its natural, man-made cultural, spiritual resources, together with the rational use and conservation of these resources for development."

Acc. to : Environmental Education Act-1970:

"For the purpose of this Act, the term 'Environmental Education' means the educational process dealing with man's relationship with his natural and man-made surroundings and includes the relation and depletion, conservation, transformation, technology and urban and rural planning to the total human environment".
UNESCO Working Committee (1970) defined Environment Education as follows:
“Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitude, necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. It also entails practice in decision-making and issues concerning environmental quality.”

The Nevada conference of the international union for the conservation of natural and national resources, 1970, defined environmental education as “Environmental education is the process of recognizing values and clarifying concepts in order to develop skill and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings.”

The American States conference on education and environment in the America, 1971, defined environment education as follows. “Environmental education involves teaching about value judgments and the ability to think clearly about complete problems – about the environment – which are as political, economical and philosophical as they are technical.”

The Finnish National commission for UNESCO, in 1974, defined Environmental education as, “a way of implementing the goal of environmental protection. Environmental education is not a separate branch of science or subject of study. It should be carried out according to the principle of lifelong integral education.”

UNESCO seminar at Jammi (1976) defined Environmental Education as: “Environmental education is a way of implementing the goals of environmental protection. It is not a separate branch of science or field of study. It should be carried out according to the principles of lifelong integral education.”

As per D.K. Illustrated Oxford dictionary, Environment was defined as external conditions as affecting plant and animal life, the totality of the physical conditions on the earth or a part of it and Education was defined as systematic instruction.
(e) Expert:
According to Oxford advanced learner's dictionary of current English - Expert was defined as a person with special knowledge, skill or training.
As per D.K. Illustrated Oxford dictionary - Expert means, having special skill at a task or knowledge in a subject.
Acc. to Chambers 21st century Dictionary: Some one with great skill in, or extensive knowledge of a particular subject.
Acc. to Macmillan English dictionary for advanced learners: Some one who has a particular skill or knows a lot about a particular subject.

(f) Student:
Oxford advanced learner's dictionary of current English defined as - a boy or girl attending school, any one who studies or who is devoted to the acquisition of knowledge.

(g) Opinions:
According to Oxford advanced learner's dictionary of current English - Opinions are the views, beliefs of a group, what the majority of people think.
As per D.K. Illustrated Oxford dictionary - Opinion is a view held as probable, what one thinks about a particular topic or question.
Acc. to Chambers 21st century Dictionary: A professional judgment given by an expert.
Acc. to Macmillan English dictionary for advanced learners: The attitude you have towards some thing, especially your thoughts about how good it is.

OPERATIONAL DEFINITIONS:

The investigator has tried to explain the terminology used in the statement is as under:
(a) Developing:
In relation with the present study, "Developing" means improving (the existing / present secondary school curriculum on EE) with necessary modifications.

(b) Secondary School:
School that offers instruction for secondary school students, ie: 8 to 10th classes.

(c) Curriculum:
The various components of secondary school curriculum on Environmental education as suggested by NCERT.

(d) Environmental Education:
Environmental education that to be offered / have been offering to the students at secondary school level is "the process of recognizing values and clarifying concepts in order to develop awareness, attitudes and skills necessary to understand and appreciate the interrelatedness among man, his culture and his bio-physical surroundings and perceive its relevance for real life situation. The problems and issues are to be identified. The imbalances of environment are to be improved in view of sustainable development."

(e) Expert:
In connection with the present study, the "Expert" means a person with special knowledge, skill or training in the environmental concerns and having knowledge of secondary school curriculum on environmental education.

(f) Student:
"student" who is studying 8/9/10th class as a regular student in a secondary school during the period of this research study.

(g) Opinions:
Opinions are the views, ideas, beliefs and feelings (of experts and students about the existing secondary school curriculum and the curriculum to be modified on EE).
1.6 OBJECTIVES OF STUDY:

To carry out a scientific enquiry in a definite direction, it is imperative for an investigator to formulate precise objectives. This study was carried out with the following objectives.

1. To enumerate the various aspects of the ecological studies prescribed in the present secondary school curriculum in A.P. state with special reference to environmental education.

2. To construct and standardize a reliable tool (Questionnaire) to collect opinions from the sample. (Experts from different disciplines and secondary school students)

3. To frame a personal bio-data form to get the details of the sample.

4. To draw conclusions based on the opinion of experts and students about the existing curriculum on environmental education at secondary school level.

5. To draw conclusions based on the opinion of experts and students about the curriculum to be modified/improved on environmental education at secondary school level.

6. To identify and compare the opinion of experts and students about the existing curriculum on environmental education at secondary school level.

7. To identify and compare the opinion of experts and students about the curriculum to be modified/improved on environmental education at secondary school level.

8. To summarize the suggestions and recommendations of experts for innovative teaching in environmental education at secondary school level.
1.7 VARIABLES OF THE STUDY:

1. Independent Variables:

A) Experts :
- Sex : Male and Female
- Age : Below 36 yrs. and Above 36 yrs.
- Qualification : Graduate and Post-graduate
- Profession. : Teaching , Govt. service (other than teaching) and N.G.O.
- Experience. : Less than 10 Yrs., 11-20 Yrs., 21-30 Yrs. and Above 31 Yrs
- Area of working. : Urban, Semi-urban and Rural.

B) Students :
- Sex : Male and Female
- Age. : 13 yrs., 14 yrs. and 15 yrs.
- Class : 8th, 9th and 10th
- Medium of instruction : Telugu, Hindi and English
- Type of school’s management : Government and Private
- Area of school : Urban, Semi-urban and Rural.

2. Dependent Variables :

A) Existing secondary school curriculum on environmental education.

Components of curriculum.
- Content
- Teaching-learning strategies
- Exemplar activities
- Learning outcomes
- Evaluation
- Enrichment material
- Teacher education and training
B) To be modified secondary school curriculum on environmental education.

Components of curriculum.
- Content
- Teaching-learning strategies
- Exemplar activities
- Learning outcomes
- Evaluation
- Enrichment material
- Teacher education and training

1.8 SCOPE OF STUDY:

Environmental education as an independent field of study arrived at the world scene in the early seventies. But the roots of environmental education can be traced to the school systems of various countries under various names; Nature study, Conservation education, Outdoor education etc. Although education about various aspects of the environment has been carried on through number of recognized disciplines for long time, the notion of environmental education is fairly recent one. During the last century, most science curriculum included some kind of environmental studies. The environmental problems have assumed a magnitude of serious concerns. It was realized that the concept of environment is multi-dimensional in nature. The environment comprise three orders of factors; natural, social and cultural. Environmental education means on integral process which deals with surroundings, including the relation of population growth, technology and urban and rural planning to the total human environment.

Government of Andhra Pradesh State has introduced the environment education in primary and secondary schools. The secondary school teachers should put these steps in the current trends of education. This is the basic requirement for the society and country too. This study aims at focusing on basic level of awareness towards Curriculum of the Environmental Education at the secondary school level. It reveals the existing position or status of the
Environmental curriculum after introduction of environmental education in the syllabus.

The study is aimed at to get the opinions of the students and experts from different disciplines on the present curriculum of environmental education in A.P. State and need to develop/improve it to suit for innovative teaching in environmental education at secondary school level. This would help the secondary school students to develop the positive attitudes towards the environmental education and hence to possess the good environmental awareness. The highly aware students towards environment education would definitely function rightly to treat the subject in the class room and thus the students would build the positive attitudes and awareness towards the environmental education. So that in future, these students could be good citizens of Nation.

1.9 DELIMITATIONS OF THE STUDY:

The present study encompasses fairly large area of education. However considering the constraints, it was limited as stated below:

1. Study: Confined to develop a suitable secondary school curriculum in environmental education through opinions of the experts (from different disciplines) and students (secondary school) on the present curriculum and need to develop/improve it to suit for innovative teaching in environmental education at secondary school level.

2. Demography: Confined to Andhra Pradesh state only. The researcher has chosen two districts each from Andhra, Telangana and Rayalaseema areas of Andhra Pradesh along with its State Capital Hyderabad as the area of his study. Guntur & West Godavari districts from Andhra area, Adilabad & Khammam districts from Telangana area and Chittoor & Kadapa districts from Rayalaseema area were selected by random method as the area of study. Hyderabad was selected purposefully as it was State Capital of Andhra Pradesh.
3. **Sample:** Delimited to the Experts from different fields and Secondary school Students from six districts of A.P. along with Hyderabad, the state Capital. (Stratified Purposive Sampling & Multistage Stratified Random Sampling).

Experts are those persons who have knowledge on secondary school curriculum on environmental education ie: teachers of secondary school, teacher training institutions, employees working with organizations connected to environmental concerns and N.G.Os.

Students are those who are studying at secondary school level, ie: 8\textsuperscript{th}, 9\textsuperscript{th} and 10\textsuperscript{th} classes.

4. **Tools:** The data was collected during last quarter of 2007, by using the following tools developed by the researcher:
   
   A) A standardized questionnaire.
   
   B) A bio-data form to collect the personal details from the sample.

1.10 **SCHEME OF CHAPTERISATION:**

A brief description of the chapters to follow is given here under:

**Chapter-1:** The first chapter deals with the importance of the problem, the need, scope and significance of environmental education and environmental awareness. The terms used in the title of the problem are explained in brief.

**Chapter-2:** The second chapter encompasses the theoretical perspective of environmental education and environmental awareness, the concept, principles and attributes. Environment is explained as a medium of learning.

**Chapter-3:** The third chapter is devoted to review the past studies / research works on curriculum development in environmental education and environmental awareness which help the investigator in understanding the present problem.
Chapter -4: The fourth chapter deals with the framing of statements for the scale and the full description of the procedure and criteria for selecting the statements for the final form of the scale (Questionnaire), description of methods to be adopted to establish the reliability and validity of the scale.

Chapter -5: The fifth chapter describes the planning and procedures adopted for data collection.

Chapter -6: The sixth chapter deals with the data analysis and interpretation of the procedure adopted for analyzing the data in accordance with the research questions of the study.

Chapter -7: The last chapter deals with the observations and conclusions on the basis of standardization procedure and analysis of the data. The findings are to be discussed in terms of educational implications and suggestions for further research work are to be indicated.

Besides the above chapters, the bibliography, necessary tables and appendices will be added at the end.

1.11 RESUME:

The significance of Environmental Education, scope, need and importance of the present study in the present context has been discussed in this chapter. Important terms and topic comprising the title of the problems have also been explained. The objectives and limitations of the study are enumerated to develop a proper perspective of the study.