

CHAPTER - 2

CONCEPTUAL FRAMEWORK AND REVIEW OF RELATED LITERATURE

2. INTRODUCTION

Conceptual framework is the structure of the content that the researcher is researching. It implies the researcher's understanding of the concept, the relevant information and other aspects of the content accumulated and created by the researcher for providing lucid content clarity.

Review of related literature is systematic identification, location, analysis and report of documents containing information related to research topic. Theoretical and research based reviews provide the researcher valuable guidance and suggestion for conducting the research. They also serve as a solid foundation for the study. A review of related literature is a must in research. It helps the researcher in understanding and defining the problem accurately and systematically. This review help the researcher to proceed in one's study and also helps to prepare a proper design for the study.

Review of related literature is one of the significant aspects of research. It enables the researcher to get acquainted with the work done in the concerned area. It also helps to explore the needs of research in unknown and unexplored areas. It develops insights into the methodological aspects of the research.

2.1 OBJECTIVES OF THE REVIEW OF RELATED LITERATURE

The following were the objectives of the review of related literature;

- To understand various aspects and scope of the research thoroughly;
- To study the researches which have been done before the current research;
- To decide proper hypothesis, objectives, methodology of the research;
- To have a proof on the part of the investigator to show that the investigator knows what type of study is done in the same field;
- To have proper guideline to implement the practical work;
- To have appropriate guidance to complete the present research;

- To provide a vast outlook regarding the subject;
- To avoid repetition of the researches done;
- To broaden the researcher's horizon of knowledge;
- To find out the novelty of the present research.

In the present study the researcher has reviewed various books, dissertations, articles, journals, thesis, and web sites as reference materials.

The present chapter has been divided into two sections: conceptual framework and reviews of related literature.

2.2 CONCEPTUAL FRAMEWORK

2.2.1 Meaning and Nature of Environmental Education

Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions.

Environmental education is aimed at producing a citizenry that is knowledgeable concerning the biophysical environment and its associated problems, aware of how to solve these problems and motivated to work toward the solution. Studies have shown that environment education engages students in learning about life around. Environment education can be thought of as comprising three inter linked components.

1. Education about the environment
2. Education for the environment
3. Education through the environment

Environmental education brings the real world into the classroom empowering learners to make positive changes in their local communities and in the world. It represents a relevant means of prevention because this type of education encourages learners'

awareness of their environment ambient conditions as well as their active participation. It helps in focusing the educational curricula for global sustainable development by incorporating the knowhow and skills and also the moral imperatives. The need of environment education has become greater. Every day the country seems to be facing new and difficult choices touching on environmental issues ranging from how to meet everyday needs to how to deal with toxic materials that might pollute air, water, and soil. It has been considered an additional or elective subject in much of traditional K-12 curriculum.

Environmental education refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behavior and ecosystems in order to live sustainably. The term is often used to imply education within the school system, from primary to post-secondary. However, it is sometimes used more broadly to include all efforts to educate the public and other audiences, including print materials, websites, media campaigns, etc. Related disciplines include outdoor education and experiential education. There are numerous ways children can learn about the environment in which they live. From experiential lessons in the school yard and field trips to national parks to after-school green clubs and school wide sustainability projects, the environment is a topic which is readily and easily accessible. The final aspect of environmental education policies, but certainly not least important, is training individuals to thrive in a sustainable society.

Environmental education is a lifelong educational process that occurs at all levels of education. It is for developing attitudes and value systems which lead to socio-economic improvement through positive social interactions and the maintenance and improvement of the natural and built environment. It requires a holistic and preferably interdisciplinary approach to teaching with opportunities for diverse learning experiences, but with particular emphasis on direct experiential learning in natural, built and social environments. It aims to develop an individual's understanding, skills and the feelings of empowerment that are necessary for both positive behavior towards the biophysical and social environment in everyday living, and for active participation in group efforts to find the optimal solutions for environmental problems. Environmental education is about the

interactions which occur in the natural, the built and social environment. It should lead to the understanding of how human interactions and political processes, together with the nature of socio-economic issues and the effect of these on environmental degradation or enhancement.

Environmental education needs to incorporate this reality by providing people with the knowledge, understanding and capacity to influence mainstream society in a way which progresses environmental objectives along with other legitimate social and economic objectives. Changes in the environment have - and will continue to - affect us geographically, socially and economically at local, national and global levels. We will see our towns and neighborhoods change as we adapt to the challenges ahead and forge a sustainable future. This makes educating the young about these changes essential. They will be the generation that makes the difference in how we tackle climate change, how we source our food and how we find sustainable and renewable energy sources, to name just a few issues. Tomorrow's leaders need to be equipped for tomorrow's challenges, and we must adequately prepare our children for the future they will inherit. That requires a commitment to providing children with environmental education that helps them become the educated thought leaders of tomorrow. The whole living organisms depend upon environment for their existence. The environment is degrading day by day either through natural process or through human activities. Human beings are the ones who degrade the environment directly when we consume the natural resources and indirectly, when they modify and purify the natural resources, waste products are produced, as a result, environment gets degraded.

Environmental education is an ideal way to stimulate the academic and social growth of young people. Young minds are generally eager to learn about their surroundings but need to be shown the interconnection between the environmental problems and everyday life. To address the environmental issues the first most important step is to understand the causes for the same and nip them in the initial stages. Experiences in the environment enhance learning and appreciation of the way the natural world functions. These are experiences such as outdoor activities which are purely for fun but at the same time aimed at raising awareness or developing specific understanding about the environment.

This learning is called experiential learning or learning based on constructivism, since learners construct their own meaning from their experiences in the environment. Environmental awareness relates to the recognition by the public of environmental issues and values, and the implications they have in relation to economic issues and social standards of living. It is best produced and developed by personal exploration and discovery of people's surroundings. Public environmental awareness and participation is vital to the goal of achieving a sustainable future. Social involvement in this course of action can only happen when the communities are aware of the importance of maintaining healthy and productive ecosystem

2.2.2 Objectives of Environmental Education

Environmental Education is bound to fulfill the following objectives.

Awareness: Assist individuals and groups in society to acquire a greater sensitivity and awareness of the environment in general and of its problems.

Knowledge: Assist individuals and groups in society to acquire a basic comprehension of the environment in its totality and of its problems. Also, to understand the presence and role of humans, this involves a critical responsibility.

Attitudes: Assist individuals and groups in society to acquire social values and a deep interest in the environment that may drive them to actively participate in its protection and improvement.

Skills: Assist individuals and groups in society to acquire the skills needed to solve environmental problems.

Participation: Assist individuals and groups in society to develop their sense of responsibility and take note of the urgent need to pay attention to environmental problems; to ensure that they adopt adequate measures in this respect.

2.2.3 Aims of Teaching Courses in Environmental Education

1. To foster clear awareness of and concern about environmental issues that affects us at local and national levels.
2. To provide opportunities to acquire knowledge attitudes and values needed to protect, manage and improve the environment.
3. To create new forms of behavior in individuals, groups and society as a whole towards the environment.
4. To produce citizens who are knowledgeable of problems associated with the biophysical environment and are aware of how to help solve these problems and motivated to work towards their solution.

Environmental education is a new focus for education. It is a new way of helping individuals and societies to resolve fundamental issues relating to the current and future use of world's resources. It is a process aimed at developing a world population that is aware of and concerned about the total environment and its associated problems and has the attitude, motivation, knowledge, commitment and skills to work individually and collectively towards solutions for the current problems and prevention of new ones.

Environmental education has been an area of concern in all curriculum development programmes in India. The movement of Basic Education launched by Mahatma Gandhi in 1937 was perhaps the first serious attempt at relating education in schools to local environmental needs. The essential elements of Basic Education were: productive activity in education, correlation of curriculum with the productive activity and the social environment, and intimate contact between the school and the local community. The best that Basic Education had to offer was incorporated in the Report of the Education Commission (1964-66) so as to relate it to the life, needs and aspirations of the nation. Environmental education refers to organized efforts to teach about how natural environments function and, particularly, how human beings can manage their behavior and ecosystems.

Environmental education, thus, may best be defined as a process directed at creating awareness and understanding about environmental issues that leads to responsible

individual and group actions. Successful environmental education focuses on processes that promote critical thinking, problem solving and effective decision-making skills. Environmental education utilizes processes that involve students in observing, measuring, classifying, experimenting and other data gathering techniques. These processes assist students in discussing, inferring, predicting and interpreting data about environmental issues. Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges and fosters attitudes, motivation, and commitments to make informed decisions and take responsible action.

2.2.4 History of Environmental Education

With an increasing awareness of environmental problems, a number of environmental movements have developed. Concerned people have written books, held meetings and made recommendations. This was the beginning of Environmentalism, which can be traced as far back as 1962. This was the time when social values were being questioned. An early example of this was the Scientist Rachael Carson, whose book 'Silent Springs' (1962) criticized the manufacturing and use of agricultural pesticides for harming the countryside.

The roots of environmental education can be traced back as early as the 18th century when Jean-Jacques Rousseau stressed the importance of an education that focuses on the environment in *Emile: or, On Education*. Several decades later, Louis Agassiz, a Swiss-born naturalist, echoed Rousseau's philosophy as he encouraged students to "Study nature, not books." These two influential scholars helped lay the foundation for a concrete environmental education program, known as nature study, which took place in the late 19th century and early 20th century.

The nature study movement used fables and moral lessons to help students develop an appreciation of nature and embrace the natural world. Anna Botsford Comstock, the head of the Department of Nature Study at Cornell University, was a prominent figure in the nature study movement and wrote a *Handbook for Nature Study* in 1911, which used nature to educate children on cultural values. Comstock and the other leaders of the

movement, such as Liberty Hyde Bailey, helped Nature Study garner tremendous amounts of support from community leaders, teachers and scientists, and change the science curriculum for children across the United States.

A new type of environmental education, Conservation Education, emerged as a result of the Great Depression and Dust Bowl during the 1920s and 1930s. Conservation Education dealt with the natural world in a drastically different way from Nature Study because it focused on rigorous scientific training rather than natural history. Conservation Education was a major scientific management and planning tool that helped solve social, economic, and environmental problems during this time period.

The modern environmental education movement, which gained significant momentum in the late 1960s and early 1970s, stems from Nature Study and Conservation Education. During this time period, many events – such as Civil Rights, the Vietnam War, and the Cold War – placed Americans at odds with one another and the U.S. government. However, as more people began to fear the fallout from radiation, the chemical pesticides mentioned in Rachel Carson's *Silent Spring*, and the significant amounts of air pollution and waste, the public's concern for their health and the health of their natural environment led to a unifying phenomenon known as environmentalism.

One of the first articles about environmental education as a new movement appeared in the *Phi Delta Kappan* in 1969, authored by James A. Swan. A definition of "Environmental Education" first appeared in *The Journal of Environmental Education* in 1969, authored by William B. Stapp later went on to become the first Director of Environmental Education for UNESCO, and then the Global Rivers International Network.

Ultimately, the first Earth Day on April 22, 1970 – a national teaching about environmental problems – paved the way for the modern environmental education movement. Later, that same year, President Nixon passed the National Environmental Education Act which was intended to incorporate environmental education into K-12 schools. Then, in 1971, the National Association for Environmental Education (now

known as the North American Association for Environmental Education) was created to improve environmental literacy by providing resources to teachers and promoting environmental education programs.

Internationally, environmental education gained recognition when the UN Conference on the Human Environment held in Stockholm, Sweden, in 1972, declared that environmental education must be used as a tool to address global environmental problems. The United Nations Education Scientific and Cultural Organization (UNESCO) and United Nations Environment Program (UNEP) created three major declarations that have guided the course of environmental education.

2.2.5 History of Environmental Education in India

The Centre for Environment Education (CEE) in India was established in August 1984 as a Centre of Excellence supported by the Ministry of Environment and Forests. The organization works towards developing programmes and materials to increase awareness about the environment and sustainable development. The head office is located in Ahmadabad. The Centre has 41 offices across India. CEE has 41 offices including regional cells in Bangalore (South), Guwahati (North East), Lucknow (North), Ahmedabad (West) and Pune (Central), state offices in Delhi, Hyderabad, Raipur, Goa, Coimbatore, and several field offices. It has international offices in Australia and Sri Lanka. Centre for Environment Education was created in recognition of the importance of environmental education in India's overall environment and development strategy. The result of a unique partnership between government and a non-governmental institution, CEE was established as a Centre of Excellence in 1984. Mr. Kartikeya Sarabhai is the Director of CEE. Centre for Environment Education, CEE was created in recognition of the importance of environmental education in India's overall environment and development strategy. The result of a unique partnership between government and a non-governmental institution, CEE was established as a Centre of Excellence in 1984, supported by the Ministry of Environment and Forests (MoEF), Government of India.

CEE has inherited the rich multi-disciplinary resource base and varied experience of Nehru Foundation for Development, its parent organization, which has been promoting educational efforts since 1966 in the areas of science, nature study, health, development and environment. At the time it began its activities, CEE was perhaps the only organization actively engaged in environmental education in the country. While carrying out programmes in different parts of the country, it was located only at Ahmadabad. Within five years of activities, it was realized that for a country as vast as India and its diversity, physical presence was important for effective implementation. Based on this, the first regional office was opened for the Southern region in 1988-89. Since then it has been a conscious effort to have an office or presence in the geographical area of work. After completing a decade of activities in 1994, it was decided to move more from environmental education to environmental action. This was an outcome of the learning and experiences in the first ten years. CEE began more pilot, field-level and demonstration projects towards sustainable development which could be scaled-up and replicated. Within the next ten years, these projects formed a major chunk of Centre's activities.

Today, CEE works for a wide range of sectors, target groups and geographical areas. CEE sees a major opportunity in the UN Decade of Education for Sustainable Development (2005–14) to further contribute towards sustainable development. CEE has inherited the rich multi-disciplinary resource base and varied experience of Nehru Foundation for Development which has been promoting educational efforts since 1966 in the areas of science, nature study, health, development, and environment. CEE is the nodal agency for implementation of DESD activities in India under the Ministry of Human Resources Development, Government of India. After the events that occurred in the Stockholm summit in 1972, India incorporated environmental concern in the constitution through 42nd Amendment in 1976. The Environment has become a priority in policy statements and strategies especially after 1980 with the establishment of a Ministry of Environment and forests. EE has been introduced into school and the main environmental problems they deal with are usually grouped under four heads, viz. land degradation, degradation of forest, pollution of soil, water and air and the cluttering and

fouling of landscape. One of the problems with EE in India is the way children are being taught to see the environment. Environmental perceptions are largely determined by Euro-American perception. Only when educators begin to emphasize the importance of listening to the authentic voices of the poor, the discriminated and the displaced, can effective EE be taught. Education as is focuses on technological progress contributing to material comforts and disregards traditional knowledge as unenlightened. Formulating an Indian environmentalism was a large undertaking because of the lack of proper EE in schools.

Efforts to define environmental education as a specific endeavor began in the 1960s. They were given international support at the United Nations conference on the Human Environment held in Stockholm in 1972, where participating governments recommended that it be recognized and promoted on an international scale through the United Nations. One of the initial tasks was to develop some consensus on what environmental education could and should become, and to assist governments in implementing relevant programs as soon as practicable. Two major conferences, supported by regional meetings of experts, were hosted by the newly formed UNESCO-UNEP International Environmental Education Programme. The purpose of the first (Belgrade, 1975) was to draft concepts and a vision for environmental education. The second, an Intergovernmental Conference on Environmental Education (Tbilisi, 1977) formally approved the scope and action plans put forward from the previous conference. The provisions of the Tbilisi Declaration on the role, objectives and characteristics of environmental education, appended to this document, have remained in wide international use and have sustained their role as a guiding influence over the past two decades. Other major milestones are as follows.

- **The IUCN World Conservation Strategy (1980)** suggested requirements for human survival and prosperity, putting forward the conservationist concept of sustainable development.
- **Our Common Future (1988)** was the name of the report published by the World Commission on Environment and Development, chaired by the Prime Minister of Norway, Mrs. Brundtland. It emphasized the relationship between the underdeveloped

nature of several parts of the world and existing social and environmental problems. The report is a survey of the planet's health, presenting the problems of atmospheric pollution, desertification, over-population, overconsumption, water shortages, poverty and under-development.

- **Agenda 21 (1992)** The United Nations Conference on Environment and Development in Rio de Janeiro established further strategies for a sustainable future. Chapter 36 of the action plan adopted by the Conference, Agenda 21, focused on public education, awareness and training, which confirms the role of education and the importance of positioning environmental education in the perspective of sustainable development.

- **UNESCO Thessaloniki Declaration (1997)**, Educating for a Viable Future: a multidisciplinary vision for concerted action sought to further clarify the concept of education for sustainable development. It presented sustainability as an ethical and moral imperative, and the objective to which education should devote itself as an instrument of choice. Education is described as an ongoing process aimed at developing the capability of adapting to rapid changes in the world, but first and foremost as a process of transmitting knowledge and information to make the public understand the problems and to stimulate awareness.

During the same period, individuals and groups, both within and outside formal education systems and agencies, began to generate new emphases in their educational work, finding and expressing different focal points and relationships as well as a new urgency in their treatment.

2.2.6 Recent Developments

The United Nations Conference on Environment and Development held in Rio de Janeiro in 1992, and the World Summit on Sustainable Development at Johannesburg in 2002 have drawn the attention of the global community to discuss problems concerning environment and development. In order to achieve the goals of sustainable development, people need to become aware of the environmental issues and acquire background knowledge to enable them to make and influence decisions. Environmental education is,

thus, concerned with attitude towards, and decisions about environment quality, with informed management of resources, and with the ethical considerations that relates to these. Recognizing the importance of environmental education at all levels, the Hon'ble Supreme Court of India ruled that a course on Environment be made mandatory at the undergraduate level to sensitize the youth to environmental issues and concerns. As per the Supreme Court direction, the University Grants Commission introduced six months of compulsory environmental course in all the universities and colleges during the academic year 2004-05.

The declaration of the decade for Education for Sustainable Development (ESD) beginning in 2005, by the United Nations has provided further impetus. The goal is to create a sustainable world through active participation of citizens. Thus, ESD is seen as a process that develops vision, builds capacity and empowers individuals to make changes in human societies. Education has a pivotal role to play in achieving a sustainable economy and society. The dilemma that an educator faces today is that, by and large, academic institutions try to teach everyone to accept the economic system and to succeed within it. Unfortunately, that success pretty much guarantees the accelerated blighting of the planet and all living organisms, without exception. The cognitive and cultural separation of 'ecology and environment' from the human enterprise, has led to a large-scale degradation and depletion of natural resources. The guiding ideology needed to learn and teach sustainability is an ideological orientation that emphasizes conserving cultural values, beliefs, and practices that contribute to sustainable relationship with the environment. All the citizens must be environmentally literate. Perhaps the best way to visualize is by incorporating environmental education in the structure, pedagogy and curriculum of academic institutions.

2.2.7 'Know your Ecosystem', A Programme in Environmental Education

'Know Your Ecosystem' is an Environmental Education Programme for conservation of ecosystems, environmental management and sustainable planning education for schools. Its holistic, participatory approach and combination of learning and action make it an

ideal way for schools to embark on a meaningful path for improving the environments of schools and their local communities, and for influencing the lives of young people, school staff, families, local authorities, NGOs, and many more. ‘Know Your Ecosystem’ is a participatory programme that provides an excellent opportunity for students to take decisions to improve both school and home environments. It strives to increase environmental awareness of students, staff and communities and to improve school environments through this. Actions taken during the programme have also led to financial savings for the school regarding electricity and water consumption costs. The schools are given the opportunity to create links with the other schools (rural, urban, etc.), giving them the chance to share environmental education ideas and creating a means for cultural exchange and language improvement.

Environmental education programme encompasses raising awareness, acquiring new perspectives, values, knowledge and skills, and formal and informal processes leading to changed behaviour in support of a sustainable environment.

The skills acquired include capacities to:

- Define and explain fundamental concepts such as environment, ecological systems, community, development and technology and being able to apply them to specific situations using a range of relevant resources and technologies;
- Analyze problems, and frame and investigate relevant questions;
- Assess and evaluate differing points of view;
- Develop hypotheses based on balanced and accurate information, engage in critical analysis and careful synthesis, and test new information and personal beliefs, with explorations and experiences against these hypotheses;
- Communicate information and points of view effectively;
- Develop partnerships and the foundation for cooperative and consensual action;
- Develop strategies for action, including locating appropriate resources, and means for their implementation.

2.2.8 Environment issues in India

Cuff and Goudie (2009, p. 358) identify four major areas of environmental problems and challenges in India. The first is the gross over population, which places increasing demands for resources that are often met through unsustainable means like the agrochemical agriculture practiced widely in India. The second is the extreme poverty and need, which are stipulated to be the greatest polluters of the environment (Gandhi, as cited in Rangarajan, 2009, p. xviii). The third is the large number of urban centers, as 25 out of the 100 fastest growing cities in the world are in India (Barta & Pokharel, 2009). 60% of India's population lives in these cities (World Bank, 2009) in slum-like conditions, which place a huge demand on natural resources like food, water and building materials which affects not only the immediate urban, but also the distant rural environments. Finally, India's diverse environment makes it particularly 'difficult' and 'fragile' as each region poses a different kind of challenge in terms of the environmental issues it raises (Joshi, 2005).

2.2.9 Types of Environmental Problems

Pollution

Pollution is the addition to the ecosystem of something which has a detrimental effect on it. One of the most important causes of pollution is the high rate of energy usage by modern, growing populations.

Different kinds of pollution are found and they are

Air Pollution

Air pollution is the introduction into the atmosphere of chemicals, particulates or biological materials that cause discomfort, disease or death to humans, damage other living organisms such as food crops or damage the natural environment or built environment. Air pollution occurs when the air contains gases, dust, fumes or odour in harmful amounts. That is, amounts which could be harmful to the health or comfort of

humans and animals or which could cause damage to plants and materials. Air pollution comes from many different sources such as factories, power plants, dry cleaners, cars, buses, trucks and even windblown dust and wildfires. An air pollutant is known as a substance in the air that can cause harm to humans and the environment. Pollutants can be in the form of solid particles, liquid droplets, or gases. Pollutants may be natural or man-made.

Natural Sources of Air Pollution: They are dust storms, forest fires, ash from smoking volcanoes, decay of organic matters and pollen grains floating in air.

Manmade Sources of Air Pollution: They are population explosion, deforestation, urbanization and industrialization.

Water Pollution

Water pollution is the contamination of water bodies (e.g. lakes, rivers, oceans, aquifers and groundwater). Water pollution occurs when pollutants are directly or indirectly discharged into water bodies without adequate treatment to remove harmful compounds. Water pollution affects plants and organisms living in these bodies of water. In almost all cases the effect is damaging not only to individual species and populations, but also to the natural biological communities. There are several classes of water pollutants. The first are disease-causing agents. These are bacteria, viruses, protozoa and parasitic worms that enter sewage systems and untreated waste. A second category of water pollutants is oxygen-demanding wastes; wastes that can be decomposed by oxygen-requiring bacteria. When large populations of decomposing bacteria are converting these wastes it can deplete oxygen levels in the water. A third class of water pollutants is water-soluble inorganic pollutants, such as acids, salts and toxic metals. Large quantities of these compounds will make water unfit to drink and will cause the death of aquatic life.

Land Pollution

Land pollution, in other words, means degradation or destruction of earth's surface and soil, directly or indirectly as a result of human activities. Anthropogenic activities are

conducted citing development, and the same affects the land drastically, we witness land pollution; by drastic we are referring to any activity that lessens the quality and/or productivity of the land as an ideal place for agriculture, forestation, construction etc. Land Pollution has led to a series of issues that we have come to realize in recent times, after decades of neglect. The increasing numbers of barren land plots and the decreasing numbers of forest cover is at an alarming ratio. Moreover the extension of cities and towns due to increasing population is leading to further exploitation of the land. Also due to the lack of green cover, the land gets affected in several ways like soil erosion occurs washing away the fertile portions of the land. Or even a landslide can be seen as an example.

Climatic Change

Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It may be a change in average weather conditions, or in the distribution of weather around the average conditions. Climate change is caused by factors such as biotic processes, variations in solar radiation received by Earth, plate tectonics, and volcanic eruptions. Certain human activities have also been identified as significant causes of recent climate change, often referred to as "global warming".

Natural Disasters

A natural disaster is a major adverse event resulting from natural processes of the Earth; examples include floods, volcanic eruptions, earthquakes, tsunamis, and other geologic processes. A natural disaster can cause loss of life or property damage, and typically leaves some economic damage in its wake, the severity of which depends on the affected population's resilience, or ability to recover.

2.3 RESEARCH REVIEWS

2.3.1 Studies Conducted in India

Bhatia & Bhatia (2013) conducted a study on ‘A Study of Environmental Awareness among Post-Graduate Students of Distt Yamuna Nagar, Haryana’. The Objective of the study were

- (1) To study Environmental Awareness among Post-Graduate Students of District Yamuna Nagar.
- (2) To study the differences in Environmental Awareness among Post-Graduate Male and Female students of District Yamuna Nagar.
- (3) To study the differences in Environmental Awareness among Post-Graduate Students Science and Arts students of District Yamuna Nagar.
- (4) To study the differences in Environmental Awareness among Post-Graduate Rural and Urban students of District Yamuna Nagar.

The simple random sampling method was used to collect the sample. 200 students were taken as the sample in their study. The researcher used the Environmental Awareness Test (EAT) which was developed by A.Rajan Meetei (1996). The test consists of five components viz. general knowledge, air pollution, water pollution, land and soil pollution and noise pollution. The test was in the form of multiple-choice type.

Singh, A. (2013) conducted a study on ‘Effectiveness of a disaster preparedness programme for preservice teachers’. The objectives of the study were

- 1) To prepare a disaster preparedness programme for preservice teachers.
- 2) To implement the prepared disaster programme on pre service teachers.
- 3) To evaluate the effectiveness of the prepared disaster preparedness programme.

The population of the study comprised of pre service teachers of 1 year B.Ed Programme College affiliated to Sardar Patel University. The sample of the study comprised of preservice teachers of Waymade College of education. Convenient sampling technique

was used by the researcher to select the sample. Questionnaire was used to collect the data.

Basu, R. (2012) conducted a study on ‘Environmental Education at the Mumbai University: An impact study’. The objectives of the study were

- 1) To evaluate the effectiveness of Environmental Education in creating awareness and concern about environmental problems among students of colleges affiliated to the University of Mumbai in Navi Mumbai.
- 2) To find out whether the students and teachers feel capable and empowered to tackle the local environmental problems.
- 3) To find out whether Environmental Education has brought any change in the lifestyle of the selected sample of students and made them eco friendly.
- 4) To understand and enumerate the challenges and hardships faced by students and teachers in putting their ideas and plans of conservation and sustainable development into action.
- 5) To review the environmental education syllabus of the University of Mumbai and to give suggestions to make it more functional and activity oriented.

The population of the study comprised nearly 5000 students and teachers who had environmental education as their subjects. The sample of the study comprised about 250 students from various colleges in Navi Mumbai, 20 senior professors, 35 teachers, 4 prominent alumni. The sample was selected through convenient sampling method. Questionnaire, interview, focus group discussion, pre test and post test, documentary study, photographic evidence was used as tools to study the topic. Major findings of the study are 95% of the respondents who believe that environmental education is necessary can play an important role in changing the behavior of the individual. The studies showed that 48% respondents are aware of environmental problems prevailing at the local as well as global level.

Ali and Sinha (2012) conducted a study on ‘A Study of Environmental Awareness and Ecological Behaviour among Female B.Ed. Students’. The Objectives of the study were

- (1) To study the relationship between environmental awareness and the medium of instructions among female B.Ed. students.
- (2) To study the relationship between environmental awareness and the place of residence among female B.Ed. students.
- (3) To study the relationship between environmental awareness and the status among female B.Ed. students.
- (4) To study the relationship between environmental awareness and ecological behaviour among female B.Ed students.

The sample of the study comprised of 200 B.Ed female students having English and Bengali as their medium of instruction. The B.Ed. students were taken from urban and semi urbanized rural areas of Kolkata. The sample was collected from the following places namely - Calcutta University (Alipore Campus), Sri Shikshayatan College, Loreto House, Calcutta Girls B.T. College and St Xavier’s College, Kolkata. Information schedule, Environmental awareness scale, general ecological behavior scale had been used as tools in their study. From the research, it is concluded that the education system alone is a powerful medium to ensure protection of environment and can lead to more eco-friendly behaviour.

Devi & Singaravelu (2011) conducted a study on ‘Impact of eclectic method in learning environmental education at primary level’. The objectives of the study were

- 1) To identify the learning impediments of the learners in learning environmental science through conventional method in panchayat union primary school Thudiyalur.
- 2) To find out whether there is any significant difference between post-test of controlled group and post-test of experiential group in achievement of primary level learners in learning environmental science through eclectic approach.

3) To find out whether there is significant difference between the pre-test and post-test of the experimental group.

4) To find out the impact of eclectic method on learning environmental science.

The sample of the study comprise of eight students studying in STD V in Thudiyalur panchayat union primary school. Researchers self made question paper was used as a tool for the study. The findings of the study are 1) learners of std V studying in Thudiyalur panchayat union school were assessed to have problems in learning environmental science.2) There is a significant difference between the post-test of controlled and experimentalgroup.3) There is significant difference between pre- test and post-test of experimental group in achievement mean scores in learning environmental science through eclectic method.

Navinkumar (2011) conducted a study on ‘A study of the awareness of student teachers on environmental issues’. The objectives of the study were

1) To study the attitude of the student teachers towards environmental issues.

2) To study the attitude of the student teachers towards environmental issues institution wise.

3) To study the attitude of the student teachers towards environmental issues stream wise.

4) To study the attitude of the student teachers towards environmental issues gender wise.

The population of the study comprised of All the English medium education colleges of Gujarat. Sample of the study comprised of B.Ed students of Waymade College of education and H.M. Patel institute of English Training & Research. Questionnaire was used as a tool to collect the data. Cluster sampling technique was used in the study. The study was experimental in nature. The findings of the study were a large majority of student teachers have moderately favorable attitude towards environment where as 43.3% of student teachers have highly favorable attitude towards environment.

Arumugarajan R (2010) conducted a study on ‘Environmental Awareness of IX std students in Tuticorin District’. The objectives of the study were

- 1] To find out the environmental awareness of IX STD students in Tuticorin area.
- 2] To find out the significant difference in the environmental awareness of boys and girls, government and private school students, students residing in own houses and rental houses.

The investigator adopted the survey method of research. The data were collected from 200 students. The variables of the study are gender, locale of the school, type of the school and type of the residence. The population of the study comprises of IX STD students of Tuticorin District. The sample of the study comprise of 200 students from six higher secondary schools were taken as sample. Random sampling technique was used in the study. Mean, Standard deviation and T test were the stastical techniques used by the researcher. The findings of the study are 1) There is no significant difference between the mean scores of environmental awareness of the boys and girls studying in std IX in Tuticorin District.2) There is no significant difference in the mean scores of environmental awareness of students in government school and management schools.3) There is no significant difference between the mean scores of std IX students residing in own houses and rental houses on environmental awareness.

Manas, B.S (2010) conducted a study on ‘A study of relationship between environmental awareness and environmentally ethical behavior of undergraduate students of Banaras Hindu university undergoing U.G.C course of environmental education’. The objectives of the study were

- (1) To study the level of environmental awareness and environmentally ethical behavior of undergraduate students of B.H.U undergoing U.G.C course of environmental education.
- (2) To study the effect of a gender, age, locality, family type, parents occupation, parent’s income and course of study on environmental awareness of undergraduate students of B.H.U undergoing U.G.C course of environmental education.

(3) To study the effect of a gender, age, locality, family, parent's occupation, parent's income, course of study on environmentally ethical behavior of undergraduate students of B.H.U undergoing U.G.C course of environmental education.

(4) To find out the relationship between environmental awareness and environmentally ethical behavior of undergraduate students of B.H.U undergoing U.G.C course of environmental education.

(5) To study the relationship between environmental awareness and environmentally ethical behavior of undergraduate students having high level of environmental awareness and having low level of environmental awareness.

(6) To study the pattern of environmentally ethical behavior of undergraduate students of B.H.U. undergoing U.G.C course of environmental education.

The study was carried out by using survey method. The design used to study is descriptive survey design. The population of the study comprise of all the undergraduate students of Banaras Hindu University. The sample of the study consists of 996 undergraduate students selected in clusters from 19 departments, selected randomly from 135 departments of 15 faculties of Banaras Hindu University. The tools used by the researcher were environmental awareness test and environmentally ethical behavior scale. The findings of the study were (1) the female students do not differ significantly from male students from male students in their environmental awareness of male students. (2) Students of different age groups differ significantly in their level of environmental awareness. (3) It was found that students belonging to private employee parents differ significantly from the students belonging to government employee parents. (4) It was found that the students of different parent's income group differ significantly in their level of environmental awareness. (5) It was found that the students of different subjects differ significantly in their level of environmental awareness. (6) It was found that there is significantly difference between environmentally ethical behavior of male and female students.

Ekambaram & Nagaraja (2010) conducted a study on ‘An analysis of Environmental Awareness. The case of Prospective teachers’. The objectives of the study were

- 1] To analyze the level of awareness about environment among perspective teachers.
- 2] To compare & contrast the attitude of science & non science prospective teachers with regard to environmental awareness.
- 3] To evaluate the impact of gender, age, and social status of the prospective teachers on the level of environmental awareness.

The sample of the study comprise of 200 prospective teachers who are under B.Ed training in Tirupathi college were selected at random consisting of 112 science trainees teachers and 88 non science trainee teachers in chittoor district of Andhrapradesh. Pre-test and Post-test were used to analyze the data. The data collected were tested statically to arrive at conclusion. The results shown that mean score of the science teacher is higher than that of mean score of the non science teachers. The findings of the study were 1] Level of awareness differs in science and non science teachers. 2] Gender difference was also found in the level of the awareness.

Sarojini, K. (2010) conducted a study on ‘Level of Environmental Awareness among the school students’. The objectives of the study were

- 1] To find out the level of Environmental Awareness among school students.
- 2] To find out the level of Environmental Awareness among school students on the basis of the subject components namely Knowledge, Awareness, Skills, Attitudes and Participation.
- 3] To find out the level environmental awareness among school students in terms of the independent variables.

The sample of the study comprised of seven schools, six in Chennai district and one in Kancheepuram district. A sample of 542 students studying in 9th STD in different types of schools in Chennai district and Kancheepuram district were identified for the present

study. The sample of the study consists of 247 boys and 295 girls. The questionnaire was used to collect the data. The findings of the study were 1] the level of environmental awareness among school students is medium. 2] The level of environmental awareness in terms of subcomponents namely Knowledge, Awareness, Attitude and Participation is medium. 3] Urban students have higher level of environmental awareness than rural students. 4] There is no significant difference in the awareness of the students due to their sex and medium. 5] There is significant difference in the environmental awareness due to difference in annual income of parents. 6] There is significant difference in environmental awareness among students due to difference in type of school. 7] There is significant difference in environmental awareness due to difference in education of parents.

Vellaisamy (2010) conducted a study on ‘Environmental achievement in IX standard students through environmental awareness’. The objectives of the study were

- (1) To study the environmental achievement as awareness of class IXth students.
- (2) To study the role of students in strengthening environmental education.
- (3) To find relation between achievement scores in environmental education and environment awareness ability.

The normative survey method was used for this study to examine the role of the students in strengthening environmental education of secondary school students. Here environmental awareness ability and learning achievement are dependent variable. The hypothesis of the study is there will be no relation between learning achievement of students in environmental education and environment awareness ability. The sample of the study comprised of 100 students from four different schools at vedaranyam block of Nagapatnam district. The sample of the students was selected using random sampling techniques. The questionnaire was used to collect data on the role responses of students. Environmental awareness ability measure is also used as a tool. The findings of the study were (1) Role of students to achieve the basic knowledge of environmental education is 58.2% and only 28% of students performing at high level. (2) Role to protect the natural resources is 49.2% of students and only 32% of students are performing at high level. (3)

The role of the students in keeping the relation between environment and social issues is that 58% and 34% of students performing at high level.

Raju, G. (2007) conducted a study on ‘Environmental ethics of higher secondary students’. The objectives of the study were

- (1) To study the environmental ethics of the entire higher secondary school students.
- (2) To study whether there is any significant difference in environmental ethics of male and female higher secondary students.
- (3) To study whether there is any significant difference in the environmental ethics among the students studying in government, aided, matriculation schools.
- (4) To study whether there is any significant difference in the environmental ethics of rural and urban higher secondary students.

Normative survey method has been used in the study. Cluster sampling technique has been used to collect the sample. The sample of the study comprise of 560 higher secondary students studying in higher secondary schools of Cuddalore educational district of Tamilnadu. The findings of the study were (1) Environmental ethics of the higher secondary students of Cuddalore educational district is high. (2) Girls students have more environmental ethics than the boy’s students. (3) The communities of students do not have any influence on their environmental ethics. (5) Rural higher secondary students have more environmental ethics than the urban higher secondary students.

Jaiswal, H. (2006) conducted a study on ‘A study of the curriculum transaction of environmental science in the primary schools of Vadodara city’. The objectives of the study were

- 1) To study the pre teaching learning activities in the curriculum transaction of Environmental science in primary schools.
- 2) To study the post teaching learning activities in the curriculum transaction of Environmental science in the primary schools.

The study was descriptive in nature. The population of the study comprise of all the primary schools of Vadodara city. Questionnaire and rating scale were used as tools to collect the data. The major findings of the study were 1) while planning for any unit of Environmental science the teachers always identified the method and approach of teaching best suited to the content, so that maximum learning takes place. 2) While planning the lessons of Environmental science the teacher always maintained a balance between the quiet and active activities to be performed by the students. 3) The students and teachers rarely celebrated special days related to Environmental protection and conservation like world environment day, the earth day. 4) Large number of teachers developed awareness and skills of the students about the environment and its associated problem by promoting collection, preparation and use of charts, posters, pictures, puzzles.

Rajendran, M. (2005) conducted a study on ‘A study of Environmental Awareness and Attitudes among student teachers of the M.S.University of Baroda’. The objectives of the study were

- 1) To study the environment awareness of student teachers in relation to their stream, educational qualification, age, gender, and teaching experience.
- 2) To study the environmental attitude of student teacher in relation to their stream, educational qualification, teaching experiences, medium of instruction at their different level of their education.

The study was descriptive in nature. The population of the study comprise of all the 180 student teachers of the department of education, M.S.University of the year 2004-2005. Environmental awareness test and Environmental attitude test were used as tools to collect the data.

Chaudhari (2004) conducted a study on ‘Environmental knowledge and environmental attitude of students of secondary schools of Vadodara’. The objective of the study were

- (1) To study the environmental knowledge of students.
- (2) To study the environmental attitudes of the students.

(3) To find out relationship between environmental knowledge and environmental attitude. The tools used were interview schedule and questionnaire.

This study is survey type of research. The findings of the study were the factual, conceptual and total environmental knowledge as well as environmental attitude of secondary school students was average.

Kaur (1992) conducted a study on ‘Relationship of population awareness and the attitude towards environmental education and population education of male and female’. Professional teachers, 400 senior secondary school teachers, college and university teachers, Medical college teachers from Punjab and Chandigarh were selected for the study. The self constructed scales, attitude towards environmental education scale and the population awareness scale were used for the study. Mean, Standard deviation and t test were used for the treatment of the study. The major findings of the study were (1) In the case of the both males and females no difference existed in the population awareness of different categories of teachers. (2) Sex difference existed in the population awareness of different categories of teachers. (3) The level of the population awareness was not related to the attitude towards environmental education.

Shahnawaj (1990) conducted a study on ‘Awareness and attitude of teachers and students towards the environment’. The survey method was used in the study. Attitude scale and awareness scale were used to collect the data. The findings of the study were 1) 95% teachers and 94% students possessed positive environmental attitudes. 2) The environment trained and untrained teachers didn’t differ in their attitudes. 3) Teachers had more awareness of the environment than students. 4) Trained and untrained teachers didn’t differ on environmental awareness 5) Girls possessed significantly more awareness of the environment than boys.

2.3.2 Studies Conducted Abroad

Rider, R. (2005) conducted a study on ‘Education, Environmental attitudes and the design Profession’. The objectives that have been identified in this study are as listed here. The first goal is to evaluate environmental attitudes of established green building professionals through the use of the NEP Scale. Second, determine the most effective

factors in steering design professionals towards sustainability. The third goal is to look at the impact of design education on a professional's decision to go green. The design of this study is a simple case study design. The method used in this study is survey. The results of the survey indicate that those design professionals involved in green design are fundamentally dedicated to sustainability. All responses suggested that the interest in sustainability was sincere and heart-felt, as opposed to the possible interest for a career boost. The limitation of the study is personal bias and online survey. A comparative analysis of environmental attitudes between populations of designers should be performed in future research.

Marwein, B. (2004) conducted a study on 'Environmental awareness and attitude towards Environmental protection among the college students in West Khasi Hills District'. The objectives of the study were

- 1) To construct a measure of environmental awareness for assessing the level of environmental awareness among the college students in West Khasi Hills District.
- 2) To develop an attitude scale for measuring the attitude of the college students in West Khasi Hills District towards environmental protection.
- 3) To find out the level of environmental awareness and attitudes towards environmental protection among the college students in West Khasi Hills District.
- 4) To compare the environmental awareness level among the college students in West Khasi Hills District on the basis of gender and types of colleges.
- 5) To compare the attitude of college students towards environmental protection on the basis of gender and types of colleges.
- 6) To find out the relationship between environmental awareness and attitude towards environmental protection among the college students in West Khasi Hills District.

The population of the study comprise of all the college students studying in the colleges located in West Khasi Hills District of Meghalaya. Sample of the comprise of 536 students from the three colleges of the West Khasi Hills District out of 243 were male

students and 293 were female students. The study is experimental in nature. The findings of the study were there was positive correlation between awareness and attitude pertaining to things of the environment. Parental illiteracy, lack of exposure to various mass media and other learning experiences, faulty curriculum. Poverty, lack of trained teachers, and inadequate input from the governments are factors for the average level of environmental awareness. There is no significant difference between male students and female students.

Kelly, J.G Krock (2002) conducted a study on ‘Environmental Education on the Web: Worthwhile or Worthless’. The objectives of the study are

- 1) To prove that through computers the World Wide Web especially has become an important technological tool in environmental education.
- 2) Technology in the classroom can promote different types of communication between students and teachers, encourage students to use higher order cognitive tasks and challenge teachers to examine old beliefs about teaching and learning.

The findings of the study are Internet allows the environmental issues to enter the classroom. Since environmental education often begins close to home, the internet provides learners an opportunity to further explore environmental issues close to them.

Rickinson (2001) conducted a study on ‘Learners and Learning in Environmental Education: a critical review of the evidence’. The main objectives of the study are

- (1) To chart the nature of the current evidence base on learners and learning in environmental education in terms of its major foci, strengths and weaknesses.
- (2) To identify key messages emerging from this evidence base for each of the major foci within the area, and assess the limitations of these in terms of empirical underpinnings and generalisability.
- (3) To raise questions about the nature, quality and accessibility of recent environmental education learning research, and suggest priorities for future work.

Pojun (1986) conducted a study on ‘Environmental knowledge, comprehension, responsibility and interest of the secondary level students and teachers’. The findings indicated majority of the students who were aware of pollution, pesticides, typhoons, dams and volcanic areas; could explain blast fishing and its environmental effects and age characteristics of the population in the Philippines but did not know about the effects of forest destruction, new techniques of fish culture and the total population of the Philippines. The section students were not as interested in learning more about the environment as the low sections students were. The students had difficulty making scientifically correct cause consequences relationships. The teachers were aware of many events in their environment but couldn’t explain many of them. The teachers were interested in learning about energy, population dynamics, conservation and recycling. Survey method was used in the study Attitude scale was used as a tool to collect data. The data obtained was analyzed using qualitative and quantitative techniques.

2.4 CONCLUSION

Through all the reviews, the researcher was able to perceive different views in the area of Environmental Education and could arrive at comprehension of the concept of Environmental Education especially about environment and environmental issues.

The next chapter devotes itself to the research methodology.