CHAPTER II

REVIEW LITERATURE
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INTRODUCTION

This chapter focuses on review literature related to the present investigation. A detailed review of both Indian and foreign studies have been reviewed and made available in this chapter. Under the following heads:

Studies on Environmental Education

Studies on Environmental Awareness / knowledge

Studies on Environmental Attitude

Studies on Environmental Behaviours

Studies on Curriculum and Text books.

2.1. STUDIES ON ENVIRONMENTAL EDUCATION

Weiss, Iris, Roshfield (1975) developed and evaluated a “self-instructional Environmental Education programme” for elementary teachers. A self Environmental Education package was developed for elementary school teachers and by a panel of experts, field tested and revised. The final package contained eight modules dealing with basic concepts and principles of ecology. Each module consisted of a cassette recorded, a series of pictures and suggested activities for students. Thirty
four volunteer teachers were aggregated by the school stratified by grade, taught and randomly assigned to experimental and control groups. All teachers were pre tested with the same instrument and with the test of attitude towards the teaching of science. The environmental knowledge and opinion survey was used as a student post-test. Teachers who were taught with Environmental Education package were found to be more knowledgeable about the environment than the control group. The self instructional package was effective in helping teachers to learn environmental concepts and principles at their own pace.

Branch Clarence (1983) conducted a developmental study of a local river and science related community problems in “Earth and Environmental Science Education” with junior high school students. This study describes how classroom, laboratory unit on the study of a local stream and science related community problems. It also describes how these activities were used in a classroom tryout to determine their relative effectiveness compared to conventional method of instruction. Results indicate that students who received science instruction in the form of a generalized approach to problem study, using teacher developed materials, became more positive in their views towards school science and exhibited a greater tendency to apply knowledge of science to
societal issues without sacrifice in the acquisition of basic knowledge of science.

Wang, Shun – Mei (1993) Evaluated high school Environmental Education Programme of the Tansui river in Taiwan. The Tansui River Education Programme (TREP) was designed for secondary students in the Tansui river watershed of Taiwan and was modeled after the Roughe river water quality and community problem solving programme in Michigan. The experimental design included control and experimental groups, pre-test, post-test and questionnaire. A paried t-test and a one-way ANOVA with 0.05 level of significance were used to analyse the data. Student and teacher evaluations were used to collect information about programme feasibility. The study revealed that TREP significantly increased participants knowledge and awareness of the quality of water in the river. TREP significantly increased their sense of empowerment for saving the river and TREP significantly increased their feelings of responsibility for the school environment in terms of planning and decision making.

Ravindranadham (1997) Study to evaluate a project an environmental orientation to school education in Andhra pradesh. The sample of the study comprised to sample of 230 subjects (Professors, Lecturers, Principles, Headmasters and Mandal Education Officers) from
SCERT, Hyderabad. The data was collected using appropriate questionnaire and was treated with percentage. Further it was found that the Government of Andhra Pradesh had established a state level cell at SCERT, Hyderabad and four project level cells at Officers of District Education Officers at Ranga Reddy, East Godavari, Vishakantnam and Chittoor Districts.

A systematic postal survey by Kara chan (2000) on the use of environmental education teaching kits was conducted in kindergartens, primary and secondary schools of Hong Kong. The results indicated that kindergartens used teaching kits more frequently than secondary and primary schools, most of the schools found the existing teaching kits helpful. Appropriate content, updated information, attractiveness of students and inclusion of a teachers guide were considered important criteria in deciding the use of the teaching kits. Good illustrations, quality production and appropriate duration for the class were considered important factors too. The tight teaching schedule was the major hindrance for secondary and primary schools in the use of environmental teaching kits. However, the main hindrance for using environmental teaching kits in kindergartens was that they did not have sufficient copies. Hong Kong schools would like to see new teaching kits about waste recycling, energy conservation, green behaviour, air pollution, noise
pollution, sewage treatment and wildlife endangering, focusing on Hong Kong and China.

Vishwanath H.N (2002) attempted in his study to compare the effectives of Advance Organizer Model (AOM) and Inquiry Training Model (ITM) as against Normally Practiced Method (NPM) of teaching on the achievement of X standard students in environmental studies (ES), and also to compare effectiveness of selected models in achievement of various groups of students. It is also attempted to study whether any significant relationship exists between ‘achievement of students’ in ES and their Total Home Facilities (THF), Total School Facilities (TSF), SES and sex of the students. The findings of the study are:

1) ITM is superior to AOM which in turn is superior to NPM on effectiveness on the achievement of students in ES.

2) There is no significant difference in the achievement of low, average and high SES students in ES in general.

3) Achievement of students with average TSF (taught through ITM) was superior to that of students with low TSF (taught through AOM) which in turn was superior to that of students with low TSF (taught through NPM).
4) There is no significant difference in the achievement of students in ES with low, average and high THF.

5) Achievement of girls is superior to that of boys in ES.

Andre Chi-Chung Ko and John Chi-Kinlee (2003) conducted an exploratory study of Hong Kong secondary school integrated science teachers' perceptions of environmental education with a sample of two hundred and fifteen teachers. The results indicated the following points—Teachers tend to teach more environmental education if they held more favourable attitude towards environmental education, had more skills of teaching environmental education, believed more in the relevance of integrated science to environmental education and would actually want to teach more environmental education in integrated science classes if there were fewer constraints. Moreover, variations in the teaching of environmental education were reflected by teachers' emphasis on teaching environmental education, and their use of a variety of teaching methods and their regular practices of extra-curricular activities on environmental education.

Dr. K. Yeshodhara (2003) conducted a study on the role of NGOs in promoting non-formal environmental education. The study was descriptive and case study aimed to identify the NGO’s in Bangalore district (urban), the functioning, effectiveness and the problems faced by
NGO’s in promoting non formal environmental education. In addition to the secondary data from documents, the primary data was collected from 11 key informants, 43 participants, 15 public, 11 schools, 25 teachers and 238 students. Both the qualitative and quantitative data collected for the study have been subjected to descriptive as well as interpretation analysis. The result revealed that the NGO’s do not have clarity in their objectives and approaches in transparency regarding funding and evaluation of their effectiveness. The NGO’s organize different and varied programmes depending upon the need of the society and their interaction with schools is not adequate. The effectiveness of the programmes of the NGO’s was assessed based on the opinion/ratings of beneficiaries, key personnel and the levels of environmental awareness, attitude and action behaviour among secondary school students and teachers. Further the study suggested that ensuring accountability, academic administrative and financial of NGO’s is required for their effective functioning.

2.2. ENVIRONMENTAL AWARENESS AND KNOWLEDGE:

Rajput, Saxena and Jadhav (1980) conducted a study on environmental approach of teaching at primary level to study the existing awareness towards the scientific and social environment in children and to identify the available community resources which can be gainfully utilized for teaching. In the first phase, the Madhya Pradesh curriculum
for classes III and IV were redesigned to inculcate scope for environmental approach of teaching. In the second phase, an environmental awareness test was developed. The third phase was the experimentation phase where the effect of implementing the redesigned curriculum was assessed on environmental awareness and achievement in science. The experiment in third phase was conducted on 197 students from two schools in Bhopal. One hundred and two students of IV class, 95 students from class III, 57 students from class IV and 47 students from class III (two sections each) were in the experimental group and the rest in control group. Mean, SD and t-test were applied for data analysis and hypothesis verification. The findings of the study were that only one of the four groups was significantly different on environmental awareness at pre-test stage whereas at the post-test stage, the experimental groups were significantly better than the control groups.

A comparative study of teaching science through environmental approach and traditional approach in schools of Madhya pradesh by Deopuria (1984) reveled that the study employed a two group design having the environmental approach for the experimental group and the traditional approach for the control group at three levels: 1) primary; 2) Middle and 3) higher secondary. Statistical technique such has mean, SD and t-test were employed. The study revealed that the students of
experimental group of classes V, VIII, IX, V obtained higher achievement scores due to teaching cognitive gain in knowledge, understanding and application of science concepts related to environmental education at primary, middle and secondary school level.

**Rajput and Gupta** (1988a) study on the environmental awareness among children of urban and rural schools and non-formal education centers attempted to know the components of environment in which children from rural and urban areas were lacking and the areas in which the students from both the streams were well acquainted and to compare the environmental awareness of school going children and children studying in non-formal education centers. The sample of the study consisted of 115 students among whom 20 were from rural schools, 35 from urban schools and 60 from non-formal centers. The study revealed that (1) the difference between Formal Rural (FR) and Formal Urban (FU) on environmental awareness was significant and in favour of formal Rural. (2) the difference between Non Formal Rural (NFR) and FU was also significant on environmental awareness and in favour of NFR, (3) the difference between NFR and FR on environmental awareness was not significant.

**Euler, Aline** (1989) conducted a comparative study of the effectiveness of a formal versus non-formal Environmental Education
Programme for male and female 6th grade students on environmental knowledge and attitudes. The sample consisted 267, VI grade male and female students of a large school of New York city. Three groups were formulated two experimental groups were given treatment with formal and informal environmental education programmes, while the third (control) involved no treatment, Pre-test and post-test were administered on all the participating students. The tools used were multiple choice Environmental Knowledge Kit (EKK), and two attitude scales: the Milward Ginter Outdoor Attitude Inventory (MGOAI) and the Environmental Attitude Scales. A two-way ANOVA was used which revealed that the experimental groups showed significant gains over the control group with respect to knowledge and environmental attitude. The experimental group with formal environmental education had significantly higher scores on the environmental knowledge and attitude over experimental group with the non-formal environmental education.

Chin-Chi-Chin (1994) attempted to investigate knowledge, attitude verbal commitment and actual commitment of secondary schools students and pre and in service teachers in relation to environmental issues in Taiwan. The effects of independent variables such as gender, grade level, geographic region, subject taught, age, teaching experience and educational background of teachers on their performance regarding
environmental issues were examined. Students in rural junior high schools appear to have the lowest level of environmental knowledge, environmental attitudes, awareness of environmental problems and verbal commitment. Older students out scored younger students as expected. Rural teachers possessed less environmental knowledge than urban teachers. Interestingly pre-service and in-service teachers were not aware of environmental problems than the senior high school students, but in-service teachers expressed more commitment to environment than all others.

**Fong, Ting-Ya** (1994) study of environmental awareness of and action from elementary school students and their parents in Taiwan, survey type research indicated that both students and their parents scored higher on many environmental awareness items and also that they took more action. This study also suggested that parents 'education level' made significantly difference on students and parents environmental awareness and environmental action. In general, the higher the educational level, the more concern they have. This finding suggests that education is the means to solve many environmental problems. Hence, parental educational level is considered as one of the variables in the present study too.
Hicks, William Whitefield (1994) conducted a study to know the effects of environmental action oriented lessons on environmental knowledge, attitude and behaviour of high school students. This study revealed several educational implications action oriented lessons should be taught for greater period of time. Environmental Education tests should be specific rather than general in natures students taking action towards solving environmental problem need these behaviours reinforced continuously. Educators can reinforce students behaviour by teaching environmental action skills, removing barriers such as negative peer pressure and inconsistent messages about the state of the environment.

Patel D.G et al. (1995) have made an investigation into the environmental awareness and its enhancement in the secondary school teachers with 2 x 2 factorial design. They also determined various aspects of environmental education interwoven in textbooks of social studies and science in secondary level and implemented an Environmental Awareness Programme (EAP) to enhance the environmental awareness of secondary school teachers. Sample of hundred teachers were studied. Analysis of Variance (ANOVA) was employed in order to study the main effects, viz., treatment, experience, and its interaction effects on environmental awareness. The study concludes that EAP had its very high effect in
raising environmental awareness of teachers. The experience of teacher
did not play an important role on the environmental awareness.

**Patel Nanubhai** (1995) conducted an experimental study to
examine the effect of the environmental study multimedia package on
environmental awareness of secondary school students. Experimental
and control groups were equated on intelligence by using Dr. Medhookar
Patel’s Intelligence Test. The control group was taught topics on
environment by using traditional approach and the experimental group
was taught by using multimedia package consisting of charts, video and
reading materials. t-test was employed for testing the significance of
mean difference. The study revealed that students with high IQ had
increased environmental awareness. The environmental awareness
multimedia package was more effective than the traditional lecture
method. Girls students were more sensitive about the environmental
awareness than boys.

**Pradhan G.C** (1995) study aiming at knowing level of
environmental awareness among secondary school teachers. And also the
differences between male, female; rural urban and science, language
teachers in environmental awareness was done 124 secondary education
teacher on pre secondary educational teachers. Analysis of the data
employing three way factorial (3x2x2) ANOVA revealed significant
difference in environmental awareness between male and female teachers. The teacher teaching science had significantly higher environmental awareness compared to the teachers of social sciences and languages. Urban school teachers evidenced higher environmental awareness than rural school teachers.

**Singh, Ummed** (1995) developed a video instructional package for creating environmental awareness among secondary school children and try out on a sample of 180 students selected from three schools, from Gujarat, Rajasthan and Uttar Pradesh studying in VII and VIII standard with Hindi medium. The package consisted of video instructional film of 45 minutes on 'environmental crisis,'. The developed video instructional package was found significantly effective for the students of standard VII and VIII.

**Bhattacharya G. C** (1997) conducted a study on environmental awareness among higher secondary students of science and non science streams, in terms of environmental orientation, environmental attitude and environmental responsibility. Sample consisted with 118 male and 82 female higher secondary students. The statistical technique with mean, SD and t – test. The finding of science discipline were comparatively better in terms of environmental awareness, environmental orientation and environmental responsibility as compared to non science
students. Female groups were better than their male in environmental awareness.

A study by Usha Rao (1997) on environmental awareness and its enhancement in the 25 secondary school teachers in Bombay indicating that even though it is very much required to include the environmental awareness programme in the regular curriculum, there are many difficulties in implementing the subject of environmental education in scheduled curriculum. The difficulties are (1) the teacher's preparation itself is the greatest hurdle in the effective implementation of environmental education because of large number of teachers and difficulty in bringing attitudinal change in them. 2) the classroom teachers faces problem in getting proper guidelines to carryout some of the activities planned. 3) supplementary and reference materials are not easily available. 4) the teacher does not have administrative support unless all teachers, headmasters and the supervisory staff are also properly oriented for environmental education programme. 5) the teacher loses interest in the new approach in the absence of regular follow up action. 6) the teacher gets little time for proper planning of activities. Almost all on the sample of the study expressed their satisfaction in the implementation of the programmes as planned in the project.
Satya premakumari (2000) study of knowledge and educational need of rural adults of Mysore district in environmental education was carried out on the sample of 740 rural adults. The findings of the study indicated that:

1) Elementary school teachers have the highest knowledge in many areas of environmental education whereas the adult education volunteers have, in contrast lower knowledge in many areas of environmental education.

2) Rural adults possess the least knowledge in the area of environmental legislation and also least knowledge on explosion of population.

3) The adult education learners should give adequate emphases on the pollution health and sanitation, energy, soil pollution forests, environmental legislation, water pollution, noise pollution, population explosion, food issues.

4) Understanding of environment is essential to the educational development of the young adults.

5) Adult learners are not aware of the local resource problems.
Sigit Sudarmadi, et al (2001) study was aimed to identify between educated and community groups and to identify human dimension factors to improve public perception, knowledge, awareness and attitude in relation to global environmental conservation concerns in developing countries. In this study it is concluded that subjects in the educated group had better perception, more detailed knowledge, were more aware, and had better attitudes in regard to regional and global environmental problems than those in the community group. More education is needed to develop environmental actions and ethic in developing countries. Non formal environmental education through popular mass media should be used more widely and frequently, and more detailed information on the environment should be provided to literate people by newspapers and other means.

Seyed Mohammad Shobeiri (2006) conducted study on secondary school students environmental awareness in India and Iran. Nine hundred and ninety one students were selected through the stratified random sampling technique from 103 secondary schools of Mysore city (India) and Tehran city (Iran) subjects consisted of 476 boys and 515 girls. They were assessed using the Environmental Awareness Ability Measures (EAAM). Results indicate that there are significant differences between Indian and Iranian students in the level of environmental awareness.
Also there is no significant differences between girls and boys students and their level of environmental awareness. The type of school management has an impact on environmental awareness of students in both the countries. In all the subfactors of students environmental awareness, Iranian government school students scored significantly higher than their counterparts in India.

Carolyn Strong (1998) conducted exploratory study to investigate and understand children’s knowledge and awareness of environmental issues, and their selection and use of information about environmentally friendly products through primary school education. The sample of the study consisted of 227 boys and girls of 7-11 years from South West of England. The result revealed that a high level of knowledge and understanding of environmental issues was found amongst the children.

A study by Karapantsios, Boutskou and Balouktisis (2002) on secondary school students awareness of the urban environment. Evidence indicated that the students are developing a reasonable conscious of environmental issues, especially regarding acute every day aspects of city life. Noticeably, students have only a limited knowledge of the living species of their city.

A study by Fisman, Lianne (2005) on the effects of local learning on environmental awareness in children showed a significant positive
effect of the programme on students awareness of the local environment and on their knowledge of environmental concept. Improvements in environmental knowledge were uncorrelated with the children’s socio economic status, where as improvements in local environmental awareness appeared only among students living in high socio economic neighbourhoods.

Vipinder Nagra, Jaswinder Singh Dhillon ‘s (2006) study on environmental awareness among secondary school teachers sample of 1800 The result revealed that the level of environmental awareness of urban secondary School teachers was significantly higher than that of rural secondary school teachers. The male secondary school teachers and science teachers showed significant difference in environmental awareness than female secondary school teachers and social economic / language counterparts.

Santhosh Kumar Rout, Sukirti Agarwal (2006) conducted study to know the environmental awareness and environmental attitude of male and female students of science and non science streams belonging to rural and urban backgrounds studying class X of different schools of Moradabad city. The result revealed that the students of sciences stream have more environmental awareness and environmental attitude than the students of non science stream. The students belonging to urban
background are comparatively better in terms of their environmental awareness and attitude as compared to the students belonging to rural background. This differences is due to the difference in the educational level of the parents of urban and rural students and also approachability to the media. The male and female students do not differ significantly in terms of their environmental awareness and environmental attitude.

**Uma Devi D. and Adenarayana Reddy** (2006) conducted study to know the knowledge and educational needs among rural adults in environmental aspects. The sample consisted with 600 rural adults of chittor district. The data analysed using mean, standard deveation to findout the knowledge and educational need level. F -test (ANOVA) was to find out the significant difference level among the sample. The result revealed that the rural adults had high knowledge in all the aspects of environmental concerns. The village secretaries are more interested to know about the environmental aspects when compared with others. They expressed high need levels followed by village sarpanches.
2.3 STUDIES ON ENVIRONMENTAL ATTITUDE:

Pai (1981) prepared and conducted a tryout of curriculum in environmental studies for college students to help them acquire an awareness of environment and the interrelationships, interactions and interdependence existing between biological and physical aspects of the total environment and its allied problems. The study also intended to help students acquire strong positive attitudes and sound ecological values towards the need for better environment and to help students develop skills necessary for solving environmental problems and taking preventive measures. The study employed pre-test, post-test, experimental, control group design. The sample consisted of 72 students in the experimental and 80 students in the control group t-test was used to analyze data. The study revealed that there was significant difference in the performance of the experimental group as compared with control group on all the variables selected for the study.

Survey by Neri, Esmondo Molina (1990) to study the attitude towards selected environmental concern; to environmental issues, problems or solutions, to examine perceived seriousness and readiness to teach issues and to examine perceived abilities to get involved with environmental education was done with 270 pre-service, middle and high school teachers of 16 selected colleges and universities of East
The analyzed data indicated that a majority of the pre-service teachers had strong opinions, showed concerns and support for experimental quality, attitude and familiarity with specific environmental concerns were varied among different groups.

Sandiford and Shamiti Ajgoankar (1992) studied the relationship between environmental attitudes, behaviours and future perspectives and the influence of locus of control temporarily (i.e. how individuals rank past, present and future in directing their behaviour) and perceived level and scope of knowledge about environmental affairs on attitude, behaviour and future perspective. The results suggested that pro-environmental attitudes were linked to pro-environmental behaviour and to pro-future perspectives. Pro-environmental behaviour are linked to pro future perspective. Although the inter relationships do not imply causal links, the positive correlation between attitudes, behaviour and future perspective suggest that an individual who engages in pro environmental behaviors likely possesses pro-environmental attitudes and was future oriented. The findings also hint at a changing environmental paradigm. The most visible shift was the ‘positive’ attitudes to technology. The new environmentalism may be more about saving the earth for humans rather than saving the earth from humane.
David Chapman and Kamala Sharma (2002) attempted to investigate the environmental attitudes and environmental knowledge of the Asian primary and secondary schools students of Philippines and India and their readiness to engage in pro – environmental behaviour which could involve some change in their personal lifestyle. Ten group interviews each were conducted both in Philippines and India. The results indicated that students always referred to environment as ‘out there’ and they excluded themselves from environment. The students of grades four to six, had very little understanding of the concept of environmental education. Science was compulsory until grade10. The majority of the Asian students appear to lack the environmental consciousness and attitude needed to protect their environment. The Eco schools concept should help in changing the attitude of students in the Asian region, thus making them more responsible citizens towards the environment which should lead to a more sustainable future.

Woods, Amunda Linnette (1993) developed and validated an interdisciplinary Environmental Education Curriculum based on the tropical rain forest. The curriculum also addressed the complexity of environmental problems by introducing the concept of “sustainable developments”, students investigated a simulated problem where a balance of alternatives was needed and sustainable development was
offered as viable option for tropical forest conservation. The results indicated that the interdisciplinary curriculum unit based on relevant and a popular topic (tropical rain forest) influenced students attitude towards science. When compared to control group, the experimental group showed more positive attitude towards science. No gender or interaction effects were evident on students attitude towards science.

Watson, Kevin et al's (2005) study on environmental attitude of pre-service teachers. Study revealed that some similarities and differences were found in environmental attitudes amongst pre-services teachers in Australia, Republic and Maldives and Indonesia. But significant differences emerged when the interview data were analysed phenomenographically. These differences reflect diversity within and across cultural groups that can not be satisfactorily explained by the theory underpinning the established questionnaires consequently, a revised conceptual framework is proposed.

Naseema's (2006) study on environmental attitude of secondary school students revealed that majority of the students exhibited moderate favourable attitude towards environment. Sex of the students do not have any major role in the study. Rural and urban school pupils do not differ significantly in their attitude. Private and government school pupils differ greatly in their attitude towards environment. The interaction
effect of sex and social position is not significant in attitude towards environment.

2.4. STUDIES ON ENVIRONMENTAL BEHAVIOUR

Ramsey, John Michael (1987) studied the effects of issue Investigation and Action Training (IIAT) on characteristics associated with environmental behaviour of 7th grade students. IIAT is an environmental education methodology designed to promote environment literacy by teaching how to investigate environmental issues, how to apply environmental action methods to help solve the environmental issues. A pre-test, post-test method was used with four experimental groups receiving IIAT instruction and four control groups. It was found that the IIAT promoted responsible citizenship behaviour. This inference was supported by the findings that the specific knowledge, skills and beliefs critical to responsible citizenship behaviour were also significantly enhanced.

Hewitt, Patricia Anne (1993) conducted a study to know the effects of institutional games on the development of environmentally responsible behaviour among 4th, 5th and 6th grade students. The students were pre and post tested, “some ideas” developed by Robert Horvat and Allen Voelkar to measure environmentally responsible behaviour and “some students” misconceptions” developed by the researcher to measure
environmental misconception were used. This study showed that playing games especially designed to teach certain topics might be successful in improving students environmentally responsible behaviour. It also shows that misconceptions were not readily dispelled simply by changing the methodology.

**Meinhold, Jana et al** (2005) conducted study on the relationships among adolescent environmental behaviours and self efficacy knowledge and attitudes with a sample of 848 students high school on the west lost. The results indicated that pro environmental attitudes significantly predicted pro environmental behaviour and that environmental knowledge was a significant moderator for the relationship between environmental attitudes and environmental behaviours. This was especially true for males.

**Sandhya Gihar's** (2006) study on the environmental responsibility among students of classes IX to XII of Bareilly district revealed that male students had significantly higher responsibility than female students. Science background students were having higher environmentally responsible behaviour than their counterparts (Arts/Commerce) The rural and urban students differed significantly from each other in environmentally responsibility.
Chandra Kumari et al (2006) conducted a study on environmental awareness, attitude and ecological behaviour among adolescents. The sample of the study consisted of 11th and 12th standard students of Gorakhpur city. The study revealed that the girls' level of awareness is higher than boys. The boys have higher attitude level than girls. Majority of the students were found to have a positive behaviour trend. No significant relationship were found between environmental awareness and attitude; between environmental awareness and ecological behaviour. However, high degree of relationship was found between environmental attitude and ecological behaviour. Thus there is need to change the attitude of these age groups.

2.5. STUDIES ON CURRICULUM TEXT BOOKS:

SCERT (Andhra Pradesh) (1980) conducted an evaluation study of textbooks in Environmental Studies of classes III and V based on revised curriculum in science. The objectives of the study were to compare the old and new science curriculum of classes III and V with respect to the cognitive load on the students, to assess the revised curriculum with respect to instructional objectives attained and to assess each unit of the revise curriculum with respect to its emphasis on modernity. The sample of the study consisted of 20 headmasters, 200 teachers and 100 educated parents of students. The study revealed that
most of the headmasters and teachers felt that the old curriculum was not relevant and the new curriculum was relevant to the child's cognitive level as well as needs, but contrary to this, parents felt that the old curriculum was easily understandable to the children. But the parents of the pupils felt that the new curriculum increased the cognitive load on their children. The teachers, parents, and headmasters opined that the new curriculum was more helpful than the old one in enriching the knowledge of the children regarding the environment.

Barr et al. (1981) developed a need based curriculum plan in Environmental Education, based on the needs established by analyzing the results of testing 1,412 of X grade students from 54 public schools in Lousiana for their knowledge and opinions about the environment. ANOVA was used to determine if there were any significance in the difference among regions of the state, between sexes, between urban and rural communities, and among size of school. The results showed that the students had limited knowledge on most of the cognitive variables. The overall attitudes and opinions demonstrated that the students favoured ideas that did not affect them directly while showing disagreement with those issues that would affect them directly. The plan suggests a multidisciplinary approach to teaching environmental education.
Central Regional Centre, Jabalpur (1981) conducted a study to develop instructional materials for students and teachers relevant to local environment and to ascertain the local condition and nutrition, health and sanitation of the experimental area. The study also intended to train teachers from selected rural and tribal schools with respect to nutrition, health and environmental sanitation. The project was carried out in eleven villages with 39 teachers. The teachers were to carry out a baseline survey of five families, to introduce the message in at least 40 families, to check the nutrition, health and sanitation habits of each family, evaluation of the impact of the message with remedial suggestions, to help develop desirable practices in school children, observe behavioural changes during school hours and evaluate the progress. The study reveals that the impact was observable in awareness of the cleanliness of clothes, hand, feet and cutting of nails the use of soap kit and wastewater in the kitchen garden; the bathing habits and preparation of food.

Manuel N.V (1981) analysed the textbooks in environmental studies of NCERT and some state systems from the point of view of components which might facilitate or hinder genuine environmental approach. He also analysed some worthwhile environmental education models in India and abroad and other relevant materials from the point of view of developing a functional theory of environmental education. The
other objectives of the study was to identify some typical resources other than textbooks which can be useful for environmental education and to develop some models of environmental education. Relevant textbooks (classes III and V) at the national level, Kerala, Tamil Nadu, collateral materials from USA, USSR, UK, France, UNESCO and other developed systems, were also analysed. In addition to the analysis and critical appraisal, interviews, observation and focused group discussions with teachers, non-formal school education school education workers, administrative officers were conducted. The study revealed that a very few genuine environmental education type activities, as understood in modern developed systems, seemed to be undertaken in the primary schools. The effective lead books (text books) at the national level seemed to have some worthy aspects such as process approach in science, activisation, some directives to observation and visits, stimulating questions, with open tables to fill in the answers, clear verbal processing, etc. The national level textbooks lacked the higher specifications commonly adopted in modern environmental education procedures and in open multidisciplinary approaches to the environment. The NCERT’s curriculum framework which had obviously guided the text book gave negative guidelines (what environmental education is not) but distinct positive guidelines were lacking.
Stubbs, Harriett Singleton (1982) conducted a study to determine whether educator who introduced the current environmental issue of acid rain into ongoing curriculum were more respective to change as measured by the Welch Curriculum Attitude Survey (WCAS). Other teacher characteristics were examined by the use of author developed questionnaire in which demographics, methods of teaching specific topics and available acid rain materials were included. The data were collected from 593 Science (Biology and Chemistry) teachers through WCAS and questionnaire and were analysed by statistical techniques such as Pearson product-moment correlation tests, t-test and regression analysis. The study revealed that the difference, when comparing WCAS scores for teachers who introduced acid rain and those who did not, was found to be significant. This study also found that the sex of teachers, years of teaching experiences, being a life science teacher and use of the combined classroom techniques, discussion, student report, library work and films were not important predictors.

Lynn, Volk Gertrude (1983) conducted a national survey of curricular needs as perceived by the professional environmental educators in the United States. The Environmental Education Curriculum Needs Assessment Questionnaire (EECNAQ) was developed, validated and used to collect data from 99 environmental educators. The EECNAQ
elicited perceptions about the desires status of environmental education curricula, the current status of environmental education curricula, the need for the curriculum development, the anticipated use of curricula by teachers and the need for in-service teacher education related to goal oriented curricula. The findings were; professional environmental educators believe that there exists a considerable discrepancy between the desired status and the existing status of environmental education. Goal related teacher education appears to be the major need at all academic levels with the exception of the college levels wherein service needs are exceeded slightly by the need for goal oriented curricula. Professional Environmental Educators believe that goal oriented curricula would be used by classroom teachers, although the extent of its use relative to discrete goals would be varied.

In a case study taken up by Pace, Rose marie (1987) it was attempted to divulge the presence of Environmental Education in the intermediate grade curriculum, along with the factors influencing it both positively and negatively. The data were collected through observation in depth interviews and artifact reviews. The sample included teachers, administrator and educators (N=28) the findings revealed that Environmental Education did exist both latents and subtly in the intermediate grade curriculum. In science, exploration of plants,
animals, energy, climate, air and water quality were replete with environmental ramifications. In social studies, dependence of human cultural development on natural environment was given by key importance. Environmental themes were employed to teach mathematics, languages, reading and art skill. Much music was developed around the imitation of sounds of nature.

Somert, Lyle Mark (1993) conducted an evaluation study of the effect of instructional video and simulation gaming activities in environmental science curriculum on knowledge and attitudes. This study evaluated a modular environmental service curriculum entitled “wild Louisiana” which attempts to address the shortcomings of the predominant curricula. Following random selection, teachers were randomly assigned to one of the four conditions of study. Group A teachers lectured from their assigned textbooks supplemented with the regionally based background information that was provided; Group B teachers used the background information and the simulation−game activities for infusion into their classes; Group C teachers used the background information together with the instructional video; and Group D teachers used the background information, infusing both the activities and video into their class. Six hundred secondary school science students of eleven schools in Louisiana took part in the 16 weeks study. The data
analyzed using ANCOVA. The results of the study suggested that “wild Louisiana” infusion materials can be more effective in increasing students environmental knowledge, students in the videos only group and students in the activities with video group had significantly higher knowledge, score than that of lecture group.

Ifegbesan Ayodeji (2001) conducted survey to find out the view of students on environmental education elements in the junior secondary school curricula. The sample for the study comprised three hundred junior secondary school students in Ogun state. The data analysed using frequency counts, percentage, mean, standard deviation and t-test, 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 junior secondary school II and junior secondary school III students perception of environmental education elements in the curriculum.

Cotton D.R.E. (2006) opined that many observers have commented on disparities between the theoretical understandings of environmental education portrayed in academic literature and environmental education that takes place in schools. In much of the
literature and in curriculum documents there has been an increasing
emphasis on promoting positive attitudes towards the environment, and
the results of several surveys suggested that many teachers support this
aim. Further it is found that in contrast to the findings of prior studies,
the geography teachers in the study felt strongly that they should try to
avoid influencing students attitudes, or imposing any kind of pro
environmental agenda. There is a substantial divergence between the
teachers beliefs and the espoused aims of much environmental education
literature and the geography syllabus they were following. The study
suggests that, unless curriculum developers take account of teachers
beliefs in designing new curriculum materials, those materials are
unlikely to be implemented in their intended format.

Conclusion:

Most of the related literature pertaining to environmental
awareness knowledge, attitude, behaviour, and curriculum, and
textbooks. However, it is found that studies related to environmental
awareness environmental action behaviour of elementary teacher
training level have not been reported this necessitated the need for
undertaking the present study. The title of the studies is “A STUDY OF
ENVIRONMENTAL AWARENESS ENVIRONMENTAL ATTITUDE AND ENVIRONMENTAL ACTION BEHAVIOUR OF
ELEMENTARY TEACHER TRAINEES IN MYSORE CITY”.