CHAPTER-II

REVIEW OF THE RELATED LITERATURE
In this chapter an attempt has been made to conduct a survey and make a review of the previous studies, allied to the present study, with a view to make the research aware in the said area and also provide helpful suggestions for significant investigations. Review of related literature is essential for the researcher to understand the trend of modern research carried out in the different parts of the world to make the investigation more significant and more meaningful.

Review of related literature is essential for understanding what has done in that particular area, what has been left out and which can be identified.

Review of related literature has been identified as a valuable guide to defining the problem, recognising its significance, suggesting promising data gathering devices, appropriate study design and source of data.

2.1 Studies done Abroad

George Perkin Marsh (1864) through his investigation showed the need to control the use of natural resources and responsibility
towards them. Marsh's work was well received by scientists and the general public. In the 1870s, while Thoreau's work was catching on, Man on Nature was becoming an American classic.

**Leopold, A (1886-1948)** was an advocate of wilderness preservation and was instrumental in establishing the Gila wilderness area in New Mexico during the 1920s, which was the first national forest-wilderness system. By combining Federal government work with writing articles and books, the Chair of Game Management was created especially for him; Leopold became a cornerstone in the conservation and its global significance. His posthumously published Sand Country-Almanac has become a conservation bible. Among his other enduring legacies was the creation of the Wilderness Society which continues to focus on protecting public lands in the US.

**Carson, Rachel (1962):** The history of western concern for the environment date back to 1962 when Rachel Carson wrote "Silent Spring". This focused on the enormity of ecological damage brought about by industrial effluents being dumped into the rivers. The author describes in her book a hypothetical town in the heart of America. She elaborates on its beautiful surrounds, the prosperity of the people, the blaze of colour during changing seasons, the variety of plant and animal life,
tourists visiting the countryside to fish and relax. DDT is extremely harmful both flora and fauna.

**Odum T Howard (1971), Environment Power and Society.**
In this book energy language is used to consider the pressing problem of survival in our time, the partnership of man in nature. An effort is made to show that energy analysis can help answer many of the questions of economics, law and religion. This book also attempts to introduce ecology through energy language which is extremely useful to the widespread efforts underway in undergraduate colleges to develop courses in human ecology that are pertinent to a new generation gaping for survival on the planet.

**Angelo G. Homer (1972), “The need for strengthening Legal Systems for the Protection of the Environment”**
Environmental movement is the need for improved education greater than in the development and use of law at most levels of human society. Indeed the need is paramount internationally, nationally and locally. The amalgam of mankind’s legal systems has not yet given adequate recognition to the vital mutual interest of all societies in the preservation of the resources through effective rules and legal procedures. Ultimately the writer advocates that legal changes may be required for environmental protection on an international scale environmental law awareness at all levels should create.
Berger (1973) started an investigation on the relationship between the cognitive achievement in environmental knowledge and attitudes towards environment. Researcher found that the trend of the relationship between achievement and attitude ranged from negative to positive co-relation.

Hamann (1973) conducted a study on the development of environmental knowledge and attitudes towards environment among the pupils. It was stated that remarkable changes can be brought among the pupils attitudes in desired direction through planned curricular experiences.

Ward L.K. et al (1974), Grassland Ecology and Wildlife Management. This book describes the distribution and ecology of low land, grasslands in Britain with special reference to their flora and fauna, history and management for wildlife conservation. It will be of great help to those engaged both professionally and as amateurs in the field of ecology and conservation and will prove most valuable to post graduates and undergraduates relating to environmental sciences.

Dunlap R & Hefferman R (1975) in a letter study of environmental attitudes and policies conducted among universities students at the University of Oregon. Researcher found that pro-environmental attitudes and actions were consistently higher among Democratic and
Liberal Left students than among their Republican and Conservative counterparts. The exceptions were those Conservative who believe in possibility of eco-catastrophe.

Munn R.E. (1975): 'Environmental Impact Assessment'. The editor tries to give information available on man-made environmental changes and the effects of these changes on man, and try to assess and evaluate the environmental parameters, and also to provide an intelligent service on current research, and by recruitment of the best available scientific information and constructive thinking. This book is specially defined as an activity designed to identify and predict the impact and biophysical environment and on man's health and well-being of legislative proposals, policies, programs, projects and operational procedures, and to interpret and communicate information about the impacts.

Walter Ingo (1976), Studies in International Environmental Economics (Edited): The book is divided into four primary sections. First two chapters constitute an introduction, the second section (chapter 3-7) concerns market failure, the third section (chapter 8-14) concerns the regulation of pollution and the forth section (chapter 15-18) concerns measuring the demand for environmental quality. This book tries to discuss the ways in which countries around the world approach environmental
problems and their control. It tries to focus on the key issues of environmental economics as there is widespread worldwide interest in the field of environmental economics specially researchers in Europe in particular are very active in the field.

**Bryant, C. K & Hungerford, H.R (1977)** conducted a study in which they presented an instructional program to Kindergarten students on environmental problems. They asked the students to describe their own and others’ responsibilities as a way of measuring students’ verbal commitment to action. The researchers found that the students appeared more environmentally conscious after the presentation of instructional programme.

**Ronald R. Childress, (1978)** conducted on the methodologies used in environment education. It was found that small group projects, class discussions and field trips are the strategies used after in the largest percentage of programme and projects.

**Jans H H (1984)** assessed the short and long term impact of environmental instructional programmes on the attitudes of the third graders. The researcher found that in comparison to pre-test scores the group of students scored 30% higher scores in the post-test.
Howe and Disinger (1988) advocated that field experience made a major impact on student attitudes and found that outdoor settings were helpful in teaching awareness of environmental issues. They further made clear that some instructional strategies like discussion, role-playing, field trips, projects etc. for developing environmental responsibility.

Taylor D.E (1989) argues that it has been demonstrated that environmental activities show a different socio-economic profile from the environment concerned. He also argues that the activities were drawn disproportionately and concern is displayed by people from all social classes. He suggested that this shows the upper middle class involvement in environmental issues and organizations owns much to factors other than a unique environmental concern.

Samdahl and Robertson (1989) tested casual modelling of the demographic and liberal ideology as co determinants of environmental concern and found that there appeared to no significant interaction between education, residents or age with environmental concern in their data. Speculating that, future studies may benefit more by focusing on broader belief systems such as liberal ideology rather than socio demographics. Samdahl and Robertson stated that these ideological belief systems may present the more pervasive source from which most environmental concern is generated.
Glatter Ron (1989): ‘Management in Educational Institution and their Environment’. This book is about the educational institution. This book may encourage reflection about what knowledge, skills and attitudes are needed for managing the environment effectively and what direction most usefully must be followed in research area.

Chin (1993) carried out a study on environmental knowledge, attitudes and behaviour of secondary students and pre and in service teachers in Taiwan. He realized that students in rural junior high schools appeared to have lowest level of environmental knowledge, verbal commitment. Urban teachers possessed more environmental knowledge than rural teachers. Girls tend to be more aware than boys.

Flong (1993) made a study to find out about the environmental awareness and action for elementary school students and their parents in Taiwan, the republic of China. To attain this purpose, survey research was engaged and descriptive and a correlation technique was briefly used for data analysis. The sample included 531 grade fifth students and their parents. This study suggests and encouragement action made a noteworthy difference for awareness and encouragement achievement.

Weaver Jace (edited) (1997): in “Defending Mother Earth: native American Perspectives on Environmental Justice” 1997 the author – editor revels the urgent issues of environmental degradation as
they affect the indigenous peoples throughout the Americas. The different essays document a range of ecological disasters, including the devastating effects of mining, water pollution, nuclear power facilities and toxic waste dumps. Mentioning the term, "environmental racism" such hazards are commonly located on or near Indian Lands. Many of the contributors of the essays have strongly emphasized on the need to combat these dangers.

**Ediger, Prof. Marlow (1998): Environmental Education and the Curriculum.** Researcher established that a quality environment is a must for individuals to possess good health as well as to grow, develop and achieve. A polluted environment hinders flora and fauna. A well informed teacher can give the proper idea about the global environment. Researcher suggested that textbook, library books, video-taps, filmstrips, slides; illustrations may develop sense of responsibility for solution of various environmental related problem.

The teacher should apply diverse method of teaching to provide various information regarding environmental problems. The methods suggested by the researcher are as follows-

(a) Problem solving method.

(b) Using subject centered approaches.

(c) Decision making strategies.

(d) Emphasizing on instructional management system.
(e) Stressing project methods.

Researcher felt that every individual have a major responsibility in maintaining a quality natural environment.

Maathai, Wangari (2004): Through the book “The Green Belt Movement: Sharing the Approach and Experience” the author explored the philosophy behind it, its challenges and objectives, and specific steps involved in starting a similar grassroots environmental and social justice organization. The Green Belt Movement has inspired the grassroots level working people to improve their environment and offers ideas about a new and hopeful future of the world.

Grossman, Julie; Cooper, Terrence (2004) “Linking environmental science students to external community partners: A critical assessment of a service learning course.” This study describes a course that integrates environmental science students into local community organizations. Despite initially high expectations, student who completed the course held negative opinion about their experience because of inadequate community partner preparation. Based on the course’s successes and challenges, in this study, the authors present organizational and logistical recommendations for the instructors wishing to link their classroom to community organizations.
Gerstenberger, Shawn L.; Kelly, William E.; Cross, Chad L. (2004): “The Influence of an Introductory Environmental Science Class on Environmental Perceptions”. An environmental concern scale (ECS) was administered to a group of college students before and after completion of an introductory environmental science class. A significant increase in the level of concern was seen in questions related to overall environmental awareness and personal responsibility. Specially, concern was raised on questions related to slowing down pollution, preventing animal extinction, and students’ willingness to accept an increase in family expenses to help protect the environment. After completing the course, students also supported providing ample opportunities in all schools to learn about environmental issues. These data provide evidence that a college level environmental education experience can have an impact on environmental concerns and anticipated future behaviours. These data stress the importance and influence of environmental education at the higher educational (college) levels, and indicate such courses may provide opportunities for students in diverse degree programs to reshape their personal environmental ethic.

Lain Taylor (2004): The author, felt that the barn owls have an ethereal grace and beauty but their number is decreasing due to human settlement and other activities. The forest are being cleared and an
understanding of the biology and ecology of the species. The author has advocated the different measures of conserving the beautiful bird. It is very important that grasslands, trees, create meadows or prairies shelter bolts etc. as barn owls nest in tree holes, barns, niches in houses or rock cavities.

Kuplowitz, Michael D., Levine Ralph (2005) How Environmental Knowledge of Michigan state university students relative to the results of a biannual national study of the environmental knowledge of the general population of the United State. While the university students were found to possess higher levels of environmental knowledge than the general public, the students' over all of them receiving a passing grade. The findings suggest a positive co-relation between academic level, field of the study and environmental knowledge.

Rideout, Bruce E. (2005): "the effect of a brief environmental problem module on endorsement of the new ecological paradigm in college students." The author measured endorsement of New Ecological Paradigm (NEP) in college students following their involvement in a 2 to 3 week environment problem and energy issues. The module included readings, discussion and a writing exercise, and was presented during 3 sequential semesters within a course on research design. Students from the 3 groups were all tested subsequently in spring 2001. When compared with
controlled data, data from students receiving the educational module at showed significant increases in NEP endorsement that declined somewhat with time but remained significantly greater after 2 semesters. In contrast retention of knowledge from the module showed a predictable decrease over time.

**Plevion, Arlene (2006):** "The world is our home": Environmental justice, feminisms and student ideology. Study reveals that from interacting with their students, many teachers are aware that the concepts of feminism and environmentalism can conjure up impoverished, deficient and equally painful stereotypes. For some college students, feminism can mean merely equal pay for work. Environmentalism may trigger similarly limited associations, but inevitably "tree hugger" is what sticks in the minds of most media—saturated, generally stereotypes accepting students.

**Yavuz, Soner (2007):** The effects of interactive learning environments on cooperative learning achievement and student anxiety in By Yavuz, Soner. This study aimed to investigate the effect of distance education and technology assisted cooperative learning projects on students' achievement and attitude in "Chemistry events and concepts in our life". In the light of this aim student achievement scores as outcomes of
student cooperative learning projects were evaluated together with technology attitude scale.

Farnandez-Mnzanal, Rosairo; Rodriguez-Barreiro, Luis; Jose Carrasquer, (2007): "Evaluation of Environmental Attitudes: Analysis and Results of a scale applied to university students." This research presents the design and validation of an environmental attitudes scale aimed at University students. The result of the work shows that a certain level of worry exits among the students regarding environmental problems, which is apparent in the need to increase environmental education and research. Some differences in environmental attitudes were also found between first year students and final year students and male and female students. These results lead us to insist on the importance of bringing about changes in the curriculum to increase environmentalism in the university.

the wealth of African peoples and their culture, its flora and fauna. The book reveals that the concept of environment and development are the result of social movement. The book explores the alternate theories of development vis-a-vis environmental protection and their relationship with society through the Government policies and the different movements related to environmental protection.

2.2 Studies done in India

Sharma and Sultan (1979), Bhargava (1981) studied the effect of instructional material on developing environmental attitude of the students. All these researchers found a significant and positive correlation relationship between instructional material and environmental attitude of the students.

Kapur, M. (1986) conducted a study of Value Orientations of Adolescent boys and girls'. The sample was the rural and urban adolescent boys and girls going to schools and colleges. The result was found that the female adolescents were more oriented to appreciating tidiness, more aesthetic in nature, conscious of being punctual and regular, more striving for harmony, love, sympathy, tolerance, peace and more oriented to competence and sound character, striving more for happiness, a peaceful life and gaining economic returns, as compared to male adolescents.
Sharma, H.S. & et al. (1987) "Environmental design and development". The contributors of the book have provided a vast canvas covering various aspects of eco-development, eco-environment and eco-balance. Authors felt that in the present century development has unforeseen the future consequences of manmade relationship and unilateral process has alarmed the very existence of man, flora fauna biotic abiotic cover on the Earth surface. That's why development should go harmony with nature rather than to conflict. Through these volume environmental crisis are discussed and strategies for development are analysis.

Khanna, Prem Krishna (1988): A study of the flora of Bhopal to produce resource material for the biology teachers of Madhya Pradesh. Problem: This study addresses the problem of biology teachers lacking knowledge of the floristic composition of the area in which they worked. Objectives: To prepare a flora of Bhopal, describing with illustrations, important examples of plants to be used by the biology teachers as a reference book. Major findings: (1) The important characteristics of plants, their phonology, points of identification and common names were also given, (2) Further a chapter on the ecological characteristics of Bhopal was written on the basis of a study of various ecological factors such as history, geography. The chapter is a very useful instruction for learners to the flora of Bhopal.
Khattar N. (1988): Systematic studies of fauna in and around Bhubaneswar for Development of a museum. National study, Bhubaneswar: Regional College of Education. Problem: The study attempts to develop a systematic account, and a museum, of the fauna typical of the local area and surroundings. Objectives: (i) To make the students and teachers curious to know and collect the fauna of their immediate environment, and (ii) to help them to find out what animals exist in their surroundings and how do these differ in different localities. Methodology: A thorough survey was conducted to collect the fauna from the terrestrial, fresh-water, brackish-water and marine environs. Different types of sampling methods were employed in different environs. Major findings: The identification and classification of different animals collected under the project was done and lists were prepared of identified specimens from different groups such as Porifera, Annelid, Butterflies, and from the different families of fish, reptiles, birds, mammals, etc.

Rajput J.S. (1988): A research study for identification of teaching skills and training strategies for implementing the environmental approach at primary level. Problem: The study is a sequel to “Project Environment”, encompassing Environmental Studies, teaching skills and strategies for the inclusion in the teacher-training programme at the primary level. Objectives: (i) to produce integrated
material for Environmental Studies I (Social studies) and II (Science) for classes III to V, (ii) to develop a strategy for teaching Environmental Studies I and II and IV through the environmental approach and to test the relative efficacy of the developed strategies in relation to the methods being used for realization of the objectives of primary education.

**Ghose Gauri Rani (1988):** Know the plants around you. It is an attempt to advocate not to stuff the mind of children with facts and information, but to sharpen their sense to enable them to observe their environment and to enrich their experience.

**Objective:** Development of a handbook of plants, containing stories and myths associated with the plants, information about the usefulness of the plants and the technical, taxonomical aspects of the plants.

**Methodology:** Seventy common plants associated with our everyday life were selected and listed, and a handy key to the families of these plants, with their floral diagrams, was developed. A description of each plant a giving its name in different Indian languages, a short history of the plant and its origin, facts about the use of the plant as food, fodder, clothing, medicine, building material, essentials oils and other commercial commodities, and some technical botanical information were given. Dried
and preserved plant specimens or herbarium sheets as teaching aids were prepared. Major Findings: The report provided a list of 70 common plants with a standardised method of describing them in non-technical and semi-technical language. As examples, descriptions of bel, coconut, Victoria regia, An thocephalus cadamba, Ficus benghalensis and Nymphaea were given; as a teaching aid, 50 herbarium sheets were prepared.

Rane A.J. (1988): Evaluation of the environmental studies approach of Parisar Asha in municipal schools in Greater Bombay. Independent Study, Bombay: Tata Institute of Social Sciences. Problem: It attempts to evaluate the functioning of Parisar Asha’s Environmental Studies approach to primary education in Standards I and II in 29 municipal schools in Greater Bombay. Objectives: (i) to study the organisational structure of Parisar Asha and the mechanism for the implementation of the EVS approach in BMC schools. Methodology: The sampling technique was used for students of Standard I and Standard II to assess their learning achievements. The sampling was done in 29 BMC schools. An interview guide, special achievement tests in Marathi for Standard I and Standard II students, teaching aids and observation sheets for Standards I and II were used. Major findings: (i) Parisar Asha has gained momentum within a short period by way of organising various
programmes for implementing the EVS approach to learning in a large number of schools of varied kinds.

Kailash Paliwal (1987): “An environmental impact assessment of human activities and conservation of human actives and conservation action models on natural and semi natural eco systems in Western Ghats region in Tamilnadu.” The study revealed that in increased weed infestation and subsequent reduction in forest regeneration is because of conversion of natural forest ecosystem into a manmade ecosystem. The frequent use of fire resulted in pure and mixed mosaics of grasslands. The decline of soil nutrient status due to frequent burning in the ecosystem was clearly evident from studies on nitrogen metabolism. The study suggested that the conservation of undisturbed patches of tropical rain forest for maintaining the biological diversity for prosperity to conduct long term ecosystem studies, extensive species inventory and ethno biological survey; response of man mad and natural ecosystems to biotic pressure and perturbations; wise management of nature and natural resources through awareness among the public by various means; supplement the needs of the rural marginal people through social forestry. Understanding nature and natural environment of tropical rain forest ecosystems is easily not only for recording the new species but also for understanding the life processes of individuals which govern the ecosystem
function. The study emphasises the need for long and short term studies to understand the fragility of valuable tropical rainforest ecosystems.

**G Perumal (1988):** "Environmental education and awareness campaign". The investigator felt that ecological balance is crucial for survival and sustained development. Therefore people should be educated about the conditions and quality of life around them and they should be made aware of the hazards of scientifically and ecologically unsound development projects. The researcher tried to identify the environmental degradation in the Nilgiri district. The study revealed that majority of the people was of the opinion that the campaigns were useful to them. Majority of the farmers were observed to be aware of the social forestry scheme, soil conservation scheme, different energy sources and soil conservation method. The people gathered at least some knowledge about environmental education, which will be useful in the social system.

**Antonysamy (1989)** while teaching environmental concepts to school dropouts through videos and charts found that those of them who were taught through video method learned more concepts on environment than those taught but chart. The working children improved their achievement on "environmental concepts" after viewing the video programme.
Shahnaway (1990) made the environmental awareness and attitudes towards environmental issues of secondary and higher secondary school teachers and students at Udaipur. He found a very high level of awareness on the part of the teachers and students regarding the environment and this was mere in urban than in rural groups.

Praharaj, B. (1991) the researcher explored the level of environmental Knowledge, attitude and its perception among 416 pre service and 302 in service secondary school teachers in Puri Dist. The pre service teacher distinctly has poor knowledge regarding the environment while in service teachers moderately know about it.

Khoshoo T.N. (1991) expressed that the role of NGOs in needed considerable as also of environmental education. NGOs can play a very distinctive role in sensitizing people about environment. Similarly, Kuketri (1993) indicated that voluntary organizations are the best position in creating environmental awareness, understanding and values among the masses; because these agencies are familiar with the local environmental problems and they are very mush close to local people. He also suggested that the voluntary organization which shows the best results in expansion of environmental education.
Gopalkrishnan, Sarojini (1992): "Impact of environmental education on primary school children". The study addresses the problems of environmental educational and its impact on primary school children of Standard V selected at random from schools of the Nilgiri, Madras and Coimbatore.

Objectives: (i) To identify the important factors of the environment, (ii) to assess the impact of environmental education through an Environmental Education Test (EET), (iii) to get feedback from the teachers handling the subject, through a constructed questionnaire.

Methodology: One thousand four hundred and fifteen children studying in Standard V, selected randomly from 30 primary schools.

The scores were analysed under three heads, viz. co relational studies, different studies and experimental studies.

Major findings: (1) The distribution of the total Environmental Education Test scores of the entire sample approached the normal from which implied that studying Environmental Education had a very good impact on the children, (2) The study showed that the participatory learning approach could bring about a better impact.
Armstrong J.B and Impara J.C (1992) found positive impact of environmental education programmes on knowledge and attitude on the students. Patel etc. al.,(1995) indicated that the administration of the special Environmental Awareness Programme (EAP) on secondary school teachers was found significantly effective in enriching their environmental awareness.

Sahoo, K.C. (1992) investigated the conceptual perception of environmental education. His central theme was man and environment but the details of his working materials are not cleared.

Shahnawaj (1992) completed a study on environmental awareness and attitudes towards environmental issues of secondary and higher school teachers and students at Udaipur. He found that a very high level of awareness on part of teachers and students regarding the environment and it was more in urban than in rural area.

A. Venmathai(1994): “creating awareness on environmental hygiene among women and children” Objective of the study are:-

1. Understand the existing environmental conditions in selected area.
2. Assess the awareness of selected women and children on the concepts of environmental hygiene.
3. Arouse civic consciousness among women and children on environmental hygiene.

4. Study the impact of improved technologies in creating clean environment.

5. Evaluate the outcomes of the environmental education programme.

**Gupta (1997)** in 1997, Gupta made a study on 'Adolescent's Environmental awareness in connection with religious & scientific attitude and scholastic achievement over the environmental awareness". This study was based on sampling technique. A random sample of 500 adolescent students was collected from the district of Hadoti for the purpose and ANOVA, T test, product movement are some of the measures taken for analyzing the data. Moreover, environmental awareness, religious & scientific attitude as well as scholastic achievement was used as tools to complete the study.

**Patel N A (1997)** investigated the effect of environmental multimedia package on the sample of 110 students, studying in IX class. The findings of the study indicate a significant relationship between multimedia package and environmental awareness of the students. The researcher also concluded that the multimedia package was found more effective than the traditional lecture method in creating environmental awareness in students.
Desh Bandhu (1982), Swami (1998) have emphasized the mass movements on environmental issues as effective tool for enhancing environmental awareness among people.

Gogoi (1998) In 1998 Gogoi made a study on the environmental problems of Assam and also its need as a part of education. This study was also based on sampling technique. He made a detail study on a group of students from higher secondary level and the special emphasis was on ecological & pollution problems caused by different industrial activities. This study reveals a lack of awareness towards environment and therefore came out with a conclusion that Environmental education should be included at high school level syllabus. Gogoi proved that this type study with sampling technique enhanced the awareness of the students towards environment who were used as samples in the process. Some other scholars including Archhana Tomor in the same year suggested that environmental science should be implemented in the primary level also. Archhana Tomor made this statement on the basis of his activity test, semi structured interview or written & oral tests which were further analyzed through basic statistics & t test.

B.S.V Dutt (1998) revealed that to create awareness and interest in students regarding environmental issues, planned instructional
material with specific learning goals should be prepared and given to the students in schools.

Kidwai (1998) Mostly to improve that the teaching methods in geography following an environmental approach, initiated her study where she aimed to identify and thereby to critically analyze the instructional objectives of geography curriculum at secondary stage at Delhi based schools, following a descriptive survey method. Paper-pencil test, questionnaire, informal discussion, and interview technique was used to pull data from the sample group of teachers and students. The study observed that importance of natural environment is neglected in formulating the instructional objectives of teaching social science. Related classifications of concepts are required for both teachers and students. Activities in this regard as mentioned in the textbooks published by Government agencies need specific directions. It was also observed that to make the teachers and students aware about environment, public schools are better than the government schools. The study observed the need strengthen the method of teaching geography though environmental exposure and field trips, in order to develop the required attitude towards environment.
Singh J. (1998) Singh initiated a study of environmental science in 1998 with a scientific temperament. His basic objective was to develop a scientific approach toward environment. Therefore, he did his study on the basis of samples of higher secondary students of science stream from Haryana. He used scientific temperament scale, school environment inventory and Eysenck’s personality questionnaire as the major tools to collect data and after analyzing came to the conclusion that this type of study has great significance at undergraduate level.

Gogoi (1998) attempted to explore the major environmental problems of Assam in his study, apart from identifying the need for environmental education. While assessing the environmental problems of the very region, special emphasis was given on ecological and pollution problems caused by different industrial activities, initiated mostly in Dibrugarh and Tinsukia district in recent past. 40 high school children from higher secondary level were chosen as the human sample for the study.

Rathore J.S. (1999) in the year 1999, Rathore attempted to examine the scholastic achievement of primary school children towards environmental science with special reference to vernacular. He also developed a remedial teaching strategy for the students of formal & non formal education centres. This attempt was made on 100 school children,
200 teachers from both formal & non formal educational institutions and also 10 supervisors from the city and adjoining area of Khandowa district. This study revealed a comparatively better scenario in formal schools than non formal.

Deb (1999) in the same year another scholar, Deb studied the cognitive development in relation to social deprivation & school climate. The study was on descriptive method. He tried to find out whether the cognitive development differs in students of different levels and of different classroom climates. The test was made upon 200 boys and girls randomly collected from Allahabad city of U.P. The study ultimately implies that socially deprived students lag behind in the cognitive development.

Indubala (1999): Indubala made a study on the video instructional package as a unique medium of instruction for better comprehension among the students in the formal classrooms. The study initiated two phases – one was the video instructional package on Environmental pollution and Education and the other was experimental tryout of the developed package. The study was made on a group of 240 students of class IXth grade at secondary level of Gujarat constitute the sample for the study which were further sub-divided in 6 experimental groups. Video-instructional-package consisted on video film and learner’s
handbook, developed by the researcher was used to conduct the experiment. Criterion tests, attention measures, experts’ comment for the students (happen to be basic tools to collect data which were analyzed through ‘t’ tests ‘f’ ratio and analysis of covariance. The study proved that video instructional films on environmental issues are proved to be effective in motivating students and sustaining the attention on the part of the program. The study explored that the video package are more effective in motivating students and sustaining the attention on the part of the program.

**Sen (1999)** studied the learning strategy, its relationship with environmental factors, and course perceptive and academic performance of the Xth grade students from Jalpaiguri district of West Bengal. His study basically focused on the learning styles of students in relationship to gender, habitation, subject, and other psychosocial factors of a sample group 600 students from live types of schools. A random sampling technique was used for the study. As many as twelve types of tools were administered over the sample group including various scales, inventories and questionnaires. Apart from basic statistics, ANOVA and ‘factor analysis’ was employed to analyze the collected data. The study observed the role of ecological environment of family and classroom, teaching style, quality of instruction, method of providing feedback, all possess significant impact over the process of developing suitable learning strategy.
Rastogi et. al. (1999) made a study to investigate the effectiveness of audiotape and transparencies on the environmental awareness of undergraduate students. The investigators explored that the use of audio-tape and transparencies was highly effective in raising the level of awareness of students.

Sunnetha (2000) In view of developing supplementary curricular programmes on environmental education for high primary schools, she took up a study to examine the status of basic understanding in environmental education and attitude towards environmental issues among upper primary school students from Mysore. 174 students from four schools constituted the sample for the study. A post-test parallel-group-design was followed in the experimental education, and a scale of attitude towards environment were developed and used to pull the data in five basic components of environment viz. biosphere, air, water, soil and energy.

Hanumanthaiah (2000) studied the effectiveness of curricular creativity inputs in Physics at the secondary school level with a basic aim of preparing lesson plan in physics at Xth grade and to study the effectiveness of such lessons on students, in relation to mental and psychological attributes. A purposive sampling technique was adopted for the study where Baqer Madhi (1975)’s test of creativity, RSSB test of mental ability, and Socio Economic Status (SES) scale by Kuppasswamy, as
well as two reaction questionnaires for experts and students were used as tools to pull the data, which were further analyzed by ‘t’ test.

Nag (2000) studies the ecological perspective of science educational among deprived society in West Bengal. The study was mostly co-relational, where attempt was made to find out their intra and intra-correlation among various psychological factors. For the sake of the study, a factorial approach was adopted by the researcher, such as level of deprivation, knowledge base of general science along with scientific attitude, verbal entrance, and attitude towards science education of students, their fathers and teachers.

Anita (2000) studied the development of hypothetical reasoning in relation to divergent thinking, intelligence and school climate. The sample of the study includes 498 students from Jhind dist. of Haryana, studying in different types of schools. Cattle’s intelligence test of creativity, Mishra’s schools environmental inventory and Piaget’s paper-pencil test wear the tools used by the researcher to collect data for the study. Apart from the concrete findings like positive correlation among creativity and its components, the study observed high correlation among creativity and its components, the study observed high correlation between intelligence and hypothetical reasoning.
**Bishnoi (2001)** aimed to study the effect of team-game-tournaments on Hindi grammar on students achievement, their inter group relationship, and self-concept under cooperative learning. A group of 70 students from IXth grade was taken as sample who were bifurcated into experimental and controlled groups. Cattle’s Intelligence test, Kulshetha’s SES scale, a self-developed achievement test and Saraswati’s self-concept test was used by the researcher to collect required data.

**Ram Krishnan P.S., (2001):** ‘Ecology and Sustainable Development’. This book is divided into nine chapters the first three chapters discuss the basic concepts governing the emerging paradigm shift in ecology and development, in the context of biodiversity-linked traditional knowledge, as we understand today. Concern for sustainable management of natural resources has got great significance in the book. In this book, the author made an interdisciplinary case study on human cultivation for sustainable management of natural resources in northeastern India.

**Vandana (2002)** studied the managerial skills studied the managerial skills of educational administrators in relation to organizational climate and certain personality factors. The major aim of the study was to explore the comprehensive profile of educational administrators, apart from
their various administrative skills, their interrelationship and to suggest workable guideline for strengthening such skills, related to manage the system of education. A convenient sampling technique was followed for the study, following which a group of 100 college administrators were chosen for the study.

**Das (2002)** investigated the development of environmental awareness through the study of Life science in the secondary schools of West Bengal, with the help of three sets of questionnaires (especially meant for students, teachers and parents). Apart from Survey, Curriculum analysis was also made. The study finds heterogeneity among the groups in terms of their perception of environmental awareness; it was also observed that several approaches related to life science helps in enhancing environmental awareness among the students.

**Agarwal K.M. & et. al (2002):** 'A text book of environment' the authors refer there is an urgent need to protect environment in order to monitor the quality of life globally. They suggested that environmental education should be multi disciplinary and holistic in character to achieve the goal of sustainable development. Each and every member of the society should realize the urgency of present deteriorating condition of society. According to the authors environment is the pressing issue and every
person has the obligation and duty to consider way to protect it and reverse the damage done to it over the decades to make the Earth healthy place to live in. Its prime objects are to create environmental awareness, acquired basic understanding of the environment and its related problems and developed required skills and attitude for active participation in improving and protecting the environment. Ultimate purpose is to present a way of thinking that integrates what we know and how we value the environment.

Srivastava (2003) initiated a comparative study of the life style and value pattern of the students studying in schools with different medium of instruction, where she studied the students from intermediate class grades from Hindi and English medium schools. The study further reveals a zero difference among the two lingua-groups, so far their scores on ‘Modern Indian life style’ is concerned.

Ghanta Ramesh and Digumarty Bhaskara Rao (2003): ‘Environmental Education problems and prospects’. Though this book editors have included the articles on various issues concerned to environment and environmental education which will make the readers aware of the need of the protection of nature and its resources in order to save the mankind from the natural and man-made disasters. The editors recognized the man is a part and parcel of the environment has to recognize
the role and responsibilities of order to protect the environment has to. Authors recognized the importance of environmental education and included the articles on various issues concerned to environmental awareness which will be extremely benefited for present deteriorating condition of our social life. The diversified viewed, discussion, strategies and information on environmental education will make the readers responsible to the environmental issues. No doubt this is the book with great value for the present day situation.

**Kaushik Anubha and et. al.,(2004):** 'Perspectives in environmental studies', in this book the fundamental concept of environmental studies has been introduced and analyzed in a simple manner strictly as per module syllabus designed by the UGC for undergraduate courses. This book also explored a systematic analysis of the natural and man-made world encompassing various scientific, economic and ethical aspects. Human greed leading to large scale degradation of the environment and has aroused global concern on environmental issues in the present century. Salient feature of this book is simple and holistic.

**Rekha (2004)** attempted to study the effect of school environment on Creativity and academic achievement of scheduled and non-scheduled caste students at Agra. The study followed a juxtaposition
approach over a sample of 400 students, including proportionate ratio
gender and caste affiliation. Tools used for the study includes School
Environmental Inventory (1986, by Mishra), and Medhi's Verbal Test of
creative thinking (1985).

**Fatma N (2004)** suggested that nearby the cities and township
special environmental education centres should be established in which
environmental education might be given to people in natural conditions.
Pardiwala (2005) revealed that, "unfortunately" the much-needed bonding
between people and nature cannot be taught or learned through a text book
within the four walls of a class-room. Human beings must be taught the art
of living environmentally sustainable lives right from early childhood.

**Rideout, Bruce E. (2005):** "The effect of a brief
environmental problems module on endorsement of the new ecological
paradigm in college students". The author measured endorsement of New
Ecological Paradigm (NEP) in college students following their involvement
in a 2 to 3 week environmental problem and energy issues. The module
included reading, discussion and a writing exercise, and was presented
during 3 sequential semesters within a course on research design. Students
from the three groups were all tested subsequently in spring 2001. When
compared with controlled data, data from students receiving the
educational module at showed significant increases in NEP endorsement that declined somewhat with time but remained significantly greater after 2 semesters. In contrast retention of knowledge from the module showed a predictable decrease over time.

**Saxena H.M. (2006)** ‘Environmental studies’, the author divided the contents of the book into eight units like natural resources, ecosystems, biodiversity and its conservation, environmental pollution, social issues and the environment, human population and the environment, and pointed out the importance of field for creating lively experiences of nature.

**Roy Rajarshi (2008):** ‘Curriculum, Pedagogy and Teachers Training for environmental Education’. The book is an attempt in direction, which address such issues from varied pertinent angles to equip our teachers of varied levels of formal educational institution. It includes issues that addresses the need of integrating knowledge of the past and present for protection of the environment, need for evolving a disciplinary approach for environmental education, integration of environmental knowledge of the past and present implication of teachers’ training for environment and safety, innovative approaches of teaching environmental education and related curricular and pedagogical issues.
Chary S.N. (2008): 'Environmental Studies': this is a comprehensive book providing the essence of concept issues and happenings pertaining to the environment and attempt has been made to present the global subjects of the environment and ecology in the local Indian context with ample examples and reported cases taken from India. The book has struck a good balance between the global and the local issues and concerns without compromising on the vitals of the environment. The book is written with the syllabus recommended by the UGC in view. There are ample examples and case studies highlighted in this book. Most of the case studies are based in India, but they could have a wider global application. The intention of this book is to make the reader go beyond mere knowledge of the environment and become and active participants in the process of environmental conservation. However, the book would also prove useful for all environment-conscious readers who would like to know the fundamentals of environmental aspects faced by us today.

Choudhury, Kabita (2008): A study of the contemporary role of formal and non-formal educational agencies in environmental awareness and protection. The researcher studied the two major points of view

(1) Role of teachers in promoting environmental awareness among the students.
(2) Level of environmental awareness of the students.

The investigator came to a conclusion that regarding role of teachers in promoting environmental awareness among the students are found to agreed that teaching environmental education is an important task. 100% teachers have positive attitude towards environmental conservation and preservation and developing right kind of values and attitudes among students. Regarding environmental level of the students, investigator found that male students are little more aware than female students and also urban students are little more aware than their rural counterparts.

**Singh, Kainath Gurucharan** (2009), “Environmental awareness among school teachers”. Objectives of the study was

To find out the awareness about different kind of waste materials among the teachers.

To find out the awareness about the management of the waste materials among school teachers

To find out the difference if any, the awareness level among arts and science teachers regarding the management of waste materials.

The investigator followed survey method. Altogether 2500 samples have been collected by the investigator.
The investigator seeks to examine the environmental awareness among the school teachers with special reference to the management of waste materials. Investigator found that there exists environmental awareness among the teachers. The awareness level of science teacher was found to be more in compared to the arts teachers. There exists awareness regarding the management of waste materials among the teacher in science as well as arts teachers. The level of awareness of science teacher was found to be more regarding the kind of waste like industrial, nuclear, municipal, domestic and hospital in compared to the arts teachers. The Arts teachers were found to be more aware regarding municipal, domestic in compared to industrial, nuclear waste. The percentage of awareness was found to be more among science teachers. Awareness regarding the waste management program was found to be in teachers of science category.

Kumar, Arvind (2009) : “environment and Global warming”. The author pointed out that Global warming is the combined result of anthropogenic emissions of Green house gasses and changes in solar radiance. Increasing Global temperature will cause the sea levels to rise and this may have an adverse effect on the marine ecosystem. The book
intended to cover all aspect of global warming and provided a detail analysis of the debates of experts on global warming.

**Goswami, Sadhana (2010):** "A Study on the role of women in environmental Protection with reference to Kamrup District'.

Objective of the study was

To study the awareness among women about the dependence of human beings on the environment for everybody needs.

To study the awareness among the women about environmental degradation in Kamrup District.

To study the awareness among women regarding importance of conservation of environment.

To study the skills in women necessary to participate in activities related environmental protection.

To study the women’s views on the importance of women education for planning environmental protection.

To study the techniques used by women in protection used by women in protecting the environment.

The investigator pointed out that women played a significant role in protecting the environment. Women have significant relationship with the environment in many ways. They are often the custodian of
indigenous knowledge and promoters of biodiversity and environment friendly management. So it is very essential that their contributions should be recognized and they should get equal political and economical rights, market opportunities and natural resources. Researcher felt that the most important instrument of promoting environmental protection is education, both formal and informal. Environmental education helps individual to be aware and sensitize to the environment and allied problems, acquires skills for solving environmental problems and develop values and strong feelings of concern for the environment by actively participating in environmental protection activities.

2.3 Summary of the Literature Reviewed:

From the literature reviewed above, certain conclusions may be drawn. It has been found that the natural resources in the world are degraded drastically leading to phenomena like global warming, Ozone depletion, green house effect etc. The pollution level, whether land, water, air, noise has risen to unimaginable heights. Every researcher felt that the whole world is facing above mentioned environmental problems, threatening to the flora and fauna, whole ecosystems and their problems are getting worse every day.
Many man made changes in the environment have been ill
effect or have been accomplished without regard for long term
consequences. We must realise that every form of life has its unique role to
play and the disruption of the delicate environmental balance produces a
chain reaction, the damage becoming accelerated and getting out of control,
it threatens the health and happiness of man; which is the ultimate aim of
all human being.

Some researchers felt that childhood is the best time to
generate environmental behaviour and motivate them to establish a
congenial and harmonious relationship with nature.

Man has now come to dominate the earth; utilizing and
depleting its natural resources and environment. This can only be
countered, if we launch an awareness drive towards preserving our natural
heritage. That is why researchers felt that all citizens should be partners in
the endeavour to save the environment. All have a stake in and
responsibility towards conserving and improving the environment. But the
best people who can work towards making of a better world are the youths
or the young generation of our society.

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