CHAPTER - II
REVIEW OF RELATED LITERATURE
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"The review of literature promotes a greater understanding of the problem and its crucial aspects. It also provides comparative data on the basis of which to evaluate and interpret the significance of one's findings". Mould (1984)

2.1 INTRODUCTION

Review of related literature implies locating, reading, and evaluating reports of research as well as reports of casual observation and opinions that are related to the individual's planned research project. A summary of writings of recognized authorities and of previous research provides evidence that the researcher is familiar with what is already known, what is still unknown and untested. Since effective research is based on past knowledge, this step helps to eliminate the duplication of what has been done and provides useful hypotheses and helpful suggestions for significant investigations (Best, 1983).

The review of related literature is one of the essential aspects of research projects. A researcher has to be up-to-date in his information about studies related to his own problems already made by others.

2.2 NEED FOR REVIEW

According to Carter V.Good, A.S. Barr and D.E.Scales, survey of selected literature serves the following purposes.
It shows the evidence to solve the problem adequately without further investigation to avoid the risk of duplications.

It provides valuable ideas, explanations or hypotheses in formulating the problem.

It suggests appropriate research methods of the problem.

It locates comparative data useful in the interpretation of results.

M. Clements Johnsons says “the research reports enable teachers, administrators and others to seek abreast of current findings and improvements relating to education. If educators are to achieve benefits from research, they should be able to read research intelligently”.

For any worthwhile study in any field of knowledge, the researcher needs an adequate familiarity with the work, which has already been done in the area of his choice. It helps researchers to find what is already known, what others have attempted to find, what methods or works have been promising or disappointing him and what problems remain to be solved. It enables him to know the means of getting to the frontiers in the field of his research.

2.3 CLASSIFICATION OF RELATED LITERATURE

A careful review of the related literature for the present study are classified and presented under the following heads.

1. Studies done in India
   
   (i) Studies related to environmental education
(ii) Studies related to environmental awareness

(iii) Studies related to environmental attitudes

(iv) Studies related to environmental behaviour

2. Studies done in Abroad

2.3.1 Studies Done in India

2.3.1.1 Studies Related to Environmental Education

Sivakumar, R. (2010) conducted a study on ‘Audio Cassette in teaching Environmental Education’. The objective of the study was to find out the effectiveness of Audio Cassette over the traditional method in teaching environmental education. The sample consisted of 80 students of IX standard. A well developed and standardized Audio Cassette was used by the investigator. Post-test materials were prepared and validated by the investigator. The major findings of the study revealed that experimental method of teaching (using Audio Cassette) was more effective than the traditional method of teaching the topics of environmental education.

Raphael, B. (2008) conducted a study on ‘Problems faced by the students and teachers of IX standard due to the Implementation of Environment Education as compulsory subject’. The objectives of the study were to find out the problems faced by the teachers and students in teaching and learning process of Environmental Education and to find out the solution for the problems. The sample of the study were 200 students of IX standard (100 boys and girls) randomly selected from 10 English medium schools of Amravati city and 30 teachers of the same schools who taught Environmental Education. A well structured questionnaire with personal data
A sheet was prepared by the investigator and was used as a tool for the study. The major findings of the study revealed that there were many problems faced by the students as well as teachers in the teaching-learning process and could be solved with the help of Government, Board and school authorities.

Singh, S.K. (2008) conducted a study on 'Attitudes of Primary School Teachers towards Environmental Education'. The objective of the study was to ascertain the attitudes towards the environmental education of the Government and Private Primary school teachers. The sample of the study consisted of 500 teachers from primary schools of Imphal East and Imphal West districts of Manipur. The 'Attitude scale of Environmental Education', prepared by the investigator was used as the tool for the study. The findings of the study revealed that there was significant difference in the attitude towards environmental education between Government and Private School teachers.

Mohini Agarwal (2007) conducted a study on 'student teacher's attitudes towards environmental education'. The objectives of the study were to find out the difference in the attitudes of science student teachers and arts students teachers belonging to general, backward and scheduled caste of village and city origin towards environmental education. The study was conducted on student teachers of Mahatma Gandhi Kasti Vidyapith, Varanasi. 'Environmental education attitude scale' of Anurag Mishra was used as a tool. The major findings were that there was no significant difference between the student teachers of science and arts group and no significant difference in attitude among student teachers of village and city origin and no significant differences between general, backward caste and rural and urban teachers.
Vipindernagra and Jaswinder Singh Dhillon (2007) conducted a study on 'Environmental Education Awareness among school teachers in relation to level and gender'. The study consisted of a sample of 3600 school teachers of Punjab selected by using stratified random sampling technique. A self-made questionnaire was used to collect data. The major findings revealed significant variations in the environmental education awareness of secondary and elementary school teachers with the former scoring higher. No significant difference was noted in the environmental education awareness of male and female school teachers. However interaction effects of both variables (level and sex) showed significant differences upon environmental education awareness.

Shailja Singh (2007) conducted a study on 'awareness and attitude of secondary class students towards environmental education'. The objectives of the study were to compare the level of environmental awareness and attitude regarding environmental education and waste management between the students studying environmental education as a subject and those who do not study as a subject. The study consisted of a sample of 25 students of class IX from schools having environmental education as a compulsory subject and 25 students were those who did not have. Students from CBSE and UP board institutions were randomly selected. Environmental awareness questionnaire and self constructed attitude scale based on Likert’s method was used as a tool. The major findings were that exposure to environmental education increases students awareness about environment. Attitude of students studying environmental education was more favourable than that of students who had not been studying it.
Nidhi Srivastava (2007) conducted a study on ‘emotional intelligence in relation to achievement in environmental studies’. The objectives of the study were to find out relationship between emotional intelligence and achievement and to compare the emotional intelligence of high and low achievers in environmental studies. 77 students of ninth class from one institution of Allahabad city had been taken as a sample. Emotional intelligence questionnaire developed by K.S.Misra had been used as a tool. The major findings were that there was significant difference in emotional intelligence of high and low achievers in environmental studies. Emotionally intelligent students might be more emotionally stable and sensitive to their environmental issues than their less emotionally intelligent counterparts. This could facilitate their learning about the environment.

Shiva Kumar, K. and Mangala, S. Patil (2007) conducted a study on ‘influence of environmental education on environmental attitudes of the postgraduate students’. The objectives of the study were to explore the impact of environmental education course on the postgraduate students’ attitude towards environmental pollution. The sample consisted of 120 postgraduate students of Karnataka University, Dharwad. Environmental Pollution Attitude scale was used as a tool. The major findings of the study revealed that students with environmental education background had better environmental attitude. There was no significant difference between male and female students in their attitude towards environmental pollution and related issues.

Ifeigbesan Ayodeji (2002) conducted a study on ‘Students’ perceptions of Environmental Education Elements in Nigerian Junior Secondary School curricula’. The objectives of the study were to find out the views of students on the
environmental education elements in the junior secondary school curricula. A total of three hundred students from ten randomly selected junior secondary schools from two zones in Ogun state responded to the questionnaire. Two research questions were asked while two hypotheses were tested in this study. The major findings were that students were not adequately aware of environmental education elements in the junior secondary school curricula. No significant difference was found between the male and female students' perception of environmental education elements in the curriculum. There was, however significant difference between the JSS II and JSS III students' perception of environmental education elements in the curriculum. Based on the findings recommendations were offered to ensure effective and efficient integration of environmental education into the school curricula.

**Sahoo, K.C. (1992)** did a critical study of the conception and perception of environmental education. The objectives of this study were to study the concepts and constituents of the environment, to study the dynamics of the environment, and to renovate the concept of environmental education. The major findings of the study were: (1) The concept of the environment is broadly divided as natural and man-made types. (2) Flora and fauna constitute the biotic environment. (3) The atmosphere hydrosphere and lithosphere constitute the abiotic environment. (4) Man-made environments are of different types, such as social, economic, political, cultural, aesthetic, historical, geographical, psychological, religious and academic. (5) The fusion of different types of environment forms the holistic concept of environment. The relationship between man and environment was symbiotic in nature. (6) The different stages of evolution – the hunting gathering stage, the agricultural stage and the industrial stage – reflect such a relationship.
(7) Gradually, man's domination over the environment has created complexities in the man – environment relationship. (8) Efforts are continuing with regard to environment management, with focus on unity of life, sustainable development, and human welfare, futuristic and cultural progress. (9) Self-management is perceived as the best formula for good environmental management. (10) Several workshops, committees and bodies at national and international levels have thrown light on the conceptual analysis of environmental education. Environmental education is a broad concept and is perceived as lifelong experiences for all.

Kidwai and Zeenal (1991) in their study investigated the development of an environmentally-oriented curriculum in geography at the secondary stage. The major objectives of the study were (1) To evolve an integrated environmental education and bring about an overall awareness among the younger generation about environmental education. (2) To develop in individuals and communities skills for identifying and solving environmental problems. At the end of the study a framework for an environmentally oriented geography curriculum at secondary stage was presented.

Devi and Sushila, A. (1990) carried out a critical study of the environmental curriculum in Andhra Pradesh. The major objectives of the study were: (1) to content – analyse the environmental studies curricula of Grades I – V in terms of stated curriculum (2) to assess how for the curricula were suited to the needs and interests of the learners (3) to assess whether the curricula had any provisions for gifted learners, and (4) to investigate the reactions of science teachers to a need based curriculum. Major findings of the study revealed that: (1) The environmental studies curricula did not cater to the essential needs of the learners for whom they
were meant. (2) The EVS curricula did not introduce children to the desired scientific skills and attitudes. (3) The prescribed curricula did not adequately reflect the stated curriculum objectives. (4) The investigator highlighted that environmental education curricula in order to be more effective should be comprehensive, sequential and full of experiences that link children's school based learning with their environment and the universe.

Rajput, J.S. (1988) carried out a research study for identification of teaching skills and training strategies for implementing the environmental approach at the primary level. The objectives of the study were: (1) To produce integrated material for Environmental Studies I (Social studies) and Environmental Studies II (Science) for classes III to V. (2) To develop a strategy for teaching environmental studies I and II in classes III 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 and (3) To identify teaching skills for the teaching through the environmental approach. The study revealed the following findings: (1) The mean scores of environmental awareness for the experimental and the control groups at pre-test and post-test level indicated that out of fourteen comparison groups in seven schools, nine groups had no significant difference, and the remaining five groups had a significant difference as a result of the treatment. (2) The results of comparison between the groups and within the groups indicated that out of fourteen groups, five groups had no significant differences in both the cases. (3) The significant differences obtained in some groups did not follow any uniform pattern.
2.3.1.2 Studies Related to Environmental Awareness

Jayantamete and Shyamsundar Bairagya (2009) conducted a study on ‘Environmental awareness in relation to sex, stream and socio-economic status at higher secondary level’. The objectives of the study were to find out the differences in environmental awareness among the students of Science, Arts and Commerce and between boys and girls. The sample consisted of 204 students (102 boys and 102 girls) of West Bengal Council of Higher Secondary Education in Medinipur District. Environmental Awareness scale developed by Dr. Praveen Kumar Jha was used as a tool for the study. The findings of this study revealed that the boys and girls students had different environmental awareness and science students had greater positive environmental awareness. It also revealed that the students belonging to high and low socio-economic status expressed the similar awareness of environment.

Madhumala Sengupta, Debasri Banerjee and Pintu Kumar Maji (2009) conducted a study on ‘Effect of sight and gender on environmental awareness and pro-environmental behaviour, among school students’. The objective of the study was to find out the effect of sightedness and gender on the scores of environmental awareness and pro-environmental behaviour of the students. The sample of the study consisted of 97 students (50 normally sighted and 47 visually impaired) belonging to secondary stage of education in the state of West Bengal, India. A self constructed standardized Likert type questionnaire was used. The major findings of the study revealed that the two groups did not differ in environmental awareness and pro-environmental behaviour. The degree of relationship between the environmental awareness and pro-environmental behaviour scores in the context of sightedness and gender was also found to be insignificant. Thus, the sense of sight of the gender does not have impact on the environmentalism.
Rajinder Kaur and Manpreet Kaur (2009) conducted a study on ‘Environmental awareness of secondary and senior secondary students’. The objective was to study the environmental awareness level of the students. The sample of the study consisted of 600 students selected by random sampling from different schools situated in rural and urban vicinity of Patiala district. The tool used in the investigation was the environmental awareness scale (EAS) developed by Haseen Taj. The major findings of the study revealed that rural students and students studying in government schools were still not aware of the various threats of environment and natural calamities and most of the Government rural schools did not possess basic literature related to environment.

Geetali Padiyar and Sunita Godiyal (2008) conducted a case study on ‘Environmental awareness among University Students’. The objectives of the study were to survey the level of awareness and attitude of undergraduate students about environment. The sample of the study consisting of 200 respondents of the Science and Arts faculty of Uttaraknand were selected randomly. The data were collected through direct personal interviews with the help of an interview schedule prepared by the investigators. The findings of the study revealed that environmental education was important to impart knowledge and awareness about an environment among the students and mass media were the most powerful tool for spreading information about the environment. Extra-curricular environmental programmes were powerful means of imparting environmental awareness among the students.

Sandhya Gihar and Manoj Kumar Saxena (2008) conducted a study on ‘Level of Awareness of Environmental Pollution among Rural and Urban Women and Educational Implications’. The objectives of the study were to survey and
compare the level of awareness about environmental pollution among rural and urban women and explore their educational implications. The sample of the study consisted of 124 women (56 rural women and 68 urban women) of Ghaziabad district of U.P. State. Purposive sampling was used. The ‘Environmental Awareness Scale’ developed and standardized by Gihar, Kukreti and Shah (2002) was used as a tool for the present study. The major findings of the study revealed that the awareness of environmental pollution among rural women was lower than that of the urban women.

Suresh, S. and Kadhiravan, S. (2007) conducted a study on ‘Influence of personality on the environmental awareness ability of college students’. The study was conducted among 400 college students to find out the relationship between environmental awareness ability and personality. The findings of the study revealed that the gender of the students did not influence the environmental awareness, the urban students had shown higher environmental awareness than the rural students; children of the literate parents had shown higher environmental awareness than the children of the illiterate parents and the personality did not affect the environmental awareness of the students.

Shikha Dhar (2007) conducted a study on ‘Environmental awareness among college level students’. The objectives of the study were to compare environmental awareness of male and female students belonging to arts and science streams. The sample for the study consisted of 50 students studying in Ewing Christian College, Allahabad. Tests of environmental awareness developed by Sushma Pandey were used as tools to collect the data. The major findings of the study were that the male and female college students as well as the students of science and arts streams were
equally aware of their environment, its relationship to them and actions necessary to ensure their survival and improve the quality of human life on earth.

Dhananjay Yadav and Sarika Sinha (2007) conducted a study on ‘environmental awareness among undergraduate students’. The objectives of the study were to compare the environmental awareness among boys and girls of science, commerce and arts faculty students on different components of awareness i.e., knowledge, comprehension and application. The sample for the study consisted of 150 undergraduate students of science, arts and commerce faculty of Allahabad University. A self-made questionnaire consisting of 60 items related to general environmental awareness was used as a tool. The major findings were that there was no significant difference in environmental awareness of boys and girls of all faculty on all the three dimensions.

Velliappan, A., William Dharma Raja, B. and Sadananthan (2007) conducted a study on ‘Higher secondary students’ awareness of environmental pollution’. The objectives of the study were to find out if there was any significant difference in the awareness of environmental pollution with regard to the gender and locale of schools. The sample for the study consisted of 300 students of higher secondary schools under state board of Tirunelveli and Thoothukudi (Tamil Nadu) educational districts. The investigator constructed a questionnaire namely 'Awareness scale on environmental pollution' which was used as a tool to collect the data. The major findings of the study revealed that rural students had more awareness of sources of pollution than their urban counterparts. There were significant difference found in the environmental awareness of students of arts and commerce faculties.
Uma Rani Sharma and Dharmendra Kumar Saraff (2007) conducted a study on 'environmental awareness among students at +2 level'. The study consisted of a representative sample of 100 students (48 male and 52 female) from two types of schools (CBSE and UP Board) of Allahabad city. An 'Environmental Awareness Questionnaire' constructed by investigator was used as a tool to collect the data. The major findings of the study revealed that the CBSE students had more awareness about the environment than the male students. Science students exhibited more environmental awareness than commerce and art students in the awareness of higher secondary students in the dimensions – source and control measures of pollution with regard to gender and locale school.

Sahaya Mary, R. and Paul Raj, I. (2005) conducted a study on 'environmental awareness among high school students'. The objectives were to study the environmental awareness of the students in terms of gender, locality, type and size of the family. The sample of the study consisted of 198 students of 9th standard, in both urban and rural areas of Pondicherry region. Environmental awareness opinionative prepared by the investigator was used as a tool. The findings indicated that the environmental awareness among high school student was above average.

William Dharma Raja, B., Selvam M. and Anto Boopalaryan, G. (2005) conducted a study on 'locale specific study on the environmental awareness of the prospective teachers'. The objective of the study was to investigate the environmental awareness of the rural and urban teacher trainees in terms of their gender, age, educational qualification, type of school studies and marital status. The sample of the study consisted of 360 teacher trainees (147 male and 213 female
trainees). The ‘environmental awareness ability measure’ standardized by Praveen Kumar Jha was used as a tool for the study. The major findings of the study revealed that in environmental awareness, the teacher trainees from both rural and urban areas had no significant difference between them in terms of the selected variables with an exception of the variables – age in urban area.

**Pradhan, G.C. (2002)** conducted a study on ‘Environment awareness among secondary school teachers’. The objective of the present investigation was a survey of environmental awareness among secondary school teachers in relation to gender, locale and school subject. Data were collected using an Environmental Awareness Inventory developed by the investigator. The study revealed significant difference in environmental awareness between male and female teachers. The teachers teaching science had significantly higher environmental awareness compared to the teachers of the social sciences and languages. Urban school teachers evinced higher environmental awareness then the rural school teachers.

**Archana Dubey and Bishnu C. Samuel (1998)** conducted a study on 'environmental awareness among women'. The objective of the study was to study the influence of the residential background, educational status and their interaction on environmental awareness among women. The sample consisted of 100 women of different age groups and educational qualifications and they were from both rural and urban areas. The environmental awareness test developed by the investigator was used as a tool. The major findings of the study revealed that the environmental awareness of urban women were significantly higher than the environmental awareness of rural women and the environmental awareness of educated women were significantly higher than the uneducated women.
Gopal Chandra Padhan (1994) conducted a study on 'Environmental awareness among Teacher Trainees'. The objective of the study was to study the variation between male and female teacher trainees, urban and rural teacher trainees in environmental awareness. The sample consisted of 124 B.Ed. students studying in two teacher education institution of both sexes coming from both rural and urban areas. The environmental awareness test developed and standardized by the investigator was used as a tool. The major findings of the study revealed that the teacher trainees belonging to urban areas had significantly higher environmental awareness than the trainees belonging to rural areas.

Fong and Ting-Ya (1993) in a study on 'Environmental awareness and action at elementary schools in Taiwan' found that parent's educational level made a significant difference on students' and parents' environmental awareness and action. In general the higher the educational level, the more concern they will show. The multiple relationships that occur between awareness and action when survey items are grouped together suggest many interesting findings. Parents' environmental awareness seems not only to be related with their own actions but also to be related with their students' actions and vice versa. Again, parent actions on daily routine are associated with student's daily routine.

2.3.1.3 Studies Related to Environmental Attitudes

Jagannath K. Dange (2008) conducted a study on 'Effectiveness of Computer Assisted Instruction in the Development of Environmental Awareness and Environmental Attitude'. The objectives of the study were to find out the effectiveness of CAI in development of environmental awareness and environmental
attitude. The sample of the study consisted of 30 students (16 boys, 14 girls) of VIII standard in an English medium school of Gulbarga district from rural and urban area. The ‘Environmental Awareness Scale’ developed by Haseen Taj was used as a tool for the study. The major findings of the study revealed that there had been development of environmental awareness and there was improvement in environmental attitudes among the students after the CAI treatment.

Naseema, C. (2006) conducted a study on the ‘influence of sex and social position on attitudes towards environment of secondary school pupils of Kerala’. The study had been conducted on a sample of 460 students of standard IX of secondary schools of Kerala. Tools used by the investigator were scale of attitude towards environment and general data sheet. The important findings of this study revealed that the boys and girls differed significantly in their attitude towards environment. Rural and urban pupils did not differ significantly but the private and government school pupils differed greatly in their attitude towards environment.

Santhosh Kumar Rout and Sukirti Agarwal (2006) conducted a study on ‘environmental awareness and environmental attitude of students at high school level’. The study consisted of a representative sample of male and female students of science and non-science stream of X class belonging to rural and urban area. The findings of this study revealed that the students belonging to urban background were comparatively better in terms of their environmental awareness and environmental attitude as compared to the students belonging to the rural background and the male and female students did not differ significantly in terms of their environmental awareness and environmental attitude.
Mathews and Diley (2006) conducted a study on ‘environmental awareness and environmental attitude and intentional ecological behaviour among adolescents’. The study was conducted on students of XI and XII standard of Gorakhpur city, Gorakhpur District (U.P). Two standardized psychological tests and one self-prepared checklist was used for the study. The major objective of this study was to analyse the attitude of boys and girls towards environment and their intentional ecological behaviour. The major finding of this study revealed that there was a high degree of relationship between environmental attitude and intentional ecological behaviour.

Mercy Abraham (2000) conducted a study on ‘environmental attitude and pro-environmental behaviour among secondary school children’. The study consisted of a representative sample of 624 children of Kerala, from the rural and urban area. The major findings were that there was significant difference between boys and girls in the degree of relationship between environmental awareness and pro-environmental behaviour and the attitudes being more in boys than in girls. Also urban subjects possessed better attitude than rural subjects.

Praharaj, B. (1991) in a study attempted to explore the level of environmental knowledge, environmental attitude and perception regarding environmental education among pre-service and in-service secondary school teachers. The major findings of this study were (1) The level of environmental knowledge was found to be low among pre-service teachers although conceptual knowledge was moderate, (2) among the in-service teachers, environmental knowledge was moderate and factual knowledge about the environment was low, (3) both the groups differed significantly in their level of environmental knowledge.
They had a favourable attitude towards environmental education although the in-service group had a higher level of attitude than that of the pre-service group. (4) There was a moderate correlation between environmental knowledge and environmental attitude. (5) Teachers perceived that environmental education could be a core part of social science and general science and science objects in secondary school. (6) Mass media had a potential role to play in imparting environmental education.

Shahnawaj (1990) conducted a study on ‘environmental attitude of secondary and higher secondary school teachers and students’. This study addressed issues related to the awareness and attitudes of teachers and students towards the environment. The objectives were to find out the awareness and attitude of teacher and students towards the environment and to find out the differences between teachers and students of male and female groups concerning the environment. The study was conducted through a survey and the tools developed by the investigator. The major findings were that the teachers had more awareness of the environment than students. The girls possessed more awareness of the environment than boys and there was no significant difference between trained and untrained teachers on their environmental awareness and attitudes.

2.3.1.4 Studies Related to Environmental Behaviour

Avinash Pandey and Buddhi Sagar (2007) conducted a study on ‘Development of environmental values among secondary school students’. The objectives of this study were to compare the environmental values of boys and girls. The sample consisted of 160 students studying in Maharshi Patanjali Vidya Mandir
and Ganga Gurukulam, Allahabad. The environmental value scale, developed by K.S.Misra was used to measure environmental values. The major findings were 'there was no significant difference in the environmental value of girls and boys. It seems to reflect lack of attention being paid to development of environmental value among school children.

Kajal Deb and Nidhi Srivastava (2007) conducted a study on 'environmental value and responsibilities among IX class students'. The objectives of the study were to find out the relationship between environment responsibilities and environment values and to study the environmental responsibilities of the IX class students belonging to high and low environmental values. The sample of the study consisted of 100 students of class IX (49 boys and 51 girls) studying in various schools of Allahabad city. Environmental value scale developed by K.S.Misra and environmental responsibility scale developed by Nidhi Srivastava were used as a tool. The major findings were that there was no significant difference in environmental responsibility of boys and girls. Both boys and girls possessed equal environmental value.

Kalplata Pendey (2007) conducted a study on 'Inculcation of environmental value among teachers'. The objectives of the study were to compare the environmental values among pre-service B.Ed. student teachers and in-service teachers teaching in schools as well as among primary school teachers teaching in schools and among primary and secondary school teachers teaching in schools. The sample of the study consisted of 150 pre-service B.Ed student teachers of M.G.Kashi Vidyapith Varanasi and 900 in-service teachers teaching in government aided and private (recognized), primary (450 teachers) and secondary (450 teachers) schools of
Varanasi. Values inherent in fundamental duties questionnaire for teachers prepared by the researcher was used as a tool. The major findings were B.Ed student teachers had more environment value in comparison to the primary school teachers teaching in aided schools and the secondary school teachers teaching in government schools. Government primary school teachers had more environmental value than the government secondary school teachers.

**Sandhya Gihar (2006)** conducted a study on environmental responsibility among students in relation to sex (male / female), locality (rural / urban) and subject stream (science / arts / commerce). The sample of the study comprised of 300 secondary level students. The major finding of this study revealed that the male students and the science students were having higher environmental responsible behaviour than their counterparts.

**Mercy Abraham and Arjuna, N.K. (2004)** conducted a study on ‘Pro-environmental knowledge among secondary school students’. The objectives of the study were to study the degree of relationship between pro-environmental behaviour and environmental knowledge of secondary school students. The sample of the study consisted of 624 secondary school students (306 boys and 318 girls) of Kerala belonging to rural and urban area. Pro-environmental behaviour scale of Likert type and environmental knowledge scale developed by Abraham and Nair (1998) were used as tools. The major findings were that the rural and urban students did not differ significantly in their relationship between pro-environmental behaviour and environmental knowledge.
2.3.2 Studies Done in Abroad

Pruneau, D. Richard, J.F., Langis, J. Albert, G. and Cormier, M. (2005) performed a research on 'The evolution of children’s idea on pollution in the frame work of experimental and socio-constructive activities'. Samples for the study were nine and ten year old children. Tools used for the study included drawings and semi-structural individual interviews were used to identify student’s conceptions about pollution in September 2001 and then again in June 2002, following the pedagogical process. The research approach then followed, describing the environmental situation of the village of cap-pele. The findings of the study revealed that nine and ten year old students conceived pollution as the presence of harmful garbage, spotted with one’s sense, thirteen and fourteen year olds were able to imagine pollution was invisible to the senses.

Mainteny Paul (2000) in a conference on education for sustainable development, London said that views of nature are now changing and religious teaching being interpreted on new ways that are more supportive of nature. This in turn influences experiences, attitude and behaviour. A related source of hope is the rising interest in spiritual matters as a possible non-material alternative for well being should the trend increase it could reduce consumptive pressure on the environment.

James (2000) quotes ‘environmental education has developed from being focused on environmental factors alone to include social and economic considerations. Environmental oriented higher education programs have many forms, some are described as environmental science while other are described as environmental studies’.
Burnier and Radha (1999) quotes 'There are several instances of how rapidly and thoroughly the earth is denuded of its immense diversity, its marvel and beauty, thereby impoverishing future generations'. The consequences of these deeds cannot really be assessed. The course of evolution itself may be halted temporarily. The solution to this appears rather native, but it is not. People should once again set a value on simple living, possess minimum of things, contain the capacity of the mind, and cultivate tender concern for every living and non living things in the world.

Uliana and Karla Ann (1996) investigated a community environmental education programme called neighbourhood green up program. The study focused on the projects which took place in the city of Guelph between January and June 1994. Semi-structured in-depth interviews were used to gather information from twenty participants and three program designers and implementers. At the end of the study the Neighbourhood Green up program was perceived to be successful in inducing individual behavioural change.

Mcilveene and Maratha, H. (1996) performed a study comparing Russian and American students' concerns about environmental issues. She said, 'environmental educators agree that an important goal of environmental education is to help individuals build knowledge that will enable them to participate in environment maintenance and remediation. The first step in an attempt to achieve this goal is to determine students' interests and concerns about their environment'. A pilot study was conducted during the 1992-93 school year to develop and test a questionnaire that would furnish information about student environmental perceptions and concerns (Mcilveene, 1994). The subjects for this study consisted of
students from a secondary school in Pushchino Russia, and a middle school in La Fayette, Georgia. The results of this study suggest that students’ environmental perceptions can be determined and these perceptions may provide a frame work for teaching, learning and curriculum for environmental education.

Residential environmental education programs for elementary school students have been offered by many Californian schools since 1946. The common goal of these programmes is to provide environmental learning experiences which are unavailable in regular class room settings. Traditional subject areas covered may include astronomy, biology, botany, ecology, geology and other natural and physical sciences.

Nelson and William, A. (1996) carried out a study to identify changes in the environmental literacy of sixth grade students who attended the residential outdoor education program. Environmental literacy was measured using ‘The Children’s Attitudes Toward the Environment Scale (CATES)’ developed by Lynn M.Musser and Amy J.Malkus. The study population consisted of four hundred and twenty-nine sixth grade elementary school students from the Orange Country area of California. Data were analysed using the Mann-Whitney Two Sample Test, Kruskal Wallis Analysis of Variance and Chi-square statistical procedures. The study revealed that students who attended the programme showed significant score increases on affective, cognitive and to some degree, behavioural items. These increases did not appear to be influenced by gender and / or ethnicity.

Heath and Debra Lee (1996) administered ‘The Children’s Attitudes Toward the Environment Scale’ (Musser and Malkus, 1994) to forty-two students
who came from the two schools – the experimental group (A) which had received hands – on outdoor environmental education and the control group (B) which had received traditional class room text book environmental education. The survey results showed that group A students scored a higher percentage than the group B students in eighteen out of twenty-five items. Health (1996) found that those students who experienced hands – on outdoor environmental education scored a higher percentage than those who received traditional class room text book environmental education.

Jurin and Richard Robert (1995) at the end of a study on relationship between environmental belief and value structures to environmental behaviour found that environmental awareness and attitudes did not predispose people to act with responsible environmental behaviour. The finding was arrived at after carrying out descriptive statistics and multivariate analysis on the results obtained from the 208 item instrument (Environmental Categorisation Instrument) – based on the Roper survey, “The environment: public attitudes and individual behaviour”, (1990) given to the study sample.

Recently, sustainable development has emerged as a popular agenda in developing environmental education. Li and Huey-Li (1995) in a study, analyzed the concepts of intergenerational equality, global economic justice, and the unity of humans and nature, which signify the convergence of rhetoric and ethics in the discourse of sustainable development. The study found that environmental ethics cannot be separated from inter-human ethics. As school education has a significant impact on the cultivation of moral character it is important to recognize and respect students as moral agents in the context of environmental education.
Sherlock and Carol Elizabeth (1995) opined that in recent years, it has become increasingly apparent that mankind is acting in ways destructive to the earth. Man has lost his sense of place within the natural scheme of things. If man has to heal this planet and him, he must begin to recognize the consequences of his personal action or inaction. Sherlock (1995) undertook an investigation into how grade eight students form and change attitude and behaviours and meaning they attribute to the experience. The study included five case studies which portrayed the experiences of the adolescents involved. The dominant themes revealed by the participants included, Personal responsibility for the earth; Feeling of control over actions; Previous involvement in positive environmental behaviour; Assessment of personal environmental behaviour; Appreciation of nature; Meaning, fun and experiential learning; Family influence; Influences of a positive environmental role model; Peer pressure; and Influence of media.

The deterioration of the natural world unravels the social fabric of today's culture and society. Educators need to supplant old cultural anthropocentric beliefs and practices with a biocentric world view that considers all of life as a part of an inter-related community. Comprehensive wilderness-based environmental education programs are one method to develop the student's desire to live more harmoniously with natural systems, Waite (1995).

Emmons and Katherine Marie (1994) performed a case study in Belize (Central America). The study tested a proposed model of environmental education to explore the inter-relationships of five environmental education areas (grasp of concepts, sensitivity and attitudes, action skills and procedures, empowerment and ownership and recreation) and their combined effect on positive environmental
action. There were two forms of the model, a “tacit” or less intense instruction and an explicit or more intense instruction. Both programs benefited from a concentration on positive environmental action in the form of an action project, and from an emphasis on outdoor experiences. Both programs effectively combined elements of recreation to the activities, which helped to make the experience a positive one for students. The study concluded with the finding that students develop as they take action, adopt and change as new information, values and skills are acquired.

Swales and Janine, R. (1994) did a case study which investigated how a grade three teacher in Nova Scotia infused environmental education into the elementary curriculum in the formal school system. The study found that the teacher was confronted with many barriers to teaching environmental education in the classroom. In order to overcome some of these barriers that classroom teachers faced, and to ensure that effective environmental education was being implemented in the schools a more collaborative effort was needed between the administration, the curriculum advisors, the school, the teachers, the students and the community.

Derrah and Richard Floyd (1994) carried out a study to assess the status of environmental education in the secondary schools of the state of Maine. The following interferences were made at the end of the study. (1) Environmental educators believe there is a considerable discrepancy between the desired status of environmental education and the existing status. (2) Environmental education should be taught as both an interdisciplinary offering and as a separate course. (3) Curricula should include more problem solving and community action techniques with less emphasis on environmental knowledge and awareness. (4) More teacher training is
necessary both as pre-service and in-service courses in environmental education. (5) Money, teacher time, priority and guidelines are the major barriers to teaching environmental education.

Nelson and Thomas Gunnar (1993) studied educator’s belief and understandings about environmental education. The data for this study were drawn from interviews with fifteen educators. Interview techniques were guided by the frame work established by Patton (1990). The study said that present behaviours towards the natural world are in conflict with the ecological balance necessary to maintain the health and well being of the earth. Emphasis on environmental education curriculum and institution is considered an important aspect in the environmental process. The results of this study have suggested that educators’ beliefs and understandings about environmental education have strongly influenced curriculum and institutional decisions. Everyone suggested that environmental education is an interdisciplinary enterprise and must include knowledge rooted in all the subject areas. Therefore environmental education should be perceived not as something to be added to the curriculum but rather a way of addressing the established curriculum within a meaningful context.

Singh and Ming Ching (1993) investigated the status of environmental education in elementary schools in eastern Taiwan as perceived by elementary school teachers. A questionnaire was developed by the researcher and administered to six hundred and eighty-six teachers who were selected from eighty-four elementary schools in Ilan, Hualien and Taitung counties in eastern Taiwan through the stratified random sampling method. Among the returned questionnaires, four hundred and ninety four (seventy-two percent) were complete. The validity and
reliability of the questionnaire were established. The major findings of the study were (1) Approximately one-third of the respondents had attended in-service programs. (2) Environmental Education (EE) should be a required part of the elementary school curricula and environmental education content should be incorporated into all school subjects. (3) Outdoor education, audio-visual presentations, and inquiry (discovery) approaches were perceived by the teachers as the most important instructional strategies for effective environmental education teaching. (4) Most of the teachers perceived the ten specific environmental education teaching materials or resources as important in supporting environmental education teaching, for example, audio-visual equipment; outdoor open areas; on-campus outdoor site resources; newspapers, magazines and journals, museums, zoos and parks; teacher’s guide; laboratory facilities; and field equipment. (5) Teachers expressed positive attitudes towards teaching environmental education. (6) If possible, environmental education and environmental studies should be listed as required courses in teacher preparation programs. (7) The major difficulties which teachers perceived concerning the implementation of environmental education were the lack of appropriate instructional materials; appropriate indoor facilities; in-service opportunities; preparation time; funding; outdoor facilities and learning sites.

Jickling and Bob (1992) in an article mentioned that research in environmental education has continued to be the subject of much discussion recently. Much has been made on the content between qualitative and quantitative research methodologies. Perhaps in the current context, some such misapplication of techniques is inevitable in environmental education. One of the reasons for this is that discussions about environmental education are rarely placed within the greater
debate about the nature and purpose of education. All environmental educators must realize that the increasingly popular educational theory that advocates critical thinking, problem solving, decision making, experiential learning and responsible citizenship are necessary in environmental education also.

Dorian Christiane (1990) in a study of environmental education in the primary school curriculum said, with the upsurge of environmental concerns since the 1970's, environmental education has developed as an element of the school curriculum. The teachers involved in the survey acknowledged the importance of developing in children an awareness of the environment and related problems, and a sense of responsibility for its conservation and improvement.

Biddle and Barbara Ann (1988) carried out a study on the status of environmental education in Texas Public Schools. ‘If concern for the environment is to become part of each individual’s sense of responsibility, the task is to educate people towards environmental awareness’ said Biddle (1988). The intent of such education would be to help individuals become capable of responsible judgments about environmental issues which will have long-term applications. The study by Biddle investigated the factors required to develop and implement an environmental education (EE) component in the Texas public school curriculum. Results indicate that in Texas, programs have been implemented by placing selected environmental topics in existing curriculum offerings. Assistance most needed is the identification of available materials, trained personnel and clearly identified facilities and curricula. Moreover, the integration of environmental education must be supported by policy commitment from school system personnel who recognize environmental education as basic academic information.
Wintz and Mildred Mary (1987) carried out a study, ‘environmentalism; its implication for environmental education’. The purpose of the study was to describe environmentalism as a basis for driving implications for environmental education. Wintz found that, Environmental Education – even though deemed critical by environmentalists – becomes opportunistic i.e. whatever the current focus contained in an issue may be. Focus upon an issue is subject to time, place, social or physical organization.

Environmentalists have continuously addressed issues deemed critical to the integrity of a society’s natural and social resource flow systems. Despite the difficulties associated with conflicting values and orientations, coordinated and systematic efforts must be made to delimit the field of environmentalism in order that environmental education is addressed.

Cartes and Leticia Pojun (1986) inquired into the knowledge, comprehension, responsibility and interest of secondary school students and teachers about local conditions, natural process and environmental issues and problems as a means of measuring their environmental consciousness. Some of the major findings of the study were as follows:

- The majority of the students were aware of pollution, pesticides, typhoons, dams and volcanic areas.
- The student’s environmental values were not consistent.
- The high section students were not as interested in learning more about the environment as the low section students.
The students had difficulty making scientifically correct cause-consequences relationship.

The teachers' knowledge, comprehension, responsibility and interest were significantly affected by community, but not by school and subjects taught.

The teachers were aware of many events in their environment but could not explain many of them.

The teachers' environmental values were inconsistent. The teachers were interested in learning about energy, population dynamics, conservation and recycling.

2.4 CONCLUSION

The review of related literature had thrown much light into the relationship between environmental awareness, attitudes and behaviour and their relation to other variables. The opinion and idea of the research works enables the investigator to formulate the relevant hypotheses for the present study. The careful review of the research journals, books, dissertations and other sources of information provided a clear picture of previous work that has been related to the problem area. It also resulted in providing evidence that the researcher is familiar with what is already known and with what is still unknown and untested. The survey of related literature has helped the investigator; to certain extent, to have clear perspective of the problem chosen for the present study.