CHAPTER - II

REVIEW OF RELATED LITERATURE AND RESEARCH
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Any new research is built upon or adds to what is known up to that print of time. So, one of the early activities of the research process is the review of research literature the body of information related to the research problem.

A literature review is a systematic explicit and reproductive method for identifying evaluating and interpreting the existing body of recorded work produced by researchers, scholars and practitioners.

-J.W. Best in his book ‘Research in education’ says that, "Review of the literature and research provides and background for the development of the present study and brings the reader up-to-date since good research is based upon everything that is known about problem, this part of the report gives evidence of the investigation’s knowledge of the field."

It reveals that effective research is based upon past knowledge. This step helps to eliminate the duplication of what has been done and provides useful hypothesis and helpful suggestions for significant investigation, citing studies that seem to present conflicting conclusions help to sharpen and define understanding of existing knowledge in the problem area provides a background for the research project and makes the reader aware of the status of the issue.
It is challenging task for the investigator to carry out the competent review of related literature and researches. It is more than just listing the researches from selected specialization. The main objective of the review of related literature and researches is to find out ‘research gap’ and to plan the research to fill up the existing ‘research gap’.

The researcher has reviewed the literature for this study to find out what others have found in their study, for review purpose, researcher visited different institutions, and also surfed internet.

The review of related literature and research from abroad and India is as follows:

**REVIEW OF STUDIES FROM ABROAD**

The Global environmental Alliance-China is overseeing the environmental test for Beijing teenagers on Earth Day, April 22.

The organization was launched in September 1977 by China’s Science and Technology Ministry and the US Global Communication for conservation. It aims to promote environmental education and cooperation between China and other countries.

Beijing Youth Daily was publishing the test questions, in which local students aged between ten and eighteen are eligible to answer. Top place getters got financial help to visit the US for environmental education programme.

This was chance for students to learn more about environmental protection.
Environmental Education Programme for Egyptian school

Egypt Ministry of Education agreed on a cooperation programme among the Ministries of Education, Health and Environment in operation with UNESCO and UNICEF as well as non-governmental civil associations, on establishing a programme by the ministry for spreading environmental awareness among students and positive participation in protecting the environment and the community surrounding the school.

The Ministry of Education said the ministry inserted new concepts about the environment, as the environment is no longer an abstract concept but subject of "Practical project, research and experiment in all educational stages".

Bryant and Hungerford (1977) conducted a study in which they presented an instructional unit on environment related problems to kindergarten students. They then asked students to describe their own and other's responsibilities as a way of measuring the students verbal commitment to action. The researcher found that students appeared more environmentally conscientious at the conclusion of the environmental unit.

They concluded that kindergarten children could understand environmental issues and citizenship responsibilities.

Aziz, Anowarul (1984) conducted a study of Science Education in the secondary schools of Bangladesh.

The study revealed that:

1. Science club is a flagrant disappointment.
2. The shortage of science teacher was very much acute in the non-government urban schools.
3. Due to non-science background, majority of the heads of schools were less enterprising in respect of science education in the schools.

4. Co-curricular activities on science were not being organized adequately in the schools to augment and strengthen science education.

Driver and Johnson (1984) studied the long-term benefits of the Youth Conservation Corps programmes, which combines outdoor work opportunities and environmental education for youth ages 15 to 18. The youths indicated that they had become more environmentally aware as a result of such programme.

Jaus (1984) assessed the short-and long-term impacts of environmental instruction on the attitudes of third graders. Instruction for the unit involved group discussions about environmental problems. When post tested, the experimental group scored 30 percent higher than on their pre test of positive environmental attitudes; the control group had only a 2 percent increase.


The major findings of the study were:

1. The existing curricular objectives of the secondary science curriculum were unsystematic and insufficient. These objectives were not achieved as there was no practical work in the curriculum for the pupils.

2. Teachers’ guides and manuals were not available in most of
schools.

3. Science teachers felt the need for in-service training.

4. There were no interactions between students and teachers which could help pupils to develop their interest in attitudes towards science learning, etc.

Shepard and Speelman (1986) measured the impact of participating in an outdoor education programme at resident 4-H camps in Ohio on children ages 9 to 14. The experimental groups participated in outdoor education programmes emphasizing on sensory awareness and basic ecological concepts, while the children of the control group did not. Although the experimental treatment did not develop significantly more positive environmental attitudes, researchers found that:

1) The length of programmes had an effect on positive environmental attitude development.

2) Previous camp experience, camper age and the area of residence also seemed to affect the environmental attitudes.

3) Residential camp programme of five days in length have the positive effect on the attitudinal development.

4) First time participants visiting an outdoor setting had to adjust to the environment before learning could occur. As they visited the outdoor site more, they were able to learn about things within the environment, because they were not spending time for worrying about unfamiliar things around them.
Howe and Designer (1988) studied the impact of outdoor experiences on students' attitude and found that outdoor settings were effective in teaching awareness of environmental issues. Researchers concluded the outdoor experience made a significant impact on students' attitude, and, in addition, they reported that the most effective instructional strategies for developing the environmental responsibility were case studies, field trips, community inventory projects and community action projects.

Ramsey and Hungerford (1989) studied the effect of an outdoor education curriculum package that used environmental issue investigation and action training on 7th grade students. The treatments used with the experimental group were allowing autonomous student behaviour, focusing on problem solving, using environmental action skills at specific environmental issues.

After 18 weeks, the experimental group reported significant changes in their environmental behaviour and knowledge of possible solutions to environmental problems. The control group, which received the usual science instruction, did not report such changes.

Makkar S. L. (1991) studied the information provided regarding educational facilities at various levels of education in Japan.

In this study researcher found that:

1. Research facilities are excellent in this country, and
2. Junior high school students are introduced to the methods of science while exploring natural phenomena.
Scott, Davis and Fern K. Willits (1994) in their study of Pennsylvanians environmental attitude and behaviour, found that attitude were predictive of behaviour but the correlation was weak.

Mathews and Riley (1995) described the knowledge-attitude-behaviour model, which holds them an increase in knowledge will lead to a change in attitude which will in turn influence the behaviour. Consequently, environmental knowledge and attitudes have been frequently evaluated when attempting to determine the effect of outdoor education programmes on the development of environmental responsibilities.

Researchers found that the programmes most likely to change behaviour involve concrete, environmentally positive, action-oriented experience, a relevant context and long-term involvement, support, follow-up and reinforcement by role models. They concluded that the following have not worked in bringing about ethical, behavioural change in students: lectures, excessive moralizing, extremely derived codes of conduct, adults’ setting the ethics agenda and teachers/leaders as authoritarian figures.

Malaysia

Malaysian experience of Post Graduate diploma courses for teachers has shown that environmental awareness could be developed through discussion of real-world environmental problems.

In Petzelka and Korshing’s (1996) study of environmental attitude and behaviour towards sustainable agriculture, they found that changing the knowledge and belief of farmers about sustainable agriculture also changed their attitude.
Diekmann and Preisendorfer (1998) also noted considerable discrepancies between environmental attitudes and behaviors in their citizen survey of residents in Switzerland and Germany.

The results of Research on Undergraduate Environmental Literacy at the University of Florida were also similar to other studies that showed that attitudes are highest, followed by lower knowledge and low behavior.

Dietz (1998) studied the social structural and social psychological bases of environmental concern where he concluded that:

Gender has been found to be correlated to environmental attitudes, though not consistently so. The relationship between gender and environmental concerns has been more carefully theorized than other structural variations in environmental concern. Women are generally more concerned than men.

Lousie, Chawla (1998) reviewed a growing body of related research in the form of surveys, interviews and questionnaire that explore people's account of the sources of their environmental interest, concern and action. The article also notes that the experiences that people describe can be understood as exchanges between the 'outer environment' of the physical and social world and the 'inner environment' of people's own interest, aptitude and temperament, and that more attention needs to be paid to the influence of this 'inner environment' of individual differences.
Connell et. al. (1999) in their study of Australian 49 youth also noted the ambivalence in response to questions regarding personal actions to protect environment.

Gogles and Demare (1999) conducted an experiment with 6th grade students to find out if participation in an environmental summer camp would have an impact on their environmental attitudes. But they found no significant difference in it.

In the Kuhlemeier et. al (1999)'s study of environmental literacy in Dutch ninth grade students, they found a weak correlation between knowledge and attitude.

Bixler, Robert D. and Myron F. Floyd (1999) studied the disgust sensitivity and preference for Environmental Education activities in school students. Middle school students in Texas (N=450) completed a Science Activity Preference Scale and a Disgust Sensitivity Scale. Respondents who expressed the lowest interest in activities that required manipulation of organic substance also had the highest disgust sensitivity scores. However, no differences were found among students for activities that required observation only. Using a photographic scale, students rated their performance for lake-shore environments as places to conduct aquatic studies. Students with high disgust sensitivity were significantly more likely to prefer the poor location, which were characterized by clear water and no algae or submerged objects.

Daniel, J. Sivek (2002) conducted a two places study to assess influences on environmental sensitivity (ES) in Wisconsin high school students. Phase-I employed a focus group methodology;
Phase-II employed a paper survey. Three categories of influences emerged from Phase-I: environmental, role model and personality. Other results were consistent between both study phases. The influence most frequently cited by students as most important was the time spent outdoors. The second most frequently mentioned influence was male teachers. The most frequently mentioned trait of role model was that they were friendly/personable.

Laughland, T. and et. al. (2002) reported the young people’s conceptions of environment with the help of phenomenographic analysis.

Environmental education in schools is an important strategy in achieving environmental improvement. However, it needs to be based on children’s understanding about the environment rather than on assumptions of what children know and believe. The researchers’ reports on a research project where school children’s answers to a question “I think the term / word environment means--------” were analysed using the qualitative research method of phenonenography.

Six distinct conceptions were isolated, ranged from the least sophisticated environment as a place to the most inclusive and expansive environment and people in a relationship of mutual sustainability. An important qualitative difference was found between conceptions that treat the environment as an object and relational conceptions.

Nigeria

Most of studies carried out on environmental education in Nigeria have been done only in the area of curriculum analysis (Adora, 1996; Olagunju, 1998 and Ifegbesan, 1998)
However, Ifegbesan Ayodeji (2002) conducted study on ‘Students’ Perceptions of Environmental Education (EE) elements in Nigerian Junior secondary school curricula’ with total 300 students from ten randomly selected junior secondary schools.

The major findings of study were:

1. Environmental education is a relatively new programme in the educational system of Nigeria and the students are not adequately aware of EE elements in the junior secondary school curricula.

2. There is no significant difference was found between the male and female perception of EE elements in the curriculum.

3. There is a need for the government as the matter of urgency to make the teaching of environment education in schools compulsory at the levels.

Jenkins, E. W. and Pell. R. G. (2004) carried out the questionnaire based “Relevance of Science Education Project’ in England in 2003 as a part of a wider international comparative study based at University of Oslo. The data drawn from 1,277 students, aged mostly of them 14 or 15 years old, indicate their attitudes towards a series of environmental challenges.

The findings revealed significant gender differences in attitudes towards the environment and in the responses that students seem to be willing to make to address environmental concerns.

Ozgul Yilmaz and et.al. (2004)”s study was to identify the Turkish students’ views with regards to environmental issues presented in the national curriculum and to determine how these views differ by gender, grade level, previous science achievement,
socio-economic status and school location. For this study, a 51-item Attitude Towards Environment Issues Scale (ATEIS) was developed and utilized. The sample consists of 458 students in grade 4-8 classrooms.

The results indicated that:

1. In general, the students felt environmental problems should be confronted in Turkey.
2. The set of ATEIS survey items were understood and functioned in a similar measurement manner for male and female students, as well as elementary and middle school students.
3. The recent high achievement in science resulted in more positive attitude toward environmental issues.
4. The older female students of this data set exhibited more support for environmental issues than did male students.
5. Students with high family income, and those students living in urban area, displayed more positive attitudes towards environmental issues than did students with low family income, and those living in sub-urban areas.
6. There is no significant gender difference in elementary school students but, significant gender differences were in middle school students. Interestingly female students in middle school indicated more environmental concerns than males.

Flogaitis, E and et. al. (2005) were used the written questionnaire to obtain the information regarding Greek Kindergarten teachers' personal views on the concept of Environment Education (EE). It was ascertained that the prevalent
conception of the Kindergarten teachers includes the following:

1. It is directed towards a knowledge-centered type of EE.
2. It is primarily centered on nature and its protection in terms of EE content.
3. It aims not only to shape citizens' willing to adopt environmental measures recommended by the experts, but who will also actively participate in social action for the protection of the environment.
4. It favours learning procedures in the environment with 'field study' activities.
5. It must be compulsory at the Kindergarten level.

Fisman, Lianne (2005) examined the effects of an urban environmental education programme on children’s awareness of their local biophysical environment. She examined changes in environmental awareness among III and V grade participants in the open spaces as Learning Places program in New Haven.

Results showed a significant positive effect of the programme on students' awareness of the local environment and on their knowledge of environmental concepts. Improvements in environmental knowledge were uncorrelated with the children’s socio-economic status.

Meinhold, Jana L. and Malkus Amy J. (2005) examined the relationships among adolescent environmental behaviour and self efficacy, knowledge and attitudes. It was hypothesized that adolescents who demonstrate more pro-environmental attitudes are more likely to demonstrate pro-environmental behaviours. Participants were 848 students from three academic high schools.
Hierarchical regression analyses were used for all subsequent analyses. Results indicated that pro environmental attitudes significantly predicted pro-environmental behaviours and that environmental knowledge was a significant moderator for the relationship between environmental attitudes and environmental behaviours. This was especially true for males.

Muzaffer, Bodur and Emine Sarigollu (2005) tried to investigate the relationship between Turkish consumers’ attitudes and their behaviour towards the environment. A multistage area sampling procedure was used to selected 1000 residences in Instanbul (Turkastan) at which at-home personal interviews were conducted. A consumer cluster analysis based on behaviours toward the environment was conducted and three distinct segments were identified 1) active concerned, 2) passive concerned, and 3) unconcerned. For each cluster, attitudinal, demographic, socio economic, and leisure activity profiles were described. In results, attitudes towards specific behaviours were found to be the best predictors of behaviour, followed by general attitudes, education and locus of control.

Shepardson, Daniel P. (2005) investigated ideas of students about what defines an environment and how these ideas change across grade level and educational experience. A total of 81 students were sampled: 18 seventh graders, 20 eighth graders and 24 ninth graders from general biology and 19 ninth graders from college preparatory biology. The environmental task was a two part task. First, students drew a picture of an environment and explained their drawing. Next, students were shown a series of photographs and
asked to indicate whether the photograph depicted an environment and to explain their response.

In general, students understood an environment from a limited ecological perspective, that is, an environment is a location where animals live and/or an area that supports animal life. An environment is a natural landscape, human managed or built landscapes were not seen as environment by these students. For these students, humans do not appear to be a part of an environment but are separate from it.

**Shoviers S.M. and Prahallada N. N. (2005)** in article entitled *Imparting Environmental Education in schools of Iran* wrote that: Iran is one of the countries where environmental education has emerged as a significant area of concern. It is clearly reflected in it’s NPE (1995). Environmental Education today is viewed as an integral part of the education system at all stages from primary school to the university level. At primary level, concepts like hygiene, public health, nutrition and pollution and at middle and secondary level the environmental concepts like ecology and energy have been introduced. Public environmental education through government channels has existed for a considerable time.

**Smith Sebasto, N. J. and Walker L. M. (2005)** explored students’ perceptions of the residential environmental education (EE) program at the New Jersey School of Conservation. The sample consists of 2779 students from 31 schools. A qualitative methodology with a grounded theory approach was used to discover which areas of the programme were most meaningful, most confusing and most interesting to the students.
The findings revealed that students found social, personal and wilderness survival sessions to be very meaningful. They thought orienteering and environmental science sessions were confusing. They were interested in learning more about many subjects, but they were less interested in social topics than environmental science, safety or recreation topics.

Steve Spencer and et. al. (2005) in their research project, that examined the effectiveness of the Kentucky Department of Fish and Wildlife Resources (KDFWR) conservation camps, conducted a survey to measure campers’ perceptions of importance to various environmental and outdoor recreation topics. A repeated measures test was performed to evaluate campers’ perception of importance to various environmental and outdoor recreating topics.

The study found that:
1. KDFWR camps have good influence on campers’ perception.
2. Subject from urban area demonstrated significantly greater positive change in campers’ perception of importance to various environmental and outdoor recreation topics.

Timothy, S. O’Conell and et. al. (2005) conducted a study to examine the link between sustainability education and outdoor education and to encourage outdoor recreation educators to evaluate their programmes with regard to sustainability and sustainable living. Researchers found that although there are programmes that have successfully implemented sustainability training into their curricula, there are many factors that serve to hinder the education of outdoor recreations students in the philosophy and techniques of sustainability and sustainable living.
Watson, K. and Halse C. M. (2005) conducted a study on environmental attitudes amongst pre-service teachers in Australia, Republic of Maldives and Indonesia. Data were collected using an established environment-attitude-questionnaire and individual interviews. The three communities exhibited a similar range of environment attitudes using the established questionnaire but significant differences emerged when the interview data was analyzed phenomenographically. These differences reflect diversity within and across cultural groups that can not be satisfactorily explained by the theory underpinning the established questionnaire.

Demir, C.E. and Paykoc F.(2006) investigated the priorities major issues and problems among Turkish parents and professionals that may have an impact on peoples’ daily lives. Data collected from 407 parents and 389 professionals using three questionnaires developed by the researchers. Results indicated that the priority challenges of primary education were considered to relate to peace, environment, etc. Additionally, primary school graduates were said to require critical thinking, problem solving, language and life skills, as well as open-mindedness, expressiveness, flexibility and sensitivity towards environmental issues.

Bednarz, Rober S. (2006) evaluated geography as an appropriate home for environmental education. After a brief review of the status and the nature of environmental research programs and environmental curricula, the article gives reasons why more environmental education does not take place in geography. The lack of environmental education in the discipline and the conservative nature of the courses taught are attributed to geography’s small size
and low status and to the controversial nature of environmental issues in the United State.

Chankook Kim and et. al. (2006) developed and implemented an interdisciplinary curriculum unit on the concept of sustainable transportation. The research includes the meshing of EE model with models in economics, engineering and statistics. The focus is on life cycle assessment of material. The education portion of the project is an educational module that has been developed on the basis of parallel research on socio-economic and environmental analysis of transportation fuels with vision of sustainable development. The curriculum unit was implemented in an EE methods course for pre-service teachers.

In this study, sustainable transportation module was designed around the concept of sustainability to allow students to investigate sustainable transportation options to determine the most sustainable transport in their futures. This module consists three parts:

*Module Part I: Understanding sustainability*

This first part of module is composed to increase students' understanding of transportation in sustainability concepts. In the activities of this phase of module, participants verbalize the linkage between society, environment and economy i.e. the three realms of sustainability and then draw concept maps depicting their views.

*Module Part II: Issue investigation and PrOACT decision activities*

With Jigsaw as one of cooperative learning method, each student explores the more promising source of energy that is not fossil fuel in the activity. Here structured decision making: PrOACT model used. Following were the steps involved in PrOACT decision
model:

Problem: carefully define the problem.
Objectives: consider the list of objectives.
Alternatives: identify potential alternatives.
Consequences: establish the consequence of each alternative with respect to the objectives.
Trade-offs: address trade-offs of each alternative.

Module Part III: Culmination - Application of learning

Students discuss pros and cons to reduce greenhouse gas and pursuing sustainable transportation. Then, they make a decision to formulate a sustainable transportation strategy.

Thus, an interdisciplinary curriculum unit centered on the concept of sustainable transportation was developed and implemented for teacher education. The module uses a structured decision model (PrOACT) which has the potential for many applications of environmental education and in life choices.

Covitt, Beth A. (2006) conducted a study for exploring the role of student self determination in service-learning. Research questions include (1) How do self-determination-related characteristics of service learning programs affect students' attitudes toward service-learning (ASL), and (2) How do attitudes toward service-learning affect environmental education outcomes? Results demonstrate that self-determination-related characteristic, service-learning graduation requirements, did not affect students' ASL. Other factors such as perceived student choice and participation in different service-learning programmes, however, did impact ASL. Furthermore, ASL was strongly related to outcomes including
environmental sensitivity, personal responsibility and intentions to help the environment.

Jerry Culen (2006)'s study determined the effectiveness of the repeated Florida 4-H residential camping experience in developing environmental sensitivity of participants ages 12-18. The study design used in this research was modified cross-sectional design. A total 125 surveys were gathered. The control group consisted of 58 campers. Participants were asked to evaluate their own level on a five point Likert Scale.

The results of the study showed that:
1) The significant difference in participants' environmental sensitivity level was found between first time campers and campers who had attended two or more times previously.
2) The media and time spent outdoors are found to be very important factors in the development of environmental sensitivity. These two factors have a strong influence on a person's perceived level of environment sensitivity.

Khapp, Doug and Benton Gregory M. (2006) used a phenomenological approach to investigate the recollections of participants of an Environmental Education (EE) residential program. Ten students who participated in a residential EE programme in the fall of 2001 were interviewed in the fall of 2002. Three major themes relating to the participants' long-term memory of the residential EE program were identified. These are as follows:

1. Recollections were highly influenced by actions taken by the students.
2. Programme content/subject matter was retained by all of the
students to varying degrees, and

3. Emotional reactions to the experience were present.

The results seem to support that active experiences have an important role in episodic recall. Results also suggest the semantic memory was achieved.

Lindemann-Matthies, Petra (2006) with the help of questionnaires, investigated the responses of teachers and their pupils to the educational programme “Nature on the way to school”.

The main objectives of the programme were:

1. The promotion of opportunities for children to experience nature first-hand on the way school.
2. The promotion of interest in and tolerance of local plants and animals.
3. The promotion of children’s awareness of nature in their daily lives.

More than 3000 children (8-16 years old) from 166 primary and secondary school classes in Switzerland including 117 teachers participated in the study.

The study reveals that:

1. Children of all age groups enjoyed observing nature directly.
2. Teachers gave the programme very high ratings on average.
   The ratings given by the teachers and the learning gains of the pupils were positively related.
3. Teachers from rural and urban areas carried out similar activities during programme.

The high satisfaction of both pupils and their teachers with the programme supports that teachers should make more use of
McLaughlin, Jacqueline S. (2006) presented a programme that brings real world scientific research into the classroom via technology is CHANCE (Connecting Humans And Nature in the Costa Rican Environment) especially for biology teachers and students. This programme transforms teachers into field researchers, who then translate their experiences to research-based internet ‘modules’ that brings the experience to the classroom. By using a field course inquiry-based learning model, shown to be effective in enhancing student comprehensions, the modules help teachers to create hands-on research-based activities that bring scientific principles to life. CHANCE was designed to address the needs of school across Pennsylvania, and the Pennsylvania Department of Education (PDE) now recommend the use of CHANCE modules as a way of helping high school students to meet state standards in environmental science and ecology.

Rao D. B. (2006) explained that Thai Environmental and Community Development Association (TECDA) a NGO, began five years ago with the ‘MAGIC EYES HELP KEEP THAILAND CLEAN COMPAIGN’ a series of cartoon advertisement on television directed to children.

TECDA’s unique and joyful approach to educating Thai’s to improve local environmental conditions has been tremendously successful. The public sector advertising survey found that 89 per cent of those surveyors said the MAGIC EYES Campaign contributed ‘quite a lot’ to society.
Siegel, Marcelle A. (2006) examined the decision making in an urban US high school classroom in which tenth grade students analyzed scientific evidence about current issues of sustainability, technology and society. A full year course, called Science and Sustainability, was used in both groups, and a computer program, called ‘Convince Me’ provided scaffolding for making evidence-based decisions for one group. During the course of instruction, both the groups completed open-ended written assessments. Limited student progress, in using evidence to support claims and in weighing benefits and drawbacks, was demonstrated. The ‘Convince Me’ group showed more significant gains than the Science and Sustainability group alone.

Van Staden and Christie J. S. (2006) explored young children’s (5-9 years) vision of their future environment in south Africa – as temporal dimension, illustrating their conceptual understanding of this concept. A sample of 320 young learners from rural and urban areas was involved in this study. The researcher examined young learners’ views about their future environment with the aim of finding a way to make them aware of their role in taking care of their environment.

The research was performed by gathering children’s expressions through visual art, verbally and in writing. By analyzing these expressions certain themes emerged. It was found that educators could take note of issues that concern learners’ life worlds, which include their social environment. Children’s awareness and sensitivity of the environment could be enhanced by offering environmental programmes, but temporal confusion
persisted.

Van, Petergen and et. al. (2006) investigated environmental worldviews of young peoples using the revised 'New Ecological Paradigm Scale' for children. By administering the scale to children aged 13-15 in Belgium and Zimbabwe, the authors found statistical differences between the two subgroups in their perspectives on human environment interactions. Children in Zimbabwe and Belgium display ecological worldviews but differences occur at the human dominance dimension. Respondents in Belgium believe in human-nature equality, whereas Zimbabwean youngsters feel more dominant over nature and emphasize a utilitarian view of the environment.

Adepoju, O. A. (2007) studied the correlates of environmental conservation habit of members of a school-based environmental education programme. The sample comprised 584 members of the Nigerian Conservation Foundation (NCF) School. The sample was drawn from 25 schools, having the conservation club, using stratified random sampling technique. Data collection was through the use of the Environmental Conservation Habit Inventory (ECHI).

Results of the study indicate that the 14 independent variable investigated accounted for 12.12% of the variability of students’ conservation habit. Four of the variables made significant contribution to the explanations of the variability in students’ environmental conservation habit. These were: school ownership status, school-club activity status, students’ class level and students’ level of activity in club.
Chapman, Robert L. (2007) argued that a philosophical inquiry into the role of values in Environmental Studies provides the missing coherence and unity. Further, he argued that environmental problems directly related to deliberate human action are the province of applied philosophy and offer a formal argument to support this claim, and briefly address and dismiss the controversy over the teaching of value. The author concluded that environmental studies are inherently part of the philosophical enterprise; as such it belongs with the humanities.

Gonzalez-Gaudianu, Edgar (2007) explained a historical and contemporary Latin American perspective on the issues regarding schooling and environmental education. It shows that since its inception as a pedagogical field, in the 1970s, the environmental education has faced many challenges and resistances in the educational system of Latin America. An analysis of the competing and contradictory discourses of environmental education in developed and developing countries suggest that among other things; system inadequacies and malfunctions, social inequalities, the agendas of modernity and globalization and the hybridization of the field continue to increase the discursive identity and configuration of Environmental Education in Latin America.

Said, A. N. and et. al. (2007) conducted a survey using a self administered questionnaire with 306 students who were randomly selected from four secondary schools in the state of Johor, Malaysia. The instrument had sections addressing demography, sources of environmental information, concept of environment, environmental awareness and concern, sustainable consumption behaviours, and...
nature related activities.

The data illustrate that students were aware of, but only moderately concerned with environmental issues. Only 10 percent of students were able to define environment. The adaptation of sustainable consumption behaviours in their daily living was modest. Environmental Education ‘in’ and ‘with’ nature experiences was found to be minimal among the respondents.

The findings showed that environmental education had raised the environmental consciousness of students but was rather ineffective in changing action and behaviour patterns.

Shepardson, D. P. and et. al. (2007) tried to find out the students’ mental model of environment and does it vary by grade level or community setting?

In this study, the Environmental Task was administered to students from 25 different teacher-classrooms. The students' responses were first inductively analysed in order to identify their mental models of the environment. The second phase of analysis involved the statistical testing of the identified mental models. From this analysis, four mental models came out:

*Model 1:* the environment as a place where animal or plants live - a natural place.

*Model 2:* the environment as a place that supports life.

*Model 3:* the environment as a place impacted or modified by human activity, and

*Model 4:* the environment as a place where animals, plants and humans live.
The dominant mental models was the mental Model-1. Yet a greater frequency of urban students than sub urban and rural students held mental Model-3.

Robinson, Michael and et.al. studied the Ranking of Global Environmental issues and problems by Polish secondary student and teachers.

This was a study of the priorities given to global environmental issues by 700 secondary students and teachers in 9 secondary schools of Poland. The 12 global environmental issues / problems used in the study were originally identified by Rodger Bybee. The students and teachers ranked air quality and hazardous substances as the most important environmental problem and energy shortage and mineral resource as the least important.

The teacher ranking differed slightly from the student ranking. The top two issues were the same but teacher ranked Water Resource as the third most important issue.
REVIEW OF STUDIES FROM INDIA

Since last two decades much discussion about environmental education has taken place at each level of education. There have been many studies on different aspects of environment, deliberations put up by environmentalists, educationists, etc.

Some of the major review of these Indian studies has given as follows:

Panchal, G. C. (1970) studied co-curricular activities and their impact on education in the secondary schools of Valia Taluka in District Broach. In this study, researcher found that most of the Head Masters, teachers and pupils told that the objectives of co-curricular activities should be clearly defined or formulated and should be clear to the school authorities as well as to the pupils. Besides this, researcher also found that the time and finance for co-curricular activities were the barriers to conduct them.

The SCERT of Andhra Pradesh (1980) compared the old and new science curricula in environmental studies of class III & V and found that the new curriculum relevant to environment was more effective.

The Department of Education, The Ministry of HRD introduced two projects –

1. a scheme for improvement of science education in schools and,

2. a scheme of Environmental Orientation to school education.
Gupta, et.al. (1981) conducted the study on environmental awareness among rural and urban schools and non-formal education centers.

The findings of this study were as follow:
1. School going rural children did better than the urban children.
2. Non-formal centre students were more aware than urban students.
3. In this study, the environmental components in which students were lacking or well familiar were also identified.

Joshi (1981) found that environment outside the class is potent enough to initiate learning, and therefore environmental education should be considered essential at least at the primary level. But teachers and syllabus are responsible for limiting the growth of this approach.

Deopuria, R. P. (1984) made the comparative study of teaching science through the Environmental and Traditional Approach in Schools of Madhya Pradesh. This study was carried out for V, VIII, IX and X standards.

The major findings of this study were:
1. The environmental approach showed greater cognitive gain in knowledge, understanding and application of science concepts related to environmental education at primary, middle and secondary school level. But it was not effective in the teaching of factual recall type concepts at middle and secondary school levels.
2. The sex had no effect on the attitude towards the environmental approach.
Jacob, Plamthodathil S. (1984) wrote an article on 'The Human factor in Environmental Education and Actions.'

He emphasized a co-existence with the sense of equality with our environment rather than that of mastery over it. The idea of 'Comradeship' with the environmental subject to be internalized and transformed into a motivating force which will protect both them, the man and the environment.

In this context writer suggested the three dimensional approach to educational planning, viz.

1. Learning to know (informative)
2. Learning to feel (experimental)
3. Learning to do (volitional)

Furthermore, he explained the educational institution involving family units are also very important in the Environmental Action Programme as considering the urgency of the current environmental situation.

The writer suggested the three types of action-oriented courses of study must be introduced at all three levels of education, which are as follows:

1. Primary level – Know your environment.
2. Secondary level – Discover your environment.
3. Higher (college or university) level – Protect your environment.

Sawant, N.N. (1984) conducted a study of co-curricular activities in secondary schools of Satara District. With the help of
questionnaire and interview researcher collected data and following results were drawn:

1. PT teachers were involved in socio-service camp, excursion etc.
2. In some schools, Science teachers conducted excursions, botanical tours, visits to zoo, aquarium, etc.
3. Many schools had not allotted any period for co-curricular activities in urban and rural area.
4. Library and cultural activities were not popular in rural area.
5. Eleven schools out of fifty did not spend any amount on science club activities.

Singh, Cooni (1984) studied the civic/ social awareness college student where researcher found that -

1. Damaging the public property by the student; this tendency is quite alarming.
2. Most of students felt the need for guidance and a sense of direction or more involvement from college authorities.

Hijam, (1986) showed through a district-based survey, how carelessly science curriculum was implemented.


Through this study, researcher found that:

1. The teaching-learning strategies now adopted in schools are not oriented to the development of scientific process.
2. The science-club members were found significantly better than the non-members in composite performance skills.
Vedamani, Manuel N. and Exemmal J. (1988) made the (independent) study for developing and testing models of environmental education in Botany relevant for the socially disadvantaged children in the schools of Kerala.

The major findings of study were:

1. The Kerala text books attempted to keep close to the national originals.
2. The researcher proposed six models which include -

Metthew, K.M. (1989) has given the Student (core) Programme and Village Programme in order to conscientise them as to their rights in society.

The Student (core) Programme is of three day programme including the exposure of the trainees to the past environmental aspects and trip as well as trek across the nearly village which helps them to come to grips with the destruction caused to the environment by rural groups, followed by a quiz programme on the inputs during three days.

Rane, A. J. (1989) evaluated the environmental study approaches of Parisar Asha is municipal schools of Greater Bombay.

The conclusions of this study were:

1. The major difficulty experienced by trainers was the teacher’s irregular attendance in the training sessions.
2. The monitoring system which was introduced by Parisar
Asha, helped to get feedback on the functioning of Environment Study (EVS) project.

3. The Head masters involved in the implementation of the EVS-project in BMC schools was appreciable.

4. The teachers of standard II have a favourable opinion about the environmental study approach and they made efforts to use this new approach in their classrooms along with the traditional methods of teaching.

Shahuwaj, (1990) worked on the environmental awareness and environmental attitude (towards environmental issues) of secondary to higher secondary school teachers and students.

The major findings of his study were:

1. There is high level of awareness on the part of teachers regarding the environment and this was more in the urban than the rural groups.

2. Girls possessed significantly more awareness of the environment than boys.

3. It was found that 95% teachers and 94% student possessed positive environmental attitude.

4. Trained and untrained teachers did not differ on environmental awareness.

Thomas, Annie (1991) took the sample of 377 student including 199 boys and, 178 girls from eight schools for studying the awareness of secondary schools students towards some environmental issues.
The findings of this study were as follow:

1. There is a significant difference in the awareness of environmental issues of secondary school students of SSC, ICSE and CBSE board.

2. There is no significant difference between boys and girls on their awareness of environmental issues under study.

3. It was found that there is no significant difference between boys and girls in their awareness of conservation of Natural Resources.

4. There is much weightage to environment in the secondary level of the CBSE curriculum.

Praharaj, Balkrishna (1991) studied the level of environmental knowledge, attitude and perception regarding environmental education among 416 pre-service and 302 in-service secondary school teachers.

The major findings of this study were as follow:

1. There is no significant difference among the in-service teachers at factual environmental knowledge with reference to their sex, place of residence, subject orientation, socio-economic background and teaching experience.

2. Pre-service teachers with science background possess significantly better factual environmental knowledge compared to the teachers with non-science background.

3. Teachers realize the existence of environment crisis, role of environmental education; but have not correctly perceived the meaning of environment and ‘environmental education’.

4. Teachers need additional training in environment education.
5. Mass media are the best source of environmental knowledge for teachers.

6. Schools and colleges are not able to contribute meaningfully for enhancement of their environmental knowledge.

7. Inflexible school schedule, public apathy and lack of trained teachers and other resources are major constraints regarding implementation of EE Programmes.

Satrusalhya (1991) studied the implementation of co-curricular activities in the secondary schools of Cuttack District of Orissa.

The major findings of the study were as follows:

1. There were some common activities, viz. Games, Drama, Debate, etc. in which boys and girls were equally interested.

2. The provision for co-curricular activities available to the children was too insignificant to fulfill their adolescent needs.

3. Though there existed provision for various types of co-curricular activities, very few activities were actually implemented.

4. It was not possible on the part of the institutions to implement all co-curricular activities due to the lack of finance, space, time, experts, staff, equipments, leisure time, etc.

5. The present over crowding in school was also responsible for meagre pupil participation.

6. The provisions for activities like Gardening, plantation, etc. were found to be insignificant.
Gopalakrishan, S. (1992) selected 1451 students of class V to X of different schools of Nilgiris, Madras and Coimbatore and exposed them to environmental education and put them through Environmental Education Test (EET).

The study revealed following findings:
1. The study showed that the participatory learning approach could bring about better impact.
2. Teachers in general felt that there was no sufficient time to give importance to learner-centered activities.

Nair, S.M (1992) stated that in India, most of the instructions in ecology and environment in schools and colleges comes from text books, yet, this form of education rarely results in action.


The major findings of this study were as follow:
1. Self management is perceived as the best formula for good environmental management.
2. Several workshops, committees and bodies at national and international levels have thrown light on the conceptual analysis of environmental education.
3. The fusion of different types of environment forms the holistic concept of environment. The relationship between man and environment is symbiotic in nature.

Banerjee, Shivani (1994) studied the awareness of environmental pollution among secondary school children. She conducted this study with 1000 students from 10 schools with the
The major conclusions of her study were:

1. In general, secondary school students are aware of the existing environmental pollution. They feel it is a serious problem which has to be tackled from its grass root level.

2. There is little difference in the awareness of environmental pollution among the male and female students. Male students are little more aware of environmental pollution.

3. Secondary school students agree that more instructional material is required for the awareness of the problem.

Countinho, Andrea Myrtle (1994) studied the environmental education through science. For this study the researcher selected class IX with control and experimental group. First group taught ten lessons without environmental input while experimental group taught ten lessons through environmental education approach (EE Approach).

The conclusions of this study were:

1. Science lessons could be taught by incorporating environmental information and data for all classes at all levels of the schools.

2. Interdisciplinary teaching promotes a more holistic education through EE Approach.

3. The student applies newly acquired skills to confront problems in life. Therefore Environmental Education prepares a student for life.
Nagarijan, N. (1996) explained women as a environmental educator. The United Nations’ Decade for women (1975-85) also initiated discussion on the role women towards the conservation of global environment.

‘To empower women’s ability to do, the capability to accomplish tasks, the command over events and the ability to exercise influence’- (Nancy, 1994).

Women are the source of continuity of life, nurturing the future. Young children also start learning through contact with mothers. Hence, inculcating ethics and stimulating change in attitude is basically important at home. It is recognized that women are the linch-pin to the environmental conservation. They are care-takers of family and managers of natural resources.

Thus, in brief, it is explained that the women education is the basis of conserving bio-diversity, natural resources, etc.

Ravindranath, M. J. (1996) emphasized the role of District Institution of Education and Training (DIET) in the process of planning, organizing and implementing a comprehensive programmed of environmental education at the district level. To bring out such qualitative improvement in the schools is one of major aim of DIETs.

He further stated that the DIETs have immense scope and potential for institutionalizing the environmental education in grass root levels of schools. He cautions that the salutary effects or efforts done by various agencies will not be sustained unless these are accompanied by good curricula, teacher-training, continuous implementation and follow-ups of programmes.
Thus, he explained the important role of DIETs in environmental education at school levels.

**Bheda, Jasmina (1997)** studied the environmental education in primary schools in view of Games as a medium of instruction.

The major findings of study were:
1. Text books (79 %) seem to be the most widely used media for environmental education in primary schools.
2. Teachers perceived this complementary ‘Game’ method for bearing environmental education to be good and effective, but they felt that it requires the extension of parental help to implement ‘Games’ as a part of the curriculum.
3. It was seen that the method of learning environmental education through games has reached the home and the community.
4. There is a need today is to develop good indoor and outdoor games suitable to the primary level and cater to the large number of children in a class at a time.
5. There should be manuals, guides, supplementary material and training workshop for teachers to expose and orient them, for the effective use of educational, environmental games in the school curriculum.

**Godbole, Madav (1997)** wrote an article on ‘Environment and Educational Institution’ emphasizing the necessity of decentralized Environmental Movements throughout the country. Therefore, he put the idea of *Panchayat Samiti* for environmental concern, working in collaboration with schools and colleges. It gives direct experience of environmental information, collection, research,
etc. to the students. This will create the caring attitude in students towards environment.

He explained the endeavours of Bombay Natural History Society (BHNS) and World Wide Fund for Nature (WWF) for environmental projects incorporating students. Writer gave an example of Tamil Nadu teachers of autonomous colleges who decided to introduce new environmental concerns in curriculum every year. Indian Science Academy also provided the resource material and training for them.

Gupta (1997) carried out a study on adolescent’s Environmental Awareness in connection with Religious and Scientific Attitude and Scholastic Achievement.

The study was a correlational one. Stratified random sampling technique was used to select the sample which includes 500 students. Inventories for environmental awareness and religious attitude were used.

The major findings of this study were:
1. Religions and scientific attitudes, gender, habitation and scholastic achievement of adolescents possess significant effect over the environmental awareness.
2. Managerial background does not pose any significant impact over such awareness.

Gupta, N (1997) conducted the survey in Mumbai region for studying the role of NGO’s in promoting Environmental Education.

The main findings of this survey were as follow:
1. Generally all NGO’s have the quite similar and inter-related objectives. Only 25 % of the NGO’s included the need to
conduct surveys and projects for the assessment of environmental quality.
2. The most common activity of the majority of NGO (89\%) was awareness generating programmes.
3. Less number of NGO were engaged in production of audio-visual aids and research action projects.
4. 78\% of NGO had no follow-up procedures.
5. Teachers were aware of the name of the NGO, but they didn’t have any well information about that NGO. e.g. objectives, activities, etc. This indicates that NGO’s are lacking in their efforts of reaching out to all sections of the society.

Modak, Anjali A. (1997) conducted a survey of environmental awareness among secondary school students with a view of developing programmes for them.

Her conclusions were as follow:
1. Students have knowledge about deforestation, soil erosion.
2. Students have fair knowledge of ozone gas.
3. Students knew four types of pollutions, but some have added nuclear, industrial pollution too. According to them, government is paying sufficient attention to this problem, but unfortunately these efforts are not sufficient.
4. Students recommended that Diwali heralds, crackers, loud noise etc. should be stopped at once.
5. They are aware about overflowing garbage. Student mentioned the proper town planning also.

Naravane M.S. (1997) prepared the Training Programme for raising the level of environmental awareness among prospective
teachers and tested it's effectiveness. The sample of 258 student-teachers were considered in this study wherein the researcher majorly found that there is a positive gain in the average performance in environmental awareness of the experimental group after the training programme.

Gokhar, S.C. and Bindu K. (1998) studied the environmental awareness among the urban and rural senior secondary school students in relation to intelligence and socio-economic status.

The survey is conducted with 100 students of IX standard urban and rural students from Ferozepur District of Punjab.

The major finds of this study were:

1. There was positive relation between the variables of intelligence and environmental awareness in case of both urban and rural sample.

2. The variable of sex difference did not account for significant difference on the environmental awareness of students in case of both urban and rural.

3. Though the values were not found to be significant; when the means of EAQ score were compared; girls scored better in urban sample than boys, while in rural sample boys scored better than girls.

Gogoi (1998) tried out to explore the major Environmental Problems of Assam. For this study, 400 high school children from higher secondary level were chosen; besides official records, publications and other print media were also taken into consideration.
In conclusion, this study revealed that there is a lack of awareness towards environment among the sample group with a considerable variation among the respondents.

Pareek, M. (1998) conducted the study on environmental awareness among secondary school students. Researcher made the survey of 1000 students with stratified random sampling. The sample was chosen from Tahsil of Jaipur and Jaipur Local city. Environmental Awareness Test was administered of students.

The conclusions of this study were:
1. The level of awareness among student came out to be good, i.e. students possess enough knowledge about various aspects of environment.
2. There exists a significant difference between urban and rural students. The urban students have shown higher cognitive level of awareness.
3. The boys and girls do not differ significantly at cognitive level of environmental awareness.

Patil S.N. (1998) studied the non-aided secondary schools from Kolhapur through the environmental point of view.

The findings of this study were:
1. Rural schools had not favorable environmental surroundings
2. Schools arranged some environmental programmes like plantation, public awareness, essay competition, etc.
3. Schools faced following problems through the view point of environment:
   a) Lack of good natural surrounding,
b) Burdon of completion of syllabus,
c) Lack of assistance from people, etc.

**Tomar, A. (1998)**'s study was in the direction towards the preparation of intervention programmes in the subject of environmental science for primary school children and thereby to implement this programme to see the effectiveness of IV grade students in terms of their academic achievement.

The study found that:

1. All student favoured learning through intervention programme. Such programmes are quite helpful to enhance the positive attitude of the student towards the environment if those are joyful.
2. Such programmes required proper training for teachers to make those programmes attractive to the students.
3. Combination of different methods has helped student to feel interested in learning.
4. Regarding evaluation pattern, students liked the activity-type test most, where they had a scope to exhibit their creativity and psychomotor skills.
5. Student mentioned that they would also like to learn other subjects through intervention programme.

**Babel, Ritu (1999)** studied the eco-friendly packaging and consumer buying behaviour in Mumbai.

The study showed-

1. The reusable packaging is more popular among consumers, now it is not new concept. Eco-mark is a new concept, so
there is not much awareness about it and only 18% consumers are aware about it.

2. People think over packaging increases solid waste in environment and the cost of the product also.

**Indubala (1999)** explored the scope of video instructional package on ‘Environmental Pollution and Education’ as a unique medium of instruction for better comprehension, attention, appeal and fulfillment of instructional objectives among the students in the formal classroom situation. A group of 240 students of IX standard constitute the sample. Video film and Learner’s handbook developed by investigator was used to conduct the study.

Investigator observed that the video instructional films on environmental issues are proved to be effective in motivating students and sustaining the attention on the part of the programme developed.

**Kidwai (1999)** made study aimed at geography curriculum at secondary stage at Delhi, wherein she observed that:

1. The importance of natural environment is neglected in formulating the instructional objections of teaching social science.

2. Activities in this concerns as mentioned in the text books published by Government agencies need specific directions.

3. Regarding to environmental awareness among teachers and students, public schools are better than the government schools.

4. There is the need to strengthen the method of teaching
geography through environmental exposure.

Nalwade N.V. (1999) conducted a study on environmental awareness of post graduate female students in Shivaji University.

The researcher found that:
1. Less number of female students (25%) was interested to see and confirm the source of clean drinking water.
2. Very less number of female students (i.e. 7.5%) was found that attitude of energy saving while using the entertaining devices.
3. Generally female students from science background had more aware than rest of female students.

Patil, Arun R. (1999) studied the awareness of people's traditions towards the environment.

The researcher found that:
1. 58% people knew about noise pollution during Diwali festival.
2. Less people (only 24%) knew about wild life like snakes.
3. The maximum (i.e. 98%) people were there, who had unfavorable attitude towards the electricity or energy saving during Ganpati Festival.

Patil K.B. (1999) studied the environmental awareness among farmers. The study revealed that:
1. The farmers who were illiterate, educated up to secondary level and graduate level have 38%, 69% and 86% environmental awareness respectively, towards different crops.
2. The farmers who were illiterate, educated upto secondary level and graduate level, have 45%, 61% and 56% environmental awareness respectively, towards fertilizers.

3. The farmers who were illiterate, educated upto secondary level and graduate level, have 9%, 36% and 19% environmental awareness respectively, towards insecticides.

Purkayastha, Chandra (1999) has done study on managing co-curricular activities to supplement formal education.

The researcher explained following points through this study:

1. The concrete experience of role playing, drama, etc. internalized the theories that they had read on the paper.

2. The charts making evoked a great deal of students’ interest. The ability to communicate came into focus, as they were required to create the chart for an audience, not for economic.

3. The Group discussion helped student to understand others’ feeling, behaviour. They decided to participate more actively in a group.

Bhosale, R.A.(2000) studied the community as a learning centers for the school students where researcher found that:

1. Students are well acquainted with plants and animals and their use in daily life situations, but they are not aware of the community resources available in their city pertaining to above topics of science subjects.

2. Students are not found to observe with a definite purpose the incidents that take place in the society.
Povalkar, S.H. (2000) studied in Non-Governmental Organization working for environment in Kolhapur. He found that Seven Kolhapur Citizens Committee, WWW, Nisarg Mitra, Green Gardens are working for environmental camps, trainings, plantation, etc. in order to increase the environmental awareness among people.

Korade S.K. (2001) studied the environmental awareness among students of VII standard. In this study, she found that:

1. 69% students of VII standard have environmental awareness while 31% students have no environmental awareness.
2. 96% students of VII standard have awareness about health and hygiene and 4% students lack such awareness.
3. 84% students know soil pollution while 16% students have no awareness about soil pollution.
4. 70% students have awareness about water pollution and 30% students have no such awareness.
5. 67% students have awareness about noise pollution while 33% students have no awareness about noise pollution.

Das (2002) studied the development of environmental awareness through the study of Life Science in the secondary schools of West Bengal.

The study revealed that:

1. There is the heterogeneity among the groups in terms of their perception of environmental awareness. It also found that several approaches related to life science helps in enhancing environmental awareness among the students.
Dhere P.A. (2002) prepared and studied the effectiveness of ‘Activity Programme’ which is related to ‘study of surrounding environment’ in order to study the sensitivity of IV standard students towards their surrounding. Researcher selected 476 students from Pune city (control 238 and experimental 238), wherein she found that:

1. The ‘Activity Programme’ enhances the sensitivity of students towards their surrounding environment.

2. Such ‘Activity Programmes’ enable to develop the cause-and-effect, observation, etc, competencies among the students.

Bahulikar J. (2002) conducted the study on ‘Development of a course of studies and material in Environmental Education as a part of B.Ed. syllabus and its effectiveness.’

The study showed that:

1. The whole teaching programme was effective in bringing about interactions between students.

2. The students were able to express the problems that are faced by the environment.

Barve, Minakshi and et. al. (2002) studied the status of Environmental Education in YCMOU, Nashik. In this case study the tools used were records, interviews and observations.

The results were draw under two headings separately:

I. Learners’ Level

It found that:

1. Only school of Humanities has introduced one unit in its
foundation course related to EE very recently.

2. A few students undertook research work concerning EE.

3. Administrative and academic authorities felt that EE content must be integrated in the programmes run by YCMOU.

II. Campus Level

At this level, it is found that:

1. Though the rooms are airy and full of light, there is a tendency to continuously use the tube lights as well as fans.

2. Some people do not switch-off the electrical appliances in the room while they are away.

3. The paper and photocopying facilities are lavishly used.

4. No lavish usage of water and wastage thereby could be cited.

The researcher, however, found the picture is not so gloomy, there are individuals quite constructive in their thoughts and deeds in the field. They would prove of great help to those who are in a dilemma whether to act or to let the things take their own time to set right, if encouraged a little, they may proceed further.

Chauhan R. C. and et. al. (2002) has presented a vision with respect to Environmental Education in the new millennium. According to them Environmental Education can be divided into three levels, i.e.

i) Elementary level,

ii) Medium level

iii) Advance level

i) Elementary Level Environmental Education

Children must be taught at home, in society, at pre-school or at primary school level.
- Not to waste.
- Not to misuse.
- Not to spoil.
- Not to damage.
- To respect and protect the various life supporting constituents of the earth.
- Belonging and Commitment.

**ii) Medium Level Environmental Education**

- Environmental systems.
- Environmental pollution, causes, and consequences.
- Concept of sustainable development.
- Concept of various pollutants, their analysis and control.
- Legal aspects of pollution control.

**iii) Advance Level Environmental Education**

- Environmental planning and management.
- Monitoring and Control of Pollutants.
- Environmental Engineering and Technology.
- Environmental Impact Assessment of Technology.
- Prediction of anticipated environmental problems like biological and chemical war, genetic transmutations and their solution, etc.

**Havaldar V.B. (2002)** conducted a study on direct experience to teach the environmental topics of science subject of V standard, wherein researcher found that:

1. The direct experience method used for topic ‘soil erosion’ of science subject of V standard was more effective than indirect method.
2. Pre-unit planning enables the teacher to use such method within available period effectively.

**Patil R.A. (2002)** studied the environmental co-curricular activities in primary school in Shirol Taluka of Kolhapur District. Researcher conducted a survey with the help of questionnaire.

The major findings of study were:

1. There are no equal numbers of teachers of environment in all primary schools.
2. Environmental co-curricular activities regarding to natural calamities are very less.
3. Environmental co-curricular activities regarding to health and hygiene are good.
4. All schools provide environmental education through cultural programmes and environmental games.
5. Various small projects are given to different groups of children.

**Sankpal, R.P. (2002)** conducted a survey of D.Ed. colleges in Kolhapur in order to study the environmental co-curricular activities conducted in colleges.

The major findings of study were:

1. There is no any period in first year of D.Ed. allotted for environment, but for second year environmental education is given through different units from science subject.
2. There is shortage of environmentally trained teachers for colleges.
3. Conducting the environmental exhibitions is rarely observed.
4. Colleges are taking very little participation or help from other
organizations.
5. These colleges arrange less environmental excursions.
6. The colleges face major difficulties of planning and expenditure while conducting environmental activities.

Allan, J. Abreo (2003) conducted a study on co-curricular activities in different types of secondary schools of Goa State. The researcher drawn following conclusions:
1. The co-curricular activities conducted in most of the secondary schools in Goa are very inadequate.
2. Almost all the schools do not encourage their students to develop different hobbies.
3. Most of the schools have no provisions for separate periods for Gardening in the school time-table. However, the rural schools have better provisions for Gardening work in the school time-table as compared to the urban schools.
4. Gender is a factor found to be associated with the extent of students participation in co-curricular activities.
5. Most of the schools conduct only very few activities in the morning assembly.
6. The extent of students participation in most of the co-curricular activities is low.


The major findings of the study were:
1. Urban female students had found high environmental
awareness (i.e. 68.53%) than urban male students.
2. There was no significant difference in the environmental awareness of rural male and female students.
3. There was a significant difference in environmental awareness among urban and rural secondary school students.
4. There was not a single teacher having graduation in Environmental Science.
5. There were more male teachers who were teaching the subject of ‘Environmental Education’ than female teachers.
6. Teachers’ manuals regarding Environmental Education were not available in Library.
7. Teachers felt that periods allotted in time-table are not sufficient to achieve the goals of Environmental Education.
8. Students found passive, as there was a grade system for their evaluation.
9. 92% of Head masters felt that teachers have responsibility of teaching and other work.
10. There were 60% students and teachers who were not seriously looking towards environmental co-curricular activities.

Shinde M. A. (2003) studied the Secondary Schools of Group-5 (Kolhapur City) through the environmental point of view. The findings of study were:
1. 80% schools have established Nature-club in their schools.
2. Schools provide environmental education to students through field visits, plantation, plant conservation, excursions, etc.
3. Majority of schools (60%) celebrates the wild life week, Ozone Day, etc.
4. Less time allotted for environmental activities, financial problems, students' less interest are some of the difficulties faced in imparting the environmental education.

Yerroju, Bhaskar A. (2003) wrote an article on “Environmental Education in India: A perspective” wherein writer discusses the importance and present position of environmental education at various levels of education in India. The writer also described the Newman’s three fold classification of EE which is as follows:

1. Environmental Studies – concerned with social aspect and change.
2. Environmental Science – concerned with processes.
3. Environmental Engineering – concerned with technical processes which can be used to minimize the environmental impact.

The writer also discussed the role of environmental education at primary, secondary and tertiary level along with the university and non-formal education also.

Finally, writer gives emphasis on the need of environmental education for different professional groups.

Chaudhari P. (2004) conducted a study on environmental knowledge and environmental attitude of students of IX standard of Vadodara city.

The major findings of this study were:
1. There was a moderate positive relationship between environmental attitude and environmental knowledge.
2. The factual, conceptual and total environmental knowledge as well as environmental knowledge attitude of secondary school students of Vododara was average.

3. There exists a positive moderate significant correlation of environmental attitude with factual, conceptual and total environmental knowledge.

Gavli V.V. (2005) tried to explore the various efforts to protect the environment by Panchayat Samiti, where she found that:

1. Panchayat Samiti has completed different agricultural works especially for farmers.

2. Panchayat Samiti has faced some problems to implement all environmental policies due to the poverty, mis-understandings of people, especially illiterate.

3. Each village is not equally benefited by environmental policies.

4. For common people it faces difficulties to take advantage of government’s environment developmental policies due to over burden of bank loans, bribe, etc.

5. Sarpanch and Gramsevak felt that there should be one village survey in a month to perceive the environmental needs of villagers.

Lenka, Samir Kumar (2005) studied the awareness of environmental education among the PG student. In this survey, Environmental Awareness Test (EA Test) is prepared and used for 150 Post Graduate students from Kurukshetra University.

The major findings of study were:

1. There is no significant difference in environmental awareness
between PG male and female students. Both have the same environmental awareness.

2. The science students were more aware about environment than Arts and Commerce students.

3. There is no significant difference in environmental awareness between Arts and commerce students.

4. There exist no significant interactions among the Post Graduate students belonging to both sexes and different subjects.

**Sandhu Vipinder and Dhillon J.S. (2005)** conducted the study on 1800 elementary school teachers from five Districts of Punjab state to study their environmental education awareness with respect to their residential background, sex and subject specialization. The questionnaire was used to collect data.

The conclusions of the study were:

1. There exists urban-rural variation in Environmental Education awareness. Teachers working in urban schools were more aware about environment and its related problems.

2. Male and female elementary school teachers showed no significant variation in environmental education awareness.

3. The science teachers had higher environmental education awareness than social science and language teachers.

**Borkar A.H.(2006)** conducted a study on Environmental Education imparted in secondary school students. The sample consists of 90 students and 15 teachers from the English medium school from Pune city. Researcher used the closed and open-ended
questionnaire to collect data.

The major conclusions of the study were:

1. Students are aware of the environmental problems that they are facing at the present.
2. Teachers are facing problems of limited resources provided to them while imparting environmental education.
3. Not a single teacher has attended the training programme regarding the Environmental Education.

**Chandra Kumari, et. al. (2006)** conducted a study on Environmental Awareness, Environmental Attitude and Intentional Ecological Behaviour among Adolescents.

The major findings of the study were:

1. The majority of respondents fall in the category of high awareness level.
2. Only 4% girls & 14% boys were found to have low awareness level.
3. Majority of respondents including boys and girls had intermediate attitude towards environment.
4. The majority of the respondents were found to have the positive behaviour trend. i.e. in eco-friendly direction.

**Devi, Uma D. and Reddy P. Adinarayana (2006)** studied the Knowledge and Educational Needs in Environmental Aspects among rural adults. The total sample of 600 respondents from the different groups of rural area was selected. Both open and closed type of questionnaire and three point rating scale were used for gathering data.
The study revealed that:

1. The knowledge level among different categories of rural adults who are involved directly or indirectly in Akshara Sankrathi programme reveals that surprising, organized workers possess high knowledge in all the aspects of environment.

2. Rest of majority of the sample possesses poor knowledge about the environmental aspect and they also revealed that they need to learn about the environmental concerns. This shows their interest towards the environmental concerns so as they are enabled to protect it.

Gihar, Sandhya and et.al. (2006) conducted a study on ‘Developing Environment Friendly Behaviour among Students: Role of Video Intervention’ with a sample of 300 students from Bareilly District. Environmental Responsibility Assessment Inventory (ERAI) was developed; besides this, 12 video films on different aspects of environment have been used as intervention.

The results of study reveal that:

1. The sense of responsibility towards environment among male and female students was significantly affected by the intervention.

2. Male students had found more responsibility towards the saving green trees and vegetables on ERAI.

Naseema, C. (2006) studied the influence of sex and social position on Attitude towards Environment of secondary school pupils. This study mainly aimed to find out the level of attitude towards environment of the secondary school pupils of Kerala.
The important findings of study were as follow:

1. Boys and girls differ significantly in their attitude toward Environment.
2. Rural and urban school pupils do not differ significantly in their Attitude towards Environment.
3. Private and government school pupils differ greatly in their Attitude towards Environment.
4. The social positions of secondary school pupils have a predominant role in determining their favorableness or unfavourableness towards their environment.

**Pandey, Bandana (2006)** studied the coverage of Environmental News. Her conclusions were as follows:

1. The Hindi dailies gave more front-page preferences to the environmental news than those of English dailies.
2. Weather related news and new researches or seminars on environmental issues were the choices of news papers followed by pollution issue.
3. News paper reporters are covering more environmental issues than agencies.
4. Hindustan Times and Dainik Jagran covered more photographs on environment.

**Sakhare S.J.(2006)** investigated the environmental co-curricular activities conducted at secondary level. For this status study; the researcher, with the help of questionnaire and interview, conducted a survey of ten secondary schools involving 100 students and 20 teachers.
The major findings of the study were:

1. Environmental co-curricular activities motivate students towards increasing environmental awareness.
2. In-service teachers who never attended any training programme related to the environment give very less responses.

Sapre N.R. and et.al. (2006) studied the bottom-up approach of Environmental NGOs in Kolhapur. Her study reveals that:

Environmental NGOs in Kolhapur have played a major role in environmental protection and development by linking local with the global. The collaborative work of these NGOs leads to the fulfillment of local needs. The bottom-up approach of NGOs facilitates local responses and adds up to significant societal change.

Vernal, Louis (2006) wrote an article on Pedagogy in Environmental Education wherein writer discussed the transaction of the curriculum is more activity oriented, locale specific, problem and issue oriented.

Disciplinary, interdisciplinary and multidisciplinary approaches are explained. Some of the well known methodologies and techniques as useful and applicable to environmental education are mentioned, e.g. lecture-cum question and answer, discussions, problem solving, project, case study, role playing, nature walk, brainstorming, etc. Writer also emphasized that in environmental education, process of continuous evaluation is perhaps more important than summative evaluation.
Wadhwa, M. (2006) conducted the study to find out whether there is a change in awareness about environment among students in a four year degree course in Education (B.El.Ed.) through a visit to a 'zoo'? The sample of 30 girls was selected from a college of Delhi University, situated in a rural setting.

The study revealed that:

1. A visit like this (zoo) is the most enjoyable and memorable of academic experiences for students.
2. Such visit built upon not only the content knowledge but also process skills like observation, communication, prediction, etc.
3. The setting outside classrooms were effective in creating awareness about environment such studies in outdoor setting promote development of positive attitude toward science and environment.

Bhandarkar A. and Patil G. (2007) studied the emotional Intelligence (EI) and Environmental valves (EV) among Junior College (XI Standard) students. The EI and EV tests from eleventh standard and the conclusions were drawn with the help of mean, SD, 't'-test, correlation coefficient.

The major conclusions of study were as follows:

1. Rural students have more positive emotional intelligence than urban students.
2. Female students have more positive emotional intelligence than male students.
3. The environmental values are found to be more positive in rural students.
4. There is a significant association between emotional intelligence and environmental values of junior colleges students.

Molia, Maganlal (2007) discussed the global issues of environmental education. In this article author wrote that: Hines, Hyngerford and Tomera analyse responsible environmental behaviour by identifying four elements in Environmental Education:

1. Knowledge of environmental issues.
2. Knowledge of specific action strategies to apply to these issues.
3. The ability to take action on environmental issue, and
4. The ownership of certain effective qualities and personality attributes.

These elements can be used as a framework for constructing learning about global issues that is related and integrated to the students' life. Whichever approach is used, the relationship of the individual action towards global issues must be central to the instruction, if the desired outcome is that of responsible environmental behaviour.

Besides this, there are many situations in which creative problem-solving dealing with environmental issues can be used in learning settings. Monroe and Kaplan suggest the following elements are important in problem solving:

1. Knowledge of the environment and of issues,
2. Familiarity with solutions to problems,
3. Knowledge of action strategies that help to resolve issues,
4. Skills in action taking,
5. Locus of control and empowerment,
6. Attitudes and values,
7. Sense of responsibility and commitment,
8. Group process skill,

CONCLUSION

When the Review of related Literature and Research is done in this area it is found that most of the research is dealing with Environmental awareness and no more research related to Environmental Sensitivity is found to be undertaken earlier.

Though these researchers are indirectly related to this study the research design, methodology is found to be useful. The sample shows wide variation and hence definite conclusions can not be drawn. However these studies have enabled this researcher to plan this study properly.

Moreover, in Konkan region of Maharashtra State, no one has conducted such type of study regarding Environmental Sensitivity among secondary school students from Marathi medium, so the researcher has conducted this study to find out the level of environmental sensitivity among secondary school students.

Hence, the research problem can be said as an original and as pointed out in the first chapter in the significance of the study there is definite need of conducting research work on the topic selected for this study.