CHAPTER-II

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Review of literature is of paramount importance for it helps the researchers in making concept clear; provide evidence that the researcher is familiar with what is already known and what is still unknown and untested. The background of the study can be developed with literature review. The effective research is based on previous knowledge, this step helps to eliminate the duplication to what has been done and provides useful hypotheses and for significant investigation. Review of related literature is one of the pre-requisites of the investigator to have identified his research problem more reliable and purposeful more than that in a systematic way. It gives the deepest depth in a subject in which the investigator is involving himself in finding solutions for the problem, he has selected for this research study. On this line it is of vital need for every investigator to see what happened in the area of his present study in the past. In this connection as many information as possible through all the ways and means and bring value to his investigation.

A literature review is a body of text that aims to review the critical points of current knowledge including substantive findings as well as theoretical and methodological contributions to a particular topic. Its ultimate goal is to bring the reader up to date with current literature on a topic and forms the basis for another goal, such as future research that may be needed in the area. It gives an overview of what has been said, who the key writers are, what are the prevailing theories and
hypotheses, what questions are being asked, and what methods and methodologies are appropriate and useful. As such, it is not in itself primary research, but rather it reports on other findings. The study of the relevant literature is an essential step to get a full picture of what has been done with regard to the problem under study. Such a review brings new insight and helps the development of research procedure.

The investigator has gathered the related studies from research quarterly, journals, magazines and theses and has listed down such studies in this chapter to add further dimensions and scope for this study. The present review is based upon the available literature in respect to the study under investigation and therefore confined to the studies to which the investigator has accessed. All the relevant literature thus obtained by the researcher has been included in this chapter to furnish necessary background material to evaluate the significance of the study. While going through the various sources of literature, it has been observed that very little work has been done on the training packages undergone in this study. However, the scholar has also gone through the literatures of allied studies that are related to this study to collect the necessary information for making a proper shape of the study.

2.2 REVIEW OF LITERATURE

A thorough survey of literature can be of great value to the investigator to understand the problem in a better way, and can help solve the problem from different dimensions, it enriches the study. It gives necessary insight to the research study by which one can think creatively.

Annika, et al. (2013) carried out to investigate how 10-12 year old Swedish students understand and value the issue of sustainable development. The responses
from open ended questions in a questionnaire have been analyzed through a content analysis based on a phenomenographic approach. The results show that there are considerable variations in the level of understandings and the values related to the three aspects of sustainable development. Understanding within as well as between the aspects is noted, with students having the most difficulty in seeing the relationships between all three aspects, i.e. a holistic understanding. Furthermore, students’ understanding and values are often expressed in an integrated way i.e. expressed in the same sentence. The variations, complex understandings, and expressions of understandings and values are discussed in relation to earlier research with a focus on ethical issues and systems thinking.

Bob Jickling (2013) Processes of normalizing assumptions and values have been the subjects of theoretical framing and critique for several decades now. Critique has often been tied to issues of environmental sustainability and social justice. Now, in an era of global warming, there is a rising concern that the results of normalizing of present values could be catastrophic. Often, when such concerns arise, education is invoked as a remedial tool, a solution to a crisis and a way of imposing change. However, education is a much-used, yet complicated and sometimes paradoxical, term. Appropriate educational responses to ‘catastrophes’ are contentious, messy and inherently interdisciplinary. This paper will explore intersections of educational philosophy, environmental ethics and social theory to provide some considerations for framing educational responses to the ‘normalizing of catastrophe.

Catharine (2013) This paper reviews research into the relationships between attributes of outdoor environments and levels of activity and exercise in populations using those environments. It takes an environmental designer's view of relevant and
effective research and research approaches that can provide evidence for policy and practice. The paper has a tripartite structure, examining theories, research methods, and findings that contribute to understanding links between physical activity, planning and designing outdoor spaces. It considers concepts, methods and evidence relevant to adults', older adults' and children's activities and identifies those that appear to offer greatest potential for future research. It also identifies gaps in our understanding, the need for well-conceptualized models of environment–behaviour interactions to elucidate these, and the importance of collecting and presenting evidence in ways that are sympathetic to design practice. If evidence is to lead to effective changes in our physical environment, then findings that translate readily into a design framework will be most beneficial.

Cynthia (2013) Multiple factors are likely to influence adult literacy regarding the natural environment and environmental issues, but very little research has been carried out in this area. The research presented in this article is intended to help address this information gap, by investigating influences on adult environmental literacy using data from a Minnesota environmental literacy survey. The article presents the research findings regarding the influence of demographic factors and of non-formal and informal learning on environmental behaviour, one of the key dimensions of environmental literacy. Results from this study indicated that environmental behaviour prediction was most improved by adding non-formal and informal learning participation. These results suggest that non-formal and informal learning options should be looked at more carefully for predictive possibilities.

Jessica (2013) Incorporating spirituality and religious themes in Environmental Education is a way to link learners to their meaning systems. Research
has shown that incorporation of a spiritual element in education provides a way for students to have authentic learning experiences and make meaning of the knowledge they acquire in the classroom. This mixed methods study examined the environmental attitudes, knowledge and actions of students in an introductory environmental science course with a spiritually infused curriculum at a community college. The quantitative data was collected from students in a survey of environmental attitudes, knowledge, and actions. Qualitative studies were conducted using a focus group to complement the quantitative data. Environmental Education increases knowledge and awareness about earth’s environment and teaches skills that lead to action that will ensure stewardship of all aspects of earth’s environment. Integration of spirituality and religious traditions in Environmental Education offers an alternative approach in curriculum design that encourages learners’ environmental attitudes and behaviors to be transformed.

Mehmet, et al. (2013) collected and analyzed the research on Environmental Education in non-traditional settings in Turkey undertaken with various subjects (e.g. students, graduates and teachers) and published over the years of 2000-2011. For systematic analysis, selected data-bases and journals were scrutinized across five pre-determined criteria. The close examination resulted in eleven studies reporting the effects of the interventions (e.g. hands-on practices, field trip activities) and four studies reporting participants’ views on the effects of the interventions in general. Field trips, ecology-based nature education programs, nature camps and science education instruction in non-traditional settings were used as educational intervention in the selected studies. Later, these studies were subjected to content analysis to present the trends and to synthesize the common findings of the selected studies. As
commonly known by definition, content analysis method enables to scrutinize what is and what is not within the written, verbal and visual communication (Frankel and Wallen, 2000; Patton, 2002). Content analysis can be used in two traditions; e.g. method for research design or method for analyzing the data (Elo & Kyngs, 2007). In the present study, both traditions were employed for designing the study and for analyzing the selected studies.

The techniques and instructions used as the intervention in these selected studies were observed to contribute to development of participants’ gain associated with knowledge of the environment and nature, perception of nature, environmental effect, responsible environment behaviours and conception and understanding of science. The results of the selected studies indicated the impact of EE in non-traditional settings on individuals’ gain in various areas; e.g. knowledge, affect, skills and behaviour. More research studies to be designed as pretest – post test with control is needed to observe the exact effects of the intervention and to get purified from the outsider effects. Traditional instruction or classroom environment could be selected as control group across the outdoor settings. This will help observe whether the outdoor settings are more successful context than the classroom environments or indoors to significantly increase in knowledge, skills, effect, behaviour and so on. It may be quite hard to understand the interdisciplinary nature of EE (Palmer, 1998) in the classroom environment, but will be quite easier to grasp this notion through outdoors using first hand-experiences and observation, the cause-effect relationship in the nature. Analysis of the selected (reached) studies sometimes revealed controversial results especially for the dimensions of effect and behaviour. Even though gain score was observed to increase in some of the studies, this increase was not statistically
significant. This may be possible due to performing statistical analysis over the data collected from small sample size. In this sense, more research studies with big sample size are needed.

Aklilu (2012) selected studies indicated the impact of EE in non-traditional settings on individuals’ gain in various areas; e.g. knowledge, affect, skills and behaviour. More research studies to be designed as pretest – posttest with control is needed to observe the exact effects of the intervention and to get purified from the outsider effects. Traditional instruction or classroom environment could be selected as control group across the outdoor settings. This will help observe whether the outdoor settings are more successful context than the classroom environments or indoors to significantly increase in knowledge, skills, effect, behaviour and so on. It may be quite hard to understand the interdisciplinary nature of EE (Palmer, 1998) in the classroom environment, but will be quite easier to grasp this notion through outdoors using first hand-experiences and observation the cause-effect relationship in the nature. Analysis of the selected studies sometimes revealed controversial results especially for the dimensions of effect and behaviour. Even though gain score was observed to increase in some of the studies, this increase was not statistically significant. This may be possible due to performing statistical analysis over the data collected from small sample size. In this sense, more research studies with high sample size are needed. The already existing windows of opportunity in grades nine, ten and twelve be utilized to integrate components of biodiversity and climate change education more adequately; and to add issues which are currently missing. Preparation of a comprehensive information “package” that could be used by teachers in their efforts to integrate issues related to loss of biodiversity and climate change, as
suggested above. Besides inclusion of relevant content, the ‘package’ should give hints on teaching and learning methodologies that enhance active learning and action-oriented Environmental Education (e.g. role-playing, debates, fieldwork, place-based learning, etc.). Such a “package” can also be used by curriculum designers when the next revision of the curriculum guides and textbooks take place. The “package” can be prepared by the Environmental Education Department at Environmental Protection Authority or Addis Ababa University or the Ministry of Education itself. With regard to issues that are apparently too broad to be fully integrated into Biology (e.g. weather and climate), an interdisciplinary collaboration is highly recommended. For instance, a high level of complementarity exists between the curricula of Biology and Geography. A similar assessment on the curricula for Geography indicates that the scientific bases of climate change are well addressed. One could thus see a great opportunity for forging or strengthening horizontal collaboration between teachers of Biology and Geography at Secondary and Preparatory levels. This could also benefit Geography students and teachers as the curricula of Biology seems to be much richer with regard to natural resource conservation and management.

Amul, et al. (2012) deals with present scenario of compulsory Environmental Education at Junior College level in Maharashtra State as per the directives of Honorable Supreme Court and guidelines of National Council for Education and Training Research (NCERT), New Delhi. Information regarding the implementation of compulsory Environmental Education at Junior College level in Maharashtra State was collected. This process was facilitated by the circulars issued by Maharashtra State Secondary & Higher Secondary Education Board (MSSHSEB) to colleges under Right to Information Act (RTI) from Board. The present paper is an effort to focus on
the present scenario with respect to its year of implementation, syllabus, and distribution of workload, appointment of lecturers (temporary/permanent/fix pay basis/clock hour basis), qualification criteria, remuneration paid and the examination pattern. Special attention is given to the lacunas and shortcomings in the system adopted for the implementation of this subject. It also provides suggestions for proper and effective implementation of this subject to comply the motto of Honorable Supreme Court. The present status of implementation of this subject and the approach of students and teachers treats this as just a show and does not touch the heart. Hence, there is a need to take the initiative for making the students and teachers to understand and to appreciate the values regarding this subject. Otherwise the Environmental Education subject will remain on paper and only a subject of lectures, conference, seminars, workshops and programmes for publicity purpose only.

Anisha and Sadia (2012) The aim of the study was to find out whether there is a difference between male and female students’ attitude towards environmental issues (pollution of air and water, overuse of resources, global changes of the climate etc.) A total of 312 students (n = 154 girls; n = 158 boys; and) attending Government (n = 151) and Private schools (n = 161) located in Karachi, (Pakistan), participated in the study. Data was collected through an adopted questionnaire “Me and Environmental challenges” (Part D) from the questionnaire- based Relevance of Science Education (ROSE) project. Data was analyzed using the non- parametric equivalent of the independent t-test. The results of the study indicate that there was no significance difference between male and female students’ attitude towards environmental issues. The results of the study provide significant insights into male and female students’ attitude towards environmental issues towards discipline in both Government and
Private Secondary schools. Based on the results of the study, some recommendations have been put forward for policy and practice. Furthermore, the results of the study can be used as a baseline for further studies.

Archana and Urmila (2012) The fast emerging economy of India is resulting in rapid degradation of natural environment and habitats. One of the ways to address the issue is to raise the sensitivity and awareness of the public on the consequences of degradation of nature. The present study measured environmental awareness by a standard tool in higher secondary students of Jabalpur, Madhya Pradesh. Level of environmental awareness was high in most students of different disciplines without gender difference. The students of humanities showed minimum awareness; Biology or Mathematics showed the maximum environmental awareness, which followed the order of Mathematics > Biology > Commerce > Humanities. The students of Central Board were better aware than those of State Board. Our research may support the earlier notions that the degree of urbanization, the level of subjective well being and the level of income inequality have direct effects on environmental awareness (Duroy, 2005). The role of families, societies, teachers and media in communicating enthusiasm and awareness about environmental action to the young people are the important factors in development of environmental awareness among the higher secondary students (Wray-Lake et al., 2008). Although higher secondary students in general have high levels of environmental awareness, but it is directly impacted by the subject of specialization. The students of humanities stream lag far behind those from science and commerce streams and need remedial environmental courses. M.P. Board of Secondary Education may review and reframe its Environmental Education syllabus. The syllabi of Environmental Education must include emerging problems of
global warming, urban pollution and biodiversity loss. Such measures may ensure equitable contribution by these young students in sustainable development of the country.

Brian and Ian (2012) student attitudes toward science and content achievements were examined in three secondary Biology I classrooms using an environmentally place-based curriculum as well as a traditional curriculum. Student attitudes were measured using Likert scale science attitude surveys administered at the beginning of the school year and once again following completion of weeklong ecology curricula. Content achievements were assessed on a pre- and post-test as well as an end-of-unit test. The quantitative results show some attitude measures are correlated with ability-group tracking, and that little change in science attitudes occurred during the course of the study for the three groups. Results also indicate that overall test scores on an end-of-unit test were not significantly different between the inquiry based and traditional curricula. Qualitative analysis of the pre- and post-tests show growth in ecology knowledge for all three classrooms, with the Inquiry-Based Academic Class achieving the greatest gains. The results warrant an exploration of curricula that use place-based inquiry as a teaching tool and learning goal by educators interested in student content achievements and keeping science attitudes from decreasing while fostering critical thinking skills.

Deeksha (2012) Environmental Education is a life-long process and must be dealt carefully in order to create environmentally concerned and responsible societies. Higher education community is one of the major factors in environmental education and sustainable development. Inspite of this, Environmental Education still does not find an important place in the curriculum of major Universities and institutions.
Realizing its importance in the current era of environmental degradation, the Hon’ble Supreme Court of India in 2003 directed the UGC to introduce a basic course on environment at every level in college education. This study focuses on the comparison of environmentally sensitive behaviour and sensitivity on general awareness of undergraduate students of Udaipur and Gautambuddh Nagar city who have studied the basic course on Environmental Studies. The study concluded that sex and level of education would improve the level of awareness and attitude regarding to environmental issues. Research findings show that even though students take many courses on the environmental issues, their environmental awareness and environmentally responsible behaviours are lower than the expected and students’ grades show no significance on the results. It is concluded that since environmental knowledge does not always influence awareness and behavioural intentions, a National strategy is needed for Environmental Education in higher education, and current curricula should be reconsidered in terms of effectiveness.

Hamza, et al. (2012) aimed to inquired whether there was a significant difference between academic achievement and attitudes of 6th grade students who learned “The Resources of Our Country” unit of Social Studies through case studies and students who learned this unit with teaching based on existing unit. Besides it was aimed to present thoughts and feelings of the students about the case study method aided learning- teaching process. Pretest-posttest control group design was used in this study and 30 students selected as experimental group while 30 students formed the control group who were from 6th grade from a primary school in 2008-2009 teaching year. During the study, pre-achievement test and pre-attitude scale were applied to the experimental and control group initially and the implementation
process was began after it. In this process it was determined that there weren’t any significant difference groups with respect to pre-test and pre-attitude tests scores.

Julie, et al. (2012) Aspects of environment are common topics in Australian primary schools. However Education for Sustainability (EfS), where students actively investigate the underlying causes of unsustainable practices and actively plan for and instigate change, is less well understood and less commonly practised. It cannot be assumed that pre-service teachers have the knowledge, skills and desire to incorporate EfS, as advocated in Australian policies, into their repertoires of practice, or, that they will acquire those skills as they gain teaching experience. Therefore for EfS to become an integral component of the primary school experience, carefully planned rather than ad hoc preparation for EfS is necessary in pre-service teacher education. This essentially qualitative study describes how a one-semester, final year pre-service primary teacher unit in EfS was shaped, and reports on how a cohort of pre-service teachers responded, particularly in terms of how well prepared they felt to engage with EfS in future teaching. Although motivation and confidence to engage with EfS varied across the cohort, pre-service teacher education appeared to make a positive contribution to both. In a longitudinal design, five teachers who had participated in the EfS unit became the focus of individual case studies early in their teaching careers. Each case study investigated ways in which the beginning teacher engaged with EfS, linking teaching decisions to pre-service teacher education. The constructivist approach adopted by the tutors was particularly valued by the early career teachers. They appreciated various modes of experiential learning including engagement with the kinds of teaching strategies advocated in EfS and a strong orientation to the curriculum requirements of primary school. However, the extent to
which each early career teacher implemented EfS was tempered not only by personal skill and motivation, but also by work situations which did not necessarily support EfS endeavours. While pre-service teacher education has a vital role in the promulgation of EfS in schools, and this study shows that it can be effective in advancing the desires of beginning teachers to do something for the environment, there are broad implications for the institutions that so heavily impact on the capacity of school systems and University systems to act in EfS.

Lamine and Richard (2012). Learning style models recognised that individuals differ in the sense learning modality of stimuli from which they best absorb, retain and process new information. The effect of sensory learning modalities on individual children’s sensitivity to sensory cues has so far been neglected. This paper reports on a study that sought to establish whether individual differences in children’s sensitivity to sensory cues in their perception of their school environmental features is influenced by their sensory learning modalities. Participants included Key Stage 1 and 2 pupils (N = 151) from four primary schools in South Gloucestershire, UK. The study used a child-friendly Visual, Auditory and Kinaesthetic questionnaire to establish children’s learning style modality. All children, independent of their learning style category, were exposed to three types of sensory cues, consisting of photo-safari, speech frequency and Global Positioning System. The analysis revealed that children’s sensitivity to sensory cues in their perception of school environmental features varied significantly between the three sensory learning modalities: visual, auditory and kinaesthetic. The implications of these findings on research, policy and practice are discussed.
Lea (2012) children’s literature is operated and distributed on the basis of faith, whereby if there is a place for effective links between literature and society, then it will naturally be found first in children’s literature. For the most part children’s literature is goal directed and amongst its targets is the assimilation of socio-cultural values. The number of study hours for children’s literature in the colleges for education is very limited, and only infrequently is the educator of the future awarded broad knowledge of children’s literature during her studies at the college. Currently no study program has been designated for the connection between children’s literature and sustainability and its derivatives and a method of integrating this subject into the field of literature. Due to the importance of children’s literature in the assimilation of values and instilling of an ideological infrastructure which will become a way of life, it is appropriate to examine the findings of literary works in literature textbooks and before this the outline of the subject in the syllabus. One should introduce environmental studies into existing subjects and introduce environmental studies as a new subject in the syllabus.

Liz Newbery (2012) explored how histories of colonialism are integral to the Euro-Western idea of wilderness at the heart of much outdoor Environmental Education. In the context of canoe tripping, I speculate about why the politics of land rarely enters into teaching on the land. Finally, because learning from difficult knowledge often troubles the learner, I consider the pedagogical value of emotional responses to curricula that address colonial implication.

Matthew and Karen (2012) determine what factors contributed to three Universities achieving environmental sustainability. A case study methodology was used to determine how each factor contributed to the institutions' sustainability. Site
visits, fieldwork, document reviews, and interviews with administration, faculty, staff, and students from the participating institutions were employed as primary data collection strategies. The six factors identified in the literature as contributing to environmental sustainability were present at all three institutions: green campus operation measures; campus administration, organization, and leadership; teaching, research, and service; campus-wide actions and activities; institutional assessment of campus sustainability measures; and established methods for overcoming barriers. This study was delimited to the six factors that were identified in the literature and the three institutions that participated in this study. The research will add to the literature on creating sustainable campuses and will also provide a foundation for further study on the progress and impact of campus sustainability efforts. A number of individual case studies have described what certain institutions have done. A smaller number of case studies have identified what factors have contributed to certain institutions’ achieving environmental sustainability.

Najafi, et al. (2012) assessed attitudes towards science and technology middle school students. The population included all 3rd grade students a total of 230 students (105 female and 125 male) chosen through stratified random sampling method. Research instrument was the Persian translation of the Science Education questionnaire. Data analyzed by SPSS version 17.00. Reliability of the scale calculated by Cronbach’s alpha coefficient (0.91). Results indicated that there is a positive attitude towards science and technology among students. However, there was not a positive attitude towards some items of science and technology. The results also showed that there is a meaningful difference between males and females points of views in attitude towards sciences and technology. According to this result, males
have higher averages than the females. The results of this research provide important information about students’ attitude towards science and could be used by science teachers and educators to development of science curricula and science books.

Neerja (2012) An attempt has been made in the present research study a) to find out the availability of marketing outlets for green products, b) to determine the nature of green products being sold by them, c) to compare the prices of green products with that of ordinary products, d) to study the supply and demand of green products in market and, e) to find out the buying pattern of the families regarding green products. The study further aimed to find out the awareness of the families regarding green products and to know their preferences for using for green products. The data were collected personally by the investigator on a pre-validated interview schedule from Vadodara city of Gujarat State. The homemakers as unit of inquiry were interviewed from ninety middle class families selected randomly based on their willingness to participate and the convenience of the researchers. The data were also collected from owner/ the manager of the marketing outlets with prior appointment with them. The data were further subjected to descriptive statistics for analysis. The major findings of the study highlighted that there existed market outlets in Vadodara city from where green products can be bought. The nature of green products sold were in the area of clothing and its accessories, furniture, furnishings, interior accessories stationery, food, cosmetics, toiletries, crockery, jewellery and footwear. The prices of green products were comparatively higher than the ordinary products. The supply of green fruits and vegetables were in short supply with their demand. These were the most popular green products bought by the families. The findings further revealed that the awareness among the families regarding green products was
found to be moderate. Contrary to this when they were asked to use green products if given option, majority of the families preferred to do so. This shows their concern towards the protection of their planet earth.

Nicole, et al. (2012) describes future trends in Environmental Education (EE) research based on a mixed-methods study where data were collected through a content analysis of peer-reviewed articles published in EE journals between 2005 and 2010; interviews with experts engaged in EE research and sustainability-related fields; surveys with current EE researchers; and convenings with EE researchers and practitioners. We discuss four core thematic findings: (1) EE researchers are highlighting the importance of collective and community learning and action; (2) EE researchers are placing increased emphasis on the intersection of learning within the context of social–ecological communities (e.g. links between environmental quality and human well-being); (3) a pressing need exists for research conducted with urban and diverse populations; and (4) research around social media and other information technologies is of great interest, yet currently is sparse.

Prasanyaa (2012) attempt to find the awareness on Global Warming among Higher Secondary Students of Coimbatore District, Tamil Nadu, India. The information was gathered through a questionnaire constructed for this purpose. The questionnaire consists of 40 questions related to awareness on Global Warming. The investigator has used normative survey method for the study. A total sample of 200 students was taken for the present study. Stratified random sampling process was followed for data collection based on the gender, type of school and locality. Accordingly, 200 Questionnaires (i.e., 5 x 40 = 200) were distributed among the students. A survey was conducted among 200 respondents using the questionnaire.
The investigator used Descriptive, Differential statistics for data analysis. She used the software “SPSS 11.0” Standard version for data analysis. The data were analysed by using Mean, SD, ‘t’ test. The study examined whether or not awareness is differentiated by factors such as gender, type of school and locality. There is no significant difference between the mean score of the Male and the Female students with respect to their awareness on Global Warming. There is a significant difference between the mean score of the Higher Secondary students in their awareness on Global Warming based on type of school and locality. The Private school students and the Rural school students have better awareness than the Government school students and the Urban students respectively. Vast changes must be made on a global scale, such as stabilizing population growth, reducing consumption rates, adjusting technology, and empowering the communities in managing and planning their environment. Each of us as individuals and collectively must take actions that change our lifestyles towards creating more sustainable environmental systems in our homes and schools.

Rajive (2012) examined the environmental awareness of Senior Secondary school students in relation to sex, residential background and type of school. To achieve the objectives of the present study Environment Awareness Ability Measure (EAAM) developed by Dr. Praveen Kumar Jha (1998) was used to measure environmental awareness of students. The tool measures the level of awareness of students about environmental pollution and its protection, as consisting of five dimensions, viz. causes of pollution, conservation of soil, forest, air, and energy conservation and of human health, wildlife and animal husbandry. There are 51 items on this scale. A numerical weightage of 1 was assigned to the response category of
agree in the case of positive items and disagree in the case of negative items. Thus, on the total scale, the scores of 51 items ranged between 0-51. The total scale gives a composite score of environmental awareness of the student. For this purpose, 800 students of class 11 were taken from the Govt. Aided and Private schools (both from rural and urban) recognized by UP Board and CBSE in the Meerut Province. Environmental Awareness Ability Measure (EAAM) developed by Dr. Praveen Kumar Jha (1998) was used to measure environmental awareness of students. The present study highlighted that in total, there is influence of type of school, sex, and stream on the level of student’s environmental awareness. All these findings suggest to us and to the Government to make efforts to provide proper classrooms, library facilities, environment related books in local language and necessary infrastructure in the form of computers and internet facilities for the students studying in different schools, especially in the rural schools. The teachers in Government Aided schools and rural schools should make more efforts to provide better education and environmental awareness to their students.

Cagri (2011) aim of this study is to introduce an attitude scale in order to define students’ attitudes about environment, recycling, plastics, plastic waste. In this study, 80 attitude sentences according to 5-point Likert-type scale were prepared and applied to 492 students of 6th grade in the Kastamonu city center of Turkey. The scale consists of cognitive, affective, and psychomotor domains. After the factor analysis it was found that they have 3, 4 and 5 factors accordingly. After the reliability analysis the alpha values for cognitive, affective and psychomotor scales are .854, .871 and .826 respectively. As a result, it is found that the scale can be used to define cognitive, affective and psychomotor attitudes.
Karen, et al. (2011) The current study asks how young children judge behaviours that harm the environment as compared to moral transgressions, social-conventional transgressions, and personal choices. This study also questions whether children are more likely to cite biocentric or homocentric reasons when justifying their judgments of environmentally harmful behaviours. To answer these questions, sixty-one 6–10 year olds were asked to judge the severity of various actions that have an impact on the environment. For comparison, participants also judged moral transgressions, social-conventional transgressions, and personal choices. Children judged actions that harm the environment more severely than social-conventional transgressions but not as severely as moral transgressions. When justifying their judgments of these environmentally harmful behaviours, participants were more likely to refer biocentric reasons as compared to homocentric reasons. The findings suggest that children perceive harm to the environment as bad, but harm to humans as worse.

Chris Eames and Miles Barker (2011) provided a perspective on Environmental Education in Aotearoa New Zealand. To contextualise this perspective, it illustrates how environmental, socio-cultural and political imperatives have shaped the development of Environmental Education in this land. These imperatives illuminate the natural history of the country, the connectedness within the worldviews of the indigenous Māori people, the pioneering views of some enlightened European settlers, and tensions between development and conservation. We connect this context with an overview of research in Aotearoa New Zealand into one aspect of Environmental Education – student learning in schools. Examples from
recent research in this area are provided to show how these approaches are contributing to the Aotearoa New Zealand-ness of Environmental Education.

Jelle, et al. (2011) There is a growing interest among scholars in instruments based on environmental worldview. Several studies have used instruments of this kind to compare groups of children or to assess the impact of Environmental Education Initiatives (EEIs) on children’s environmental worldview. When using scales of this nature, it is important to control factors that might blur the true impact of EEIs. One such factor – and which may have been neglected – is personality. This study (n = 957) examines the link between environmental worldview of Belgian adolescents (as measured by the New Environmental Paradigm scale for children – NEP) and their personality (as measured by the Hierarchical Personality Inventory for Children – HiPIC). The results show that adolescents who are willing to take responsibility for their actions and who feel control over the outcomes of their decisions are more likely to have an ecocentric worldview. Furthermore, this study demonstrates that, for Belgian adolescents, egocentrism and ecocentrism are opposite conceptions. All correlations were, however, small and showed no deterministic pattern in the relationship between adolescents’ environmental worldview and personality, indicating that worldviews are not stable or innate characteristics within individuals, but can be influenced by interactions between the individual and its context. Personality traits explained only a very small part of the variation in adolescents’ environmental worldview (.7%), suggesting that they are unlikely to blur the impact of EEIs in worldview-based assessment. This is an important finding as it indicates that the results of studies showing differences in the environmental worldview of different groups of respondents or changes in their environmental worldview as a
result of taking part in an EEI are not artefacts of non-control for personality and that
they may, therefore, reflect genuine differences, changes or impacts.

Kelsie (2011) investigated student views on the relationship between their
environmental attitudes and behaviours and their thoughts about barriers and
motivators to environmentally responsible behaviours. The environmental attitudes
and behaviours of students participating in a classroom-based environmental
education program were measured using two Likert scales that had been tested for
internal consistency and validity using the Rasch polytomous measurement model.
Focus groups were held for students to comment on the results from the two
questionnaires and provide suggestions with regards to the barriers and motivators
influencing their behaviour. The findings of the study support previous research about
the relationship between attitude and behaviour and the students’ comments on the
results provided insight that has not been widely reported elsewhere. Conclusions
were drawn regarding the most significant barriers to specific environmental
behaviours for high school students and how Environmental Education programs
could be designed and delivered more effectively in secondary schools with the aim
of engendering environmentally responsible behaviours in students.

Lou Preston (2011) draw on interviews with graduates from an Outdoor and
Environmental Education course to explore the ways in which their environmental
ethics changed since leaving University. I do this in relation to the graduates’ personal
and professional experiences, particularly in the context of teaching Outdoor
Education and Physical Education in secondary schools. By offering two alternative
readings of graduates’ experiences, this research contributes to existing education
literature about the ‘wash-out effect’ of teacher education courses once beginning
teachers become immersed in schools. In the first reading I find evidence of regulatory and normalising strategies of society and school communities and a ‘plateauing’ of graduates’ engagement with environmental practices. In a second reading, framed by Foucault's theory of power and ethics, I discern acts of ‘tactical’ resistance. This reading foregrounds strategies graduates use to negotiate the constraining spaces of schools.

Mahbub Sarkar (2011) examined secondary students’ environmental attitudes in Bangladesh by employing a standardized environmental attitude scale. The scale consisted of 15 questions rated on a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). 400 secondary students, with equal number of boys and girls from both the urban and rural schools participated in this study. The study found that overall students from both the urban and rural areas expressed favourable environmental attitudes with girls having a significantly higher level of favourable environmental attitudes than boys; in particular, rural girls had the highest level of environmental attitudes comparing among others. This paper discussed the scope for further research to identify the gap and relationship between environmental attitudes and environmental behaviours of Bangladeshi adolescents.

Robert & Neus (2011) addressed the question of how Australian Environmental Education (EE) research was conceptualised and contextualised in the decade of the 1990s. Sixty seven articles published by Australian authors in this journal from 1990-2000 were analysed to examine the conceptualization of this research using an inductive emergent categorisation approach and a five frames model (Reid, in press) of key arguments and debates in the field. Contextualisation
was explored in relation to specialist areas, scale and environmental dimensions of focus. A search for a coherent and distinct meaning of this research was explored by making comparisons with International Environmental Education research during a similar time period that was the subject of two reviews. These analyses revealed that Australian Environmental Education research can be characterized as questioning and challenging prevailing (at the time) Environmental Education orthodoxies by critiquing and theorising the conceptual and curriculum framing of Environmental Education, most commonly from a socially critical and global perspective. Specialist areas and educational sectors that received little attention are also discussed.

Sacit (2011) Environmental Education has been viewed as an important way to educate students about environmental issues beginning from pre-school to higher education. This study is a part of this field- namely, undergraduate Environmental Education. The purpose of the study is to explore undergraduate students’ attitudes towards environment after the course “Environment, Human, and Society”. In direction of this basic aim, environmental attitudes of University students were examined according to the gender and faculty type factors. The research was applied at Pamukkale University in School of Foreign Languages during the spring term of 2008-2009 education years. A questionnaire consisting of 2 parts titled personal information and measuring of attitude towards environment was utilized as the means of collecting data. As a result of the study, it could be concluded that undergraduate students had positive attitudes toward environment after the course “Human, Environment and Society”. It was also found that female students were more sensitive toward environment than male students. At the end, some advices were given in relation with environmental researches.
Shivakumar and Vamadevappa (2011) Today man is living in a world of crisis. The social, economic, political and value crisis are some of the threats which are quite alarming. Added to this, in the recent decades, the environmental crisis has become another important factor that has made everyone in the world to think of its gravity. Ever since man has been on this earth, there has been a constant interaction between him and the natural world. In the beginning man lived in harmony with nature, but as his numbers grew and his scientific discoveries and inventions led him on the path of industrialization, he became the predator and his increasing demands on the environment and its resources has led to its exploitation and degradation.

Sylvia and Amy (2011) what is distinctive or indistinctive about Environmental Education in schools and other formal education settings in India? In essence, what is the necessity of Environmental Education in the Indian education system? Our responses to these important questions form the focus of this paper, shedding light on the historical, present and future directions of Environmental Education in India. In effect, we attempt to capture the necessity of Environmental Education by considering practice, policy and research developments throughout the various contemporary and traditional Environmental Education movements. In so doing, we identify a theory-practice gap and a dire lack of research as some of the pertinent issues facing Environmental Education in India. In conclusion we discuss possible future directions that Environmental Education might take in addressing these issues.

Tasos and Konstantinos (2011) An Environmental Education intervention in a University conservation-related course was designed to decrease students’ errors in
consensus estimates for proenvironmental intentions, that is, their errors in guessing their classmates’ proenvironmental intentions. Before and after the course, the authors measured two intentions regarding willingness to contribute money and volunteer work for environmental causes. The false consensus effect, whereby contributors provide significantly higher consensus estimates compared with noncontributors, was displayed both before and after the course. Specifically, students intending to contribute believed most (51%-54%) of their classmates would contribute, and students not intending to contribute believed fewer (28%-35%) of their classmates would contribute. Accuracy in estimating consensus increased significantly after the course. Errors in consensus estimates were significant predictors of behavioural intentions. The study showed that the theoretical and methodological background of Environmental Education interventions can be enriched by incorporating consensus estimates for proenvironmental intentions in assessment procedures.

Xia Ji (2011) what experiences have influenced Chinese educators’ environmental consciousness and their involvement in Environmental Education work? Using the autobiographical inquiry approach the author explored this question with fourteen master environmental educators from various regions of China and examined in depth their Significant Life Experiences (SLE). Participants described several paths to become involved in Environmental Education work. Multiple factors impacted their environmental consciousness. Out of ten main categories of SLE three themes emerged: serendipity, and a strong sense of responsibility towards the environment and toward Environmental Education work. This study illuminates the Chinese necessity of Environmental Education from the angle of life experiences and
Altug Kasalı and Fehmi Dogan. (2010). investigated fifth, sixth, and seventh grade students’ place preferences between indoor and outdoor non-classroom spaces during recess and their activity patterns in these spaces in three private elementary schools. The study explores whether differences in the variety and organization of the spaces of school facilities have an impact on the place preferences of students and whether students are aware of the reasons for their preferences. Students’ place preferences and their activities were determined with field observations and a 30-item questionnaire with Yes/No and open-ended questions. A total of 173 students (n = 51 School 1; n = 70 School 2; and n = 52 School 3) filled in the questionnaire. The Chi-Square test, a non-parametric statistical analysis test, was used to analyze the students’ answers to the questionnaire. The results indicate that students prefer places which offer variety and which are large enough to avoid congestion and that, in general, students are aware of the spatial features of their environments and make choices accordingly. When students are given a choice of outdoor or indoor, they tend to choose according to which is more conducive to their activities. If both outdoor and indoor spaces are conducive, students tend to use both. If neither is conducive to their activities, students either alter their behaviour patterns, for example, developing a preference for stationary activities or staying inside the classroom, or they convert available spaces to accommodate their activities. It is concluded that students are good sources of information in the design and planning of the environments they occupy.
Animesh, et al. (2010) The rapid rate of urbanization in India has led to increasing plastic waste generation resulting in a large amount of plastic waste litter. The focus of the present study is to explore the ideas of senior secondary students about causes, consequences and cure for plastic pollution. The results demonstrated that areas of insecure knowledge are present in many of the students studied. Many of the students are not aware of the fact that eatables wrapped in plastics get contaminated; colour plastic bags are carcinogenic, plastics are produced from hydrocarbons by a process of cracking and are petroleum products. They are also not aware of the fact that dumping plastics hinders percolating of water into the soil, and that plastic is an unsustainable product of fossil fuel. Some misconceptions shown by the students are that recycling of plastic is an eco-friendly process, waste plastic can be dumped into sea and dumping of plastics into sterile land can convert it into fertile land. The students in our high schools today are the corporate directors, decision makers, town planners and consumers of the future. How students perceive the environment today will affect the decisions they make as adults in the future. In order to work towards the goal of sustainable development, it is very important to develop awareness amongst the young on the nature and magnitude of environmental degradation. The solution to overcome environmental problems is to develop a proper attitude through Environmental Education (EE). The goal of Environmental Education is to produce citizens who are knowledgeable about the biophysical environment and its problems, aware of strategies that can be used to deal with those problems, and are actively engaged in working towards their solution (Stapp, et. al., 1969). Traditionally, EE has focused on teaching children about “pristine” environments or “wilderness”. For urban and suburban children, this often means classroom learning from books and wall charts or long bus rides to nature centres and
preserves. Given that the literature indicates that sustained contact with a given place best cultivates children’s environmental knowledge and concern (Sobel, 1996; Hart, 1997; Vaske and Kobrin, 2001), current EE practices may not be the most effective pedagogical approach to creating genuine environmental concern. In a recent study, Haluza-Delay (2001) found that EE built around wilderness experiences might actually diminish environmentally responsible behaviours among suburban participants because these programmes tend to reinforce the separation of pristine nature and the students’ local environments. This finding implies that teaching children about the positive aspects of their local environment would build their sense of caring and connection to the place where they live.

Animesh, et al. (2010) Understanding of secondary level school children about air pollution has been studied using a closed form questionnaire. The ideas explored include the causes of air pollution, its biological and environmental consequences and what might be done to reduce it. The responses of the students to different items in the questionnaire revealed that they are well informed about certain facts like how CFCs, CO, CO2, oxides of nitrogen and sulfur, ground level ozone are air pollutants and how air pollution results in loss of biodiversity and affects human health. A degree of uncertainty in students was also observed regarding the causes and consequences of air pollution. Along with their cognitive understanding, the questionnaire explored students’ views about what they and others could and should do to reduce air pollution. In this they seemed to agree that using cleaning devices and catalytic converters in vehicles, their proper maintenance and using public transport would reduce pollution of air. Although the idea of pollution of air is quite complicated for learners, the results from this survey suggest that the majority of the
children of secondary level were aware of the facts that CFCs, CO and CO2 are air pollutants and natural processes like ocean spray and volcanic eruptions produce air pollutants like oxides of nitrogen and sulfur. Rather fewer students thought that thermal power plants increase air pollution, trees emit volatile organic compounds like terpenes and isoprene that are air pollutants and main components of smog are unsaturated hydrocarbons, oxides of nitrogen and some sulfur compounds. It has been suggested that students tend to think of pollution in a conflated manner, such that all pollutants are seen as producing ‘pollution’, which is then thought of as causing a whole range of environmental problems (Boyes and Stains street, 1996). This thinking may depend in part on the transference of terminology such as ‘pollution’ from a general context, as used in the popular media, into the classroom for use in a formal, scientific context. If so, use of the term ‘pollutants’ rather than the more general ‘pollution’ might be encouraged. Furthermore, there is genuine ambiguity about what constitutes a pollutant. To many, the term ‘pollution’ conjures up a meaning of something that is anthropogenic, produced by industry and therefore ‘unnatural’ (Ali, 1991); whilst the word ‘natural’ seems to imply that something is good and healthy. Under this definition, pollen is not a pollutant. On the other hand, a pollutant might also be seen as anything that causes harm to life, in which case pollen, which can cause harm, amongst other things, chronic ‘pollen asthma’, might be said to be a pollutant. The results of the present study, revealed the maturity of thinking by many of the students about the remedies of air pollution. For example many students affirmed that use of bag filters and electrostatic precipitators in factories, catalytic converters in vehicles, proper maintenance of vehicles and by using public transport instead of one’s own automobiles, air pollution could reduce. In addition, specific misconceptions were revealed. Many children thought that deforestation; use of
sprinklers in agricultural fields, use of steam engines instead of diesel engines, and use of LPG instead of CNG would reduce air pollution. 

Gokan (2010) investigated the effects of Multiple Intelligences strategy and traditional methods of instruction on elementary students’ environmental awareness knowledge levels and their attitudes towards the environment. The pre/post-test control group research model was used in this study. The research was carried out in 2009 – 2010 education-instruction year in Karatli Sehit Sahin Yilmaz Elementary School, Nigde, Turkey. Totally 60 students in two different classes in the 7th grade of this school participated in the study. The data obtained in the study were analysed by the computer programme SPSS 15.0. The arithmetic means and standard deviations were calculated for each group. In order to test the significance between the groups, the t-test was used. The significance level was taken as .05. The results of the research showed a significant difference between the environmental awareness knowledge levels and attitude scores of the experimental group and the control group. It was also found out that the multiple intelligences strategy activities were more effective in the positive development of the students’ attitudes and their environmental awareness knowledge levels. At the end of the research, it is revealed that the students who are educated by Multiple Intelligences strategy have more environmental awareness knowledge levels and have a higher motivation level than the students who are educated by the traditional methods of instruction. It was also found out that the students participated in the experimental process in which Multiple Intelligences strategy was applied, enjoyed the activities, had great fun and they became more aware of the environmental issues.
Mat and Peter (2010) employed a mixed-method design to examine the relationship between nature experience type (e.g., direct and indirect) and learning outcomes (e.g., environmental knowledge, attitudes, and behaviour) associated with an environmental education, international immersion program for adolescents. Longitudinal data from 108 participants and 49 comparison group members were analyzed to test the study’s hypotheses. Additionally, qualitative data were analyzed using grounded theory methodology to assess participants’ perceptions of these processes. The findings indicate that environmental knowledge increased more than environmental attitudes during the indirect portion of the program (i.e., preparatory program) whereas the direct portion (i.e., international workshop) produced similar levels of knowledge and attitude growth. Further, while attitudes were more strongly associated with behavior during the indirect component of the program, the strength of the relationships between attitudes and behaviour, and knowledge and behaviour were similar during the direct portion of the experience. A synthesis of the findings suggests that the program’s direct experiences catalyzed environmental knowledge into a stronger motivating force than it had been during the indirect experiences. The qualitative findings also provide insights into the characteristics of direct experiences. These findings offer important insights for both theory and practice related to the use of direct and indirect nature experiences to develop environmental knowledge, attitude, and behaviours.

Miyoun and Angela (2010) informed by phenomenology and ethnography, explores urban children’s relationship with their urban environment. In what ways do urban children exhibit “insideness” in their sense of place? This study proposes “insideness” as a conceptual construct to understand urban children’s sense of place.
in its ecological and dynamic nature. Employing qualitative research methods, the study explores place stories of urban children who live in low-income, immigrant neighborhoods in New York City. The study finds that as children cultivate their sense of place, they construct “insideness” in their sense of place including 1) environmental understanding (i.e., contextualized, comprehensive, and critical understanding of a place), 2) environmental competence (i.e., knowing how to navigate and engage in a place), and 3) diverse, strong affective relationships with a place. Using “insideness” as a conceptual tool, this study discusses children’s understanding and active and dialogical positionality in the development of their sense of place.

Mustafa Metin (2010) The aim of this study is to develop a general attitude scale about environmental issues (GASE) for students in different grade levels. The research was carried out with the total 1225 students; 409 (33.4%) were primary school students in grades 5, 6, 7 and 8; 408 (33.3%) of the students were in grades 9, 10, 11 and 12 at high schools and the remaining 408 (33.3%) students were undergraduates at a University in Artvin. The study consists of five parts including a literature review, item pool, experts’ opinions, administration of scale and computing the reliability and validity. While constituting the pool of items, 21 students in different levels were asked to write a composition related to the environment and environmental issues. A pool of 46 items has been performed, which are directly concerned with the subject of attitude or accepted to be interested in, from the collected compositions. These were edited to 36 items by the opinion of the experts and the five point Likert draft scale. The draft scale was administered to 1,225 students and as a result of factor analysis, the number of items was reduced to 27. The
Cronbach-Alpha internal integrity coefficient of the final version of the scale was found to be 0.88 after factor analysis was carried out. After computing the reliability of GASE, the scale is ready to be used.

Nikme (2010) Ecosystem degradation is a barrier to achieving the Millennium Development Goals. The Millennium Ecosystem Assessment viewed that the reversal of ecosystem degradation can only be achieved through significant changes in policies, institutions and practices. The need of this aim is required for Meghalaya’s Nokrek Biosphere Reserve, which very recently on the 20th of May, 2009, was included in the 22 new sites from 17 countries by the UNESCO to its World Network of Biosphere Reserves (WNBR). Natural resources are the people’s primary source of livelihood in this Biosphere Reserve. They have no alternative income-generating activities other than shifting cultivation (Jhum cultivation); they are witnessing large-scale erosion and loss of biodiversity of the area, micro climatic variation and massive threat of biosphere degradation. This article employs ‘Environmental Education’ as a tool to meet the challenges of ‘Sustainable Development’ with local plans and actions that would help local people to preserve biodiversity. After the intervention of the project, the villagers seemed to be more aware of the importance and value of conserving natural resources in their village. They learned that forest means more opportunities for their livelihood. They are aware that the “forest” provides their “supplies for sustenance” including the “needs of their children and grandchildren in the future”. But the practice of Jhum cultivation remains a main problem for sustainable biodiversity conservation, further aggravated by lack of basic infrastructures and amenities such as roads, education, health, market accessibility, electricity, means of transportation, water supply (besides the river source), and
empowerment to participate in the political and economic planning. Geophysical conditions of hills, uplands and mountains and inaccessibility of this Biosphere Reserve further cuts it off from the developmental processes. Stagnation in their rural economy and low productivity through Jhum cultivation (with shortened Jhum cycle) is resulting in encroachment on to the prohibited areas. The villagers realize that Jhum cultivation is no longer a sustainable livelihood system. But due to lack of alternate sources of livelihood, they are marginalized with the challenges of both environmental and food insecurity. Besides, these inactive Governmental and Non-Governmental developmental managements, compulsive, unproductive shifting cultivation are the contributing reasons for this twin insecurity. It is because of poverty, that the villagers are silent partners of the practices like plantation of the banned marijuana in the core of the National park, which is thriving due to smuggled returns and severe illegal timber logging by unmindful timber mafias and smugglers.

Patrick and Susan (2010) Research on identity has proliferated in recent decades, particularly within environmental psychology; the physical environment has been shown to have strong connections to a sense of self, and identity has proved to be an important mediator of behaviour. The concept of identity has been defined and measured, however, in a wide variety of ways. The goal of this special issue is to present some of the recent work tying identity to place and behaviour. In our opening essay we describe some of the distinctions among approaches to identity at different levels of specificity and scale and suggest some criteria to determine meaningful sources of identity, including impacts on cognitive processing, emotional responses, and behaviour. Although a monolithic framework is neither practical nor desirable,
we encourage greater conceptual and methodological integration in future research on
the interconnections among place, identity, and behaviour.

Sadik and Sari (2010) aims to investigate primary school student teachers’
environmental knowledge, to find out their attitudes about environmental problems
and to see whether their attitudes vary significantly depending on some variables. As
data collection tools, the Environmental Attitude Inventory and the Environmental
Knowledge Test, adapted by Uzun and Sağlam (2006), were used. The data were
collected in the 2007–2008 academic year. Five hundred and forty-two student
teachers from Cukurova University, The Elementary Education Department
participated in the study. For the analysis of the data, t-test and analysis of variance
were used. The results based on the mean values showed that the Environmental
Behaviour sub-scale was 37.63 and the Environmental Opinion sub-scale was 29.55.
The total score of the Environmental Attitude Inventory was 67.19 and the total score
of the Environmental Knowledge test was 17.08. According to the grade variable, the
meaningful differences were found in favour of the fourth grade students at the
Environmental Behaviour sub-scale and the Environmental Knowledge test. As for
gender, the meaningful differences were found in favour of the female students in the
Environmental Behaviour sub-scale and in favour of the male students in the
Environmental Opinion sub-scale. As for taking the Environment Course or not, the
differences among scores were found to be meaningful in favour of the student
teachers who took this course at the Environmental Behaviour sub-scale.

Taciano and John (2010) Environmental attitudes (EA), a crucial construct in
environmental psychology, are a psychological tendency expressed by evaluating the
natural environment with some degree of favour or disfavour. There are hundreds of
EA measures available based on different conceptual and theoretical frameworks, and most researchers prefer to generate new measures rather than organize those already available. The present research provides a cumulative and theoretical approach to the measurement of EA, in which the multidimensional and hierarchical nature of EA is considered. Reported are findings from three studies on the development of a psychometrically sound, multidimensional inventory to assess EA cross-culturally, the Environmental Attitudes Inventory (EAI). The EAI has twelve specific scales that capture the main facets measured by previous research. The twelve factors were established through confirmatory factor analysis, and the EAI scales are shown to be unidimensional scales with high internal consistency, homogeneity and high test-retest reliability, and also to be largely free from social desirability.

Todd, et al. (2010) examined the similarities and differences among 171 Grade 7-12 science teachers from three different countries (54 U.S, 63 Bolivian, and 54 Turkish) with respect to their attitudes towards Environmental Education (EE) and instructional practices. The instrument employed explored how teachers' knowledge, instructional practices, decision-making process, and cultural features influenced their EE attitudes and praxis. The instrument, which was translated into Spanish and Turkish and then back into English, contained a personal data form that included demographic questions and a three-part questionnaire. Based on the analysis completed, significant differences were found between these three countries with respect to 1) teacher's knowledge about global environmental issues, 2) teachers rationales for including Environmental Education in their science classroom instruction, and 3) while there were no significant differences in the importance of religion in the teachers lives, there were significant differences in the extent to which
teachers reported religion influencing instructional decisions. In addition, there were differences regarding the resources that teachers reported drawing on as they included EE in their classrooms. There were no significant differences found when comparing the three countries with respect to the extent to which each country reported including technological and/or environmental problems in science classroom instruction. Finally, generally there was agreement regarding teachers’ goals and objectives in science classrooms with respect to EE and the most important global environmental problems/threats.

Gary, et al. (2009) Over the course of environmental psychology’s brief history, there has been an interest in ecologically oriented approaches to theory and research. Based on this work, this paper identifies a set of six principles of ecological analysis that present theoretical, methodological, and analytic challenges to future research in environmental psychology. These challenges include the theoretical treatment of the multiple contexts within which human experience and behaviour occurs, the need for sampling both persons and environments, the modeling of moderating and mediating processes, the issue of self-selection into and out of different settings, the necessity of considering temporal factors in environmental research, reliance on single methods (e.g., verbal report) in data generation, cross-sectional and longitudinal research designs, and the need for greater use of statistical techniques developed for contextual (multi-level) research. These issues are discussed and illustrated using recent developments in environmentally oriented research. The paper concludes with a set of 11 recommendations for the future.

Jody, et al. (2009) Do individuals’ perceptions of their interdependence with the natural environment affect their environmental behaviours? From the perspective
of interdependence theory, we introduce a scale to measure commitment to the natural environment. In Study 1, higher levels of commitment to the environment and greater inclusion of nature in the self separately predicted higher levels of pro-environmental behaviour, even when controlling for social desirability and ecological worldview. In Study 2, participants primed to experience high commitment to the environment reported greater levels of pro-environmental behavioural intentions as well as pro-environmental behaviour relative to participants primed to experience low commitment to the environment. Commitment to the natural environment is a new theoretical construct that predicts environmental behaviour.

Marcel, et al. (2009) Understanding proenvironmental consumption behaviour may enable companies to establish reputational and competitive advantages. This study generates new insights by analyzing consumer-related factors related to distinct but connected package-related behaviours regarding beverage consumption: purchase and post consumption disposal. An online survey among 176 German respondents provides empirical support for all but one hypothesis. The results suggest that eco-friendly purchase and disposal decisions for beverages are related to the environmental awareness of consumers and their eco-friendly attitude. Furthermore, consumers are willing to trade off almost all product attributes in favour of environmentally friendly packaging of beverages, except for taste and price. The non supported hypothesis pertains to the expectation that believing in the positive effects of own eco-friendly disposal actions will guide ecological disposal behaviour. Perceived behavioural control may thus not translate into actual disposal behaviour. Underlying this may be the belief that individual actions are not enough to contribute to a greener world.
Aydin Ozdemir and Oguz Yilmaz. (2008). Outdoor school environments are sites for play and physical activity for many children, and shortcomings within these environments are considered significant factors that contribute to children's inactive lifestyles and high levels of childhood obesity. This study explores the associations between the physical characteristics of schoolyards and the physical activity of third and fourth year students in five Turkish primary schools. Data were collected through multiple methods, including behaviour mapping of student activities during recess, physical assessments of schoolyards, and interviews with students, teachers and administrations. The findings show similarities in the landscape features and physical qualities of schoolyards, particularly in the types of play and activities in which students engage. Results indicated that active students who walk to and from schools have lower body mass index (BMI) values than passive students, and students in schools with larger yards have lower BMI values. Most of the students prefer spacious and vegetated yards. A major concern is the crowdedness of the yards during recess that limit children's activity. Schoolyards with advanced landscape features are preferred more, and this in turn affects students’ positive satisfaction. Outdoor school environments have a correlation to health outcomes and should be designed to promote more activity. Improving the physical and landscape qualities of the public schoolyards should be the primary concern of the designers in order to increase awareness of natural environment and more important, increase the health of children.

Christie, et al. (2008) The relation between Kohlberg's cognitive moral reasoning and concern for the environment was measured in 158 college students. Rest's Defining Issues Test and Thompson and Barton's measure of environmental attitudes were administered. Principled moral reasoning, the weighted ranking of
responses at the most advanced level of moral development, correlated positively with ecocentrism (belief in the intrinsic importance of nature), negatively with environmental apathy, and was unrelated to anthropocentrism (belief that nature is important because it is central to human wellbeing). Ecocentrism, the only attitude that has been found in previous research to correspond with environmentally friendly behaviour, was predicted by principled moral reasoning, gender, and college major.

Karen Mrema (2008) Recycling over many years has become of great importance to our society, and especially the environment. It has become an important means of reducing the increasing amounts of waste being sent to landfills each year. Adults, youth and even children can all play a part in contributing to creating a healthier and clean environment. With this in mind, and the fact that Halifax is recognised as having one of the most progressive recycling programs in Canada, the principle objective of this project was to assess student attitudes and behaviour towards recycling in the attempt of increasing recycling participation in the schools. The significance of this project was that we need to start encouraging good habits and behaviours among the youth, to teach them to be good stewards of our environment so as to create a more sustainable environment in the future and for the future generations. The research and analysis of this project was obtained through the use of questionnaires to gather the relevant information from the students. In addition, observations and interviews were also undertaken. Knowledge about recycling and knowing what materials are recyclable was found to be the main factor that influences recycling participation as well as location and instructions on the recycling bins.

Lorraine and Emily (2008) Prior research indicates that the physical classroom environment has the potential to affect children's behaviours, academic performance,
and cognitive development. However, less is understood about the effect on the socio-emotional development of children. This study investigates the potential role of one aspect of the classroom's physical environment, personalization displays, on children's self-esteem. The study employed a classroom intervention in a quasi-experiment to examine the effects of increasing environmental personalization on children's self-esteem. Thirty-eight kindergarteners and first graders in six classrooms of two elementary schools in a rural community of a north-eastern state were assessed on pretests and post-tests of the Self-Esteem Index (SEI) scale and the Children's Inventory of Self-Esteem (CISE) scale. The findings were mixed but encouraging. On both measures of self-esteem, there was a significant positive effect of classroom personalization for first graders. However, for kindergarteners there was a significant positive effect for only one measure, the CISE. Although there are limitations with the study design, the findings suggest that young children's self-esteem may be influenced and enhanced by specific aspects of the classroom's physical environment.

Maryam Larijani and K. Yeshodhar (2008) The present study is an attempt to study the environmental attitude of Indian and Iranian higher primary school teachers in various components. The article tries to answer whether Indian and Iranian teachers differ in their attitude towards environment. A total of 1000 teachers (500 Indian and 500 Iranian) teaching in 6th and 7th standards were randomly selected for the present study. The environmental attitude scale was employed to assess the level of attitude in each component. It consisted of components on Health and Hygiene, Wildlife, Forests, Polluters, Population explosion and Environmental concern. The data on Indian sample was collected in Mysore city and data on Iranian teachers was collected in Hamedan city. MANOVA was employed to find out the significance of difference
between the teachers of two countries as well as male and female teachers. Results revealed that Iranian teachers had most favourable attitude in all the components except in Wildlife. Only in Wildlife Indian teachers had most favourable attitude as compared to their Iranian counterparts. Male and female teachers differed significantly in most of the factors except population explosion, and total attitude scores on implications Environmental Education also stressed.

Peter, et al. (2008) Partnerships for Schools (PfS) is responsible for delivering the Government’s secondary school renewal programme, Building schools for the Future (BSF). PfS is working with local authorities and the private sector to rebuild or renew every one of England’s 3,500 state secondary schools during the 15-year lifetime of the multi-billion BSF programme. PfS’s education and design specialists work with local authorities to develop education visions to create innovative and exciting learning environments for schools. The first new build school, delivered by a Local Education Partnership, opened in Bristol in September 2007. The National Foundation for Educational Research (NFER) has been commissioned by PfS to assess the impact of the school environment on young people’s attitudes towards their education and learning. The research comprised ‘before’ and ‘after’ surveys administered to students in year groups 7 and 8 in this first BSF school. Students were surveyed about their thoughts on their school environment, the learning opportunities available to them and their views on their new school. The evaluation consisted of ‘before’ and ‘after’ surveys to two year groups of students in the first BSF school. The ‘before’ survey was administered to Year 7 and 8 students prior to the opening of the new building at the end of the summer term 2007. The ‘after’ survey was administered to the same year cohorts (now Years 8 and 9), towards the end of the
autumn term, hence there was a period of five months between the two surveys. The
same questionnaire was used in both surveys in order to enable direct comparison of
the student’s attitudes over this time period. A request was made that the survey
should be issued to four of the six form groups in each year group and the response
rates were very encouraging: the total number of students who responded to the first
survey was 193 and 203 students responded to the second survey (approximately 80
and 84 per cent response rates, respectively, from these form groups). In addition, a
short proforma was administered to form tutors for year groups 8 and 9, in the autumn
term, in order to provide retrospective and current contextual information. Eight
tutors (four from each year group) completed questionnaires, and their responses
presented were appropriate throughout the report. On the whole the findings from the
before and after surveys were very positive. There is a good deal of evidence to
indicate that student attitudes had become more positive after the move into the new
school buildings.

Aini, et al. (2007) Environmental Education was first formally introduced to
Malaysian schools in 1986. Its implementation since then has been limited owing to
various constraints facing teachers, and its success in achieving stated Environmental
Education objectives remains uncertain. In view of this, an empirical, exploratory,
descriptive study was undertaken to gauge levels of environmental understanding,
awareness and knowledge, and the involvement of secondary school students in
sustainable consumption practices. A survey was conducted using a self administered
questionnaire with 306 students who were randomly selected from four secondary
schools in the State of Johor, Malaysia. The instrument had sections addressing
demography, sources of environmental information, concept of environment,
environmental knowledge, environmental awareness and concern, sustainable
consumption behaviours and nature related activities. The data illustrate that students were aware of, but only moderately concerned with, environmental issues. Only 10% of the students were able to define environment in terms of a relational conception (as opposed to an object). The adoption of Janikowski’s four principles of sustainable consumption (selection, reduction, maximization and segregation) in their daily living was modest. Environmental Education ‘in’ and ‘with’ nature experiences was found to be minimal among the respondents. The relationship between variables was also investigated. The findings showed that Environmental Education had raised the environmental consciousness of students but was rather ineffective in changing action and behaviour patterns. Ways of enhancing understanding and participation of Malaysian school students in Environmental Education and sustainable development are also proposed.

James, et al. (2007) Using phenomenological analysis, the authors examined the long-term effects of an Environmental Education school field trip on fourth grade elementary students who visited Great Smoky Mountains National Park. The authors’ findings suggest that one year after the experience, many students remembered what they had seen and heard and had developed a perceived pro environmental attitude. The authors discuss the phenomenological analysis, cite interviews with students, and draw conclusions on the effect of the field trip.

Sara, et al. (2007) report the environmental attitudes and knowledge of 765 1st-year students in 3 teacher-training colleges in Israel and examine the relationship between these variables and background factors and their relationship to environmental behaviour. Although the students' environmental knowledge was
limited, their overall attitudes toward the environment were positive. The authors found a positive relationship between the environmental knowledge and environmental attitudes of the students and the level of their mothers' education. Students majoring in fields related to the environment were more knowledgeable and had more environment-oriented attitudes in comparison with other students. The authors discuss the relationship between knowledge, attitudes, and behaviour and the influence of background factors on the students' environmental literacy.

Sebastian Bamberg and Guido Moser (2007) The goal of the present paper is a replication as well as an extension of the Hines et al. [(1986/87). Analysis and synthesis of research on responsible environmental behaviour: Meta-analysis on psycho-social determinants of pro-environmental behaviour. Based on information from a total of 57 samples the present meta-analysis finds mean correlations between psycho-social variables and pro-environmental behaviour similar to those reported by Hines et al. In a second step, the matrix of pooled correlations is used for a structural equation modelling (SEM) test of theoretically postulated structural relations between eight determinants of pro-environmental behaviour (so-called Meta-analytic SEM (MASEM)). MASEM results confirm that pro-environmental behavioural intention mediate the impact of all other psycho-social variables on pro-environmental behaviour (27% explained variance). Results also confirm that besides attitude and behavioural control personal moral norm is a third predictor of pro-environmental behavioural intention (52% explained variance). The MASEM also indicates that problem awareness is an important but indirect determinant of pro-environmental intention. Its impact seems to be mediated by moral and social norms, guilt and attribution processes.
Daphne, et al. (2006) measured the level of environmental behaviour of new students in three major teacher-training colleges in Israel and investigated the relationship between behaviour and background factors. Factor analysis of students’ responses resulted in grouping of environmental behaviour items into 6 categories that represent increasing levels of environmental commitment. Findings indicated that graduates of the educational system who chose to prepare themselves to be teachers were characterized by a low level of environmental literacy, as reflected in their environmental behaviour: Students demonstrated limited performance of behaviours that require a high level of commitment, and hence, reflect a high level of environmental literacy, and visa versa. The authors discuss the influence of background factors on environmental behaviour and its implications for Environmental Education in teacher training. Analysis of responsible environmental behaviour from the viewpoint of environmental commitment may provide an alternative framework for evaluating environmental behaviour.

Gul and Kutret (2006) Today to cope with the changing environmental conditions and the environmental problems, countries separate their budgets to solve these problems. But the easiest way is to sensitize the present generation about environmental problems. Especially Environmental Education has an important role in order to realize this mission. Environmental Education has its origin in the 1960s. Through the decade of the 1970s and into the 1980s, the Environmental Education movement grew rapidly. Education concerning environmental problems was recognized at the World Conference on the Environment in Rio de Janeiro in 1972. These emergences are today evident in Environmental Education. This study was conducted to understand University students’ attitude toward environment and
environmental issues. Also it was examined whether attitude toward environment of students differ significantly based on their socio-economic status. For this study a sample of 225 student teachers was used. The sample composed of 143 girls and 82 boys. Participants included the sophomore students of Faculty of Education at Pamukkale University in Denizli, in Turkey. For the purpose of this study, a survey composed of two section was given to sophomore students. In the first section of the survey, students were asked about demographics, in the second part they were given a scale to measure their attitudes toward environment and environmental issues. The reliability of Environmental Attitude Scale was found to be 0.81. According to the results of this study; students’ attitude towards environment and environmental issues are not very high. Furthermore, environmental attitude of girls is higher than that of boys at a significant level. Mothers’ occupation cause significant differences on students’ attitude towards environment. Although student’s attitude toward environmental issues differ regarding age and number of siblings, attitude toward environmental issues doesn’t differ regarding father’s occupation, parents’ educational level, their house, families’ economic status and whether the students took lesson about environment before. To protect the environment, it is necessary to educate people as individuals who have environmental awareness and knowledge to environmental subjects. Environmental Education has an important role in order to sensitize the present generation about environmental problems. Findings in this study may interest educators and have implications for development in Environmental Education in Turkey.

Kokkarinen and Cotgrave (2006) Shortcomings of current sustainability approaches are discussed with reference to sustainability models. This study attempts
to identify were sustainability efforts are falling short in both the construction industry and higher education institutions through existing literature and proposes a way to overcome these barriers through conceptual and methodological means. Psychological assessment will be used as a way to explore whether the type of psychological profiles built environment students have a relationship with their environmental knowledge. Correlations showed a weak negative correlation between neuroticism, extraversion and ecological world view. The implications of the results are discussed.

Shobeyri and Prahallada (2006) investigated secondary school student’s environmental attitude 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 Taj Environmental Attitude Scale (TEAS) developed by Haseen Taj (2001). Results revealed that there are significant differences between them in environmental attitude across and within two groups with regard to their gender. Also type of school management (Govt. and Private) is a factor, which can affect student’s environmental attitude.

Shobeiri, (2006) reported that there are significant differences between and Iranian teachers in their level of environmental attitude and also the type of school management (Government and Private) is not a factor, which can affect teachers’ environmental attitude.
Abraham.M., & Arjuna, N.K (2005) reported that the boys possess better attitude than the girls in Environmental Education and also noticed that urban students possess better attitude than the rural subjects.

Cara and Sunita (2005) applied constructivist learning theory to Environmental Education to explore knowledge gains, student attitudes, and engagement among high school students exposed to a week-long unit on non native plant species. The authors compared constructivist and traditional teaching methods. Each class was given a pretest and a posttest. The constructivist group significantly increased knowledge scores and attitudes, whereas the traditional group did not. The two groups did not differ significantly on engagement. Karen Malone and Paul Tranter (2005) taken a reflective journey to explore the research methodology utilised in a multi-method, multi-site research study of children’s environmental learning in school grounds in Australia. Informed by an extensive literature review and dialogue with researchers around the world, the study constructed a research design and procedure that could be utilized by practitioners, researchers and academic researchers as the foundation for further research on children’s learning in school grounds. This paper has the specific task of sharing our research story and lessons learnt as a conversation to those who intend to conduct future research with children on school ground greening projects.

Cynthia (2005) The complexities of environmental challenges stress our understandings because current theory and research tools are often too discipline-bound to permit holistic assessment of the interrelationships, interfaces, and overlaps that exist in the environment. Too often, teams of talented faculty members from a number of departments come together to apply for a grant or to establish a new
footprint and discover that the transaction costs of understanding one another and believing in each other’s theories are challenging, to say the least. In addition to the difficulties for faculty members, there is the profound challenge for administrators. Douglas J. Crawford-Brown, Director of the Carolina Environmental Program at the University of North Carolina, Chapel Hill, admits that “deans often fight such programs because they often report to a provost rather than being ruled by those deans.” Dr. Crawford-Brown points out that these cross disciplinary programs upset the balance of power in the University system (Crawford-Brown, 2005). Needs for broader understandings, coupled with political realities, challenge environmental programs Nationwide.

Guillermo Foladori (2005) discussed methodological criteria for Environmental Education. The place of Environmental Education in the curriculum has led to its being considered as a dimension that should cut across different disciplines, instead of offering a corpus of contents by itself. Nevertheless, experience has shown that ecology has systematically filled up the contents of Environmental Education. In the following pages the author try to explain: (a) the reasons why ecology has gained hegemony, as well as the limitations that this approach represents; (b) the place and evolution of the concept of Sustainable Development in relation to the ecological approach; and (c) the methodological importance of the distinction between technical and social relations as a way to improve on the ecological approach.
Mercy Abraham (2005) studied the environmental attitude and pro-environmental behaviours among secondary school children. The study made use of a representative sample of 624 secondary school children. He used environmental attitude scale (DAS) developed by the author for the purpose of the study. The mean and standard deviation for the total sample and relevant sub-samples based on the sex location were computed and the group comparisons were done by applying the two-tailed test of significance for difference between mean, Pearson’s Product Moment correlations. A gender difference was noticed with respect to the environmental attitude of secondary school children; boys possessed better attitude than girls in their environmental attitude.

Vinothkumar and others (2005) conducted a study on the awareness of the Environmental Education of the trainees of secondary teacher training. The sample of the study comprised of 80 male and 80 female. The awareness scale was used as tool to find out their awareness on Environmental Education.

Fontes (2004) outlined briefly some of the factors and forces that have led to the multiplicity of approaches to and the disintegration of the objectives of Environmental Education. It traces the evolution of the understanding of the concept of action competence, and of its application in Environmental Education research and practice in Portugal. The comprehensiveness of action competence allows and requires that Environmental Education integrate separate and sometimes opposed approaches: knowledge, in the form of know that, about the environment and about society; knowledge, in the form of know how, of how to act, individually and
collectively, to bring about change; and the will to act, based on affections and values that impel and sustain action.

Marketta Kytta (2004) Diversity of environmental resources and access to play and exploration have been regarded as the two central criteria of a child-friendly environment (Moore, 1986). The former has been operationalized in this article by the number of actualized, positive affordances (Gibson, 1979; Heft, 1989) and the latter by the degree of independent mobility. A hypothetical model in which the degree of independent mobility and the number of actualized affordances co vary in four varying types of children's environment was constructed. The latter are called Bullerby (the ideal environment), Wasteland, Cell, and Glasshouse. The model was applied in the interpretation of the research data from eight different neighbourhoods of various levels of urbanization, in Finland and Belarus. The subjects (n=223) were 8–9-year-old children, who were studied by using individual interviews and questionnaires. The results indicate that all of the hypothesized environment types appeared in the data. Each neighbourhood had a unique combination of affordances and independent mobility in terms of the model. The Bullerby type of setting abounded in the Finnish communities. The Cell, Wasteland and Glasshouse were the most common types of environment in the Belarusian data. In general, the proportion of Bullerby-type settings decreased and the glasshouse-type increased as the degree of urbanization augmented. The models and measures applied need further elaboration and testing in different environments and with varying groups of children. The co-variation of the actualized affordances and the degree of independent mobility can be considered as a significant indicator in the assessment of child-friendly environments.
Christopher, et al. (2003) integrates themes from psychology and economics to analyze pro-environmental behaviour. Increasingly, both disciplines share an interest in understanding internal and external influences on behaviour. In this study, we analyze data from a mail survey of participants and non-participants in a premium-priced, green electricity program. Internal variables consist of a newly developed scale for altruistic attitudes based on the Schwartz norm-activation model, and a modified version of the New Ecological Paradigm scale to measure environmental attitudes. External variables consist of household income and standard socio-demographic characteristics. The two internal variables and two external variables are significant in a logit model of the decision to participate in the program. We then focus on participants in the program and analyze their specific motives for participating. These include motives relating to several concerns: ecosystem health, personal health, environmental quality for residents in southeastern Michigan, global warming, and warm-glow (or intrinsic) satisfaction. In a statistical ranking of the importance of each motive, a biocentric motive ranks first, an altruistic motive ranks second, and an egoistic motive ranks third.

Selvam, (2003) conducted a study of environmental awareness amongst the trainees. The sample under this study included 360 teacher trainees. The standardized tool of Environment Awareness Ability Measure (EAMM) by Dr. Praveen Kumar Jha was made use for this study. ANOVA was calculated to find out the awareness of trainees on different variables. The major finding of the study shows that in environmental awareness the teacher trainees from both rural and urban areas had significant difference between them in terms of the select variables (gender, age, qualification).
Jeena James (2003) studied on creating environmental awareness among primary school children through “field trip”. The sample selected for the study was 24 children (11 girls and 13 boys). The researcher, to measure the awareness on environmental awareness constructed tools. Pre test, post test, simple group design and t test were calculated using the data obtained. No significant differences were found in the environmental awareness of boys and girls.

Maha, et al. (2003) aimed to (a) assess Lebanese secondary school students' environmental knowledge and attitudes, and (b) explore the relationship between participants' knowledge and attitudes, biographical and academic variables, and commitment to environmental friendly behaviour. Participants were 660 grade 10 and grade 11 students. They were administered a questionnaire to assess their environmental knowledge, attitudes, beliefs, affect, and intentions, and commitment to environmental friendly behaviours. Results showed that participants had favourable attitudes towards the environment but lacked in their environmental knowledge. Environmental knowledge was significantly related to parental education level, and to participants' environmental attitude, beliefs, affect, and behavioural commitments. These correlations, however, were low ($r = .17$ to $.33$) indicating a definite but rather small relationship between these variables. By comparison, participants' scores on the behaviour subscale were significantly and substantially correlated with their environmental affect ($r = .45$) and intentions ($r = .46$) suggesting that environmental intentions and affect might serve as good predictors of commitment to environmental friendly behaviour.
Mark, et al. (2003) Recently, management educators have proposed that colleges of business should enrich their curricula with environmental topics. However, there has been little research assessing how environmental materials affect business students. In this study, the authors examine the effect of a required course using six different measures of environmental concern. They found that business students expressed greater levels of environmental concern on each of the six measures at the end of this course. The authors discuss the results given, the proposals to include environmental topics in business courses and suggest how to incorporate environmental materials into these courses.

Institutional Research Study (2000-02) overall findings from the faculty and staff environmental attitude survey indicated that nearly all of the faculty and staff respondents believe that recycling really helps the environment.

Institutional Research Study (2002-2004) The environmental attitude survey provides evidence that students, faculty, and staff at the University are concerned about the environment. The general attitude towards the environment and current environmental practices of UG students, faculty, and staff are positive.

Antonella and Francesco (2002) The work presented in the present article was carried out for the purpose of evaluating the effects of the limitations imposed on children's autonomy on their acquisition of environmental knowledge. The representation of the home-school itinerary was investigated in 8–11 year old children who travelled along the itinerary in different ways (on their own, accompanied by an adult, on foot or by car). The tasks included a sketch map of the route and drawing the route on a blank map of the neighbourhood. In order to
investigate the role of autonomy in the development of a full understanding of the environment in which they live, the children were asked to use landmarks to find their way around a blank map of the quarter and to mark on it the position of significant components of their environment. The children's freedom of movement in the quarter was investigated by indirect observation. The data were analysed and discussed as a function of the children's method of mobility, their age and gender. The results confirm the importance of the type of individual environment interaction, in particular of freedom of movement, in acquiring, processing and structuring environmental knowledge. Children going to school on their own achieved the best performances in both making a sketch map of the itinerary and in drawing their movements on a blank map of the quarter. Even when the representation of the environment in which they live is taken into account, the key role played by autonomy is confirmed.

Par Lundquist, et al. (2002) developed a mood-rating instrument primarily aimed at identifying effects of noise and other aspects of the classroom environment, that probably are of importance, for the children's scholastic performance. None of the existing mood questionnaires were found to be directly applicable to the target group, viz., children in upper compulsory school in Sweden. An adjective checklist containing 45 mood-describing adjectives was constructed and answered by a group of 280 students. Thirteen of the items had a non-response rate above 10 per cent and were excluded. The remaining 32 items were subjected to factor analyses, and another group of 443 students were used to cross validate the obtained factor structure. The analyses showed that the adjective checklist reflected two slightly negatively correlated latent factors. One factor described task orientation, the other inattentiveness. A questionnaire was constructed containing 12 items covering the
content of these two factors. This instrument reflects important aspects of the classroom climate. It should be easy to administer, quick to complete, and should be useful in studies of the classroom environment.

Pradhan, (2002) conducted a study of environmental awareness among secondary school teachers, it comprised of 283 secondary school teachers. They used survey method of investigation and employed three way factorial (3x2x2) ANOVA test. There is no significant difference between the Social Science and Language teachers in environmental awareness.

Orlando, et al. (2001) an EE infusion model was adopted for this program that included 90 teachers from 18 schools in three regions. The infusion approach taught teachers to address environmental issues in different subject matters. Three types of schools were represented: schools with official curricula, community schools, and PFIE schools (European Union Training and Information Program for the Environment). Students were tested on environmental knowledge and attitude before and after the infusion implementation to determine the effectiveness of teacher training. The sample included 1,975 third and fourth graders and 1,935 fifth and sixth graders. Teachers established three levels of infusion: no infusion, low infusion, and high infusion. Infusion levels were determined by teacher daily activity reports and student notebooks. Results indicated that when class size and teacher experience were held constant, knowledge and attitude scores increased significantly from the pre test to the post test, except for attitudes among third and fourth graders. The knowledge and attitudinal gains were higher than the overall trend among students in classrooms with high-infusion teachers. Third and fourth graders in classrooms with low levels of infusion showed a significant decrease in both knowledge and attitudes. However,
their schoolmates in the fifth and sixth grades showed a significant increase in their measurements. Consequently, lower levels of environmental content infusion affect student knowledge and attitudes differently. Lower levels hinder the performance of students in lower grades, but not students in higher grades. Results also indicate better performance from the pre-test to the post-test among students from community schools. In addition, performance on both knowledge and attitude tests decreased significantly in third and fourth graders in PFIE schools. This drop was mainly due to the poorer performance of students from PFIE schools in two of the regions visited. Implications for improving both teacher and student performance were discussed.

Constance, et al.(2000) In secondary schools in Canada, Environmental Education is rarely infused throughout the highly discipline based curriculum. The various integrated environmental study programs operating in a number of Ontario secondary schools, however, offer an alternative approach which bears some promise. In this paper, we provide a brief overview of the Ontario programs before turning to a case study of one such program, highlighting student perspectives. We conclude by discussing the promises and limitations of these programs, as well as constraints on their implementation.

Edward and Kathleen (2000) The North American Association for Environmental Education (NAAEE) and the Environmental Literacy Council (ELC), in partnership with the National Environmental Education and Training Foundation, sponsored a Nationwide survey of teachers to gather information on how education about the environment is conducted in the classroom. The population for this survey consisted of a random sample of all K (kindergarten)–12 teachers in the United States. Of the 1505 teachers who responded to the mailed survey, 61.2% said that they
included environmental topics in their curriculum. The average time spent teaching
about the environment was 115 hours per year. K-4 teachers were more likely to
report teaching environmental topics (83.0%) than grades 5-8 teachers (58.7%),
grades 9-12 teachers (44.5%), and teachers who taught some combination of K-4, 5-8,
and 9-12 grade levels (43.1%). Almost 70% percent of teachers include
environmental topics in their curriculum (69.4 %), while 4% teach courses about the
environment. Recycling and waste management is the most frequently included
subject, as almost 90% of the teachers include it in their topics. The most commonly
used sources of environmental teaching materials are textbooks (79.1%), the library
(75.9%), and newspapers (74.0%). Journals are used less frequently (26.5%).
Textbooks are the most relied source for teachers of grades 5-8 (88.8%), the library -
for teachers at grades K-4 (87.4%), and newspapers - for teachers at grades 9-12
(83.6%). Groups and agencies (27.0%), the Internet (19.4%), the library (18.2%), and
textbooks (17.9%) were rated most frequently as the “most satisfactory” sources of
materials by the teachers who indicated that they teach environmental topics.
Teachers reported using materials from a variety of suppliers, including
environmental groups; Local, State, and Federal education agencies; Local, State, and
Federal natural resource/environmental management agencies; commercial
publishers; educational groups; and business/industry. About half of the respondents
said they used materials from each of these suppliers. An exception was the materials
from business and industry which was used by about 38% of teachers. The “most
useful” suppliers were educational groups (21.3%), commercial publishers (20.0%),
and Governmental natural resource/environmental management agencies (18.8%).
The main reasons the teachers found suppliers’ material useful was the quality of the
materials. The major ways in which teachers learn about environmental materials
from suppliers were direct mail (26.5%) and word of mouth (23%) Discussion of environmental topics is the most frequent method used to teach environmental topics (about 90%) at all grade levels. Hands-on activities/projects are used by over 90% of K-4 teachers versus 80% for grades 5-8 and 55% for grades 9-12. Problem solving exercises are employed about equally at all grade levels (55%–61%). Teachers of grades 9-12 are much less likely to use fields trips than are teachers in the lower grades. Civic action exercises are the least used method, 3.5% of K-4 teachers report using civic action exercises versus 13.5% for 5-8 and 19.3% for 9-12. Prior to becoming teachers, only about one in ten (10.4%) of the teachers who now teach environmental topics had courses in environmental teaching methods, while 28.9% reported receiving such training since they began teaching. Overall, about a third (39.2%) of teachers of environmental topics have been trained in environmental teaching methods either before or after becoming teachers. Only about 27% of the teachers who now teach environmental topics had courses in environmental science/ecology or environmental studies before they became a teacher, while almost 36% reported receiving such training since they began teaching. Overall, over 60% of teachers of environmental topics have been trained in environmental science/ecology or environmental studies either before or after becoming teachers. Encouraging students to be active in protecting the environment was the reason most frequently cited for choosing to teach about the environment: it was mentioned by 51.1% of the 920 teachers teaching environmental topics. The most frequently mentioned reason for not teaching about the environment was irrelevancy to their curriculum, as reported by 48.8% of the 585 teachers who do not teach environmental topics. “Resistance from parents,” “resistance from school District,” “resistance from school
“Board” and “issues are too controversial” were cited by less than 1% of the teachers as reasons for not teaching about the environment.

Dinakara (2000) and Shaila (2003) reported there is no significant difference between teachers of Government and Private schools in their level of environmental attitude.

Gregory (2000) Since the mid-1990s, Environmental Education has gained the attention of a number of critics. Most prominent among these have been Michael Sanera and Jane Shaw, whose 1996 book, Facts, Not Fear: A Parents’ Guide to Teaching Children About the Environment, has gone through numerous printings. Sanera has also played a major role in raising challenges to State-Level Environmental Education programs. Central to Sanera and Shaw’s criticism is the assertion that the most widely available Environmental Education materials are factually inaccurate and one-sided, favouring the catastrophic version of environmental issues and disregarding research that suggests that problems are less serious or non-existent. Drawing solely upon their review of textual materials, they also assert that many environmental educators are engaged in a process of misrepresentation and indoctrination. Sanera and Shaw propose a three-part solution to the problems they identify: (1) the presentation in school textbooks of multiple science-based perspectives regarding environmental topics, (2) a more detailed exploration of the costs and benefits of strategies aimed at dealing with environmental problems, and (3) an avoidance of any effort to encourage students to become environmental advocates. From their perspective, environmental educators should focus on the science and economics of environmental issues and avoid any reference to connections that exist between environmental problems and broader social or
cultural factors. The critiques of the Environmental Education movement, however, appear to be biased by their funding sources: ideologically-based foundations supported by industries that are deeply involved in manufacturing and extraction and the consequent pollution those industries cause. Moreover, the studies on which those critiques are founded do not appear to stand up to scholarly scrutiny. They make assertions about what students are taught without any evidence of classroom observation, instead relying solely on textbook analysis. Finally, the critics’ efforts to seek legislation weakening State Environmental Education mandates and programs have mixed results.

and Moira (2000) The main focus of Environmental Education programs has been to change environmental behaviour through increasing environmental knowledge. As many environmental studies have failed to apply successfully attitude theory in researching environmental attitudes, the present study investigated the cognitive and affective bases of environmental attitudes to indicate that it is what people feel and believe about the environment that determines their attitudes towards it. The findings suggest that for environmental educators interested in changing environmental attitudes, emotions and beliefs, rather than knowledge, need to be targeted as sources of information on which to base their environmental programs.

Keith, et al. (2000) designed to help teachers in differing national contexts develop approaches to Environmental Education influenced by the arts rather than the sciences and social sciences, adopting a theoretical perspective allowing us to see our environments as “texts” to be “read” and, consequently, reworked. Efforts were made to encourage teachers’ own pedagogic reasoning by involving them in devising, as well as using, teaching materials. Subsequently, the Internet is being used as a vehicle
to encourage more interactive exploration and development of the offered ideas. The work builds on that of Hart, reported in the first edition of the Canadian Journal of Environmental Education, and attempts to show that teachers can be drawn effectively into reconceptualizing their own practice in Environmental Education through active involvement in the development of curriculum materials.

Kristine (2000) The communication of risk assessment uncertainty to the public and to policy makers is a matter of increasing concern and debate. Although both past research and psychological theory predict that presenting information about the uncertainty associated with a risk estimate will increase perceived risk, recent work (Johnson & Slovic, 1995) suggests that it may in fact have a negligible impact on the average response to hazard risks. The present study argues that, when hazards are evaluated in the context of risk-benefits tradeoffs, uncertainty information interacts with individual value differences in its effects on perceived risk. One hundred and seventy-seven subjects evaluated five hypothetical environmental risk scenarios, with probabilistic risk information presented in one of four ways: (1) a single best estimate, (2) a best estimate with a verbal qualification of its associated uncertainty, (3) a numerical range centered on that estimate, and (4) a numerical range with the values explained as the conclusions of two different sources with opposing biases. Average level of perceived risk did not differ across these experimental groups, but type of uncertainty information and the individual's level of environmental concern had an interactive effect.

Monogram (2000) studies on the study of environmental knowledge among the pupils studying science subject at Higher secondary level, they used survey that is
not significant between the girls and boys in environmental knowledge in environmental awareness.

Nicholas and Paul (2000) Outlines some of the benefits that can arise through partnership working between higher education institutions and other local organisations in the environment sector. Aims to contribute to the debate on sustainability by highlighting the capacity for partnerships to “unlock” value retained within single organisations. Argues for the need for more creativity in the ways in which HEIs interact with other organisations in the environment sector, in order to harness mutually-advantageous opportunities. The situation in Northamptonshire (central England) is described and case studies are included to demonstrate some local successful partnership-based projects and to highlight the wider approach. Suggests this approach can offer considerable scope for the personal development of academics and to benefit HEIs, the local communities they serve and the economies they operate within. States, in addition, that partnership working can significantly contribute to the process of sustainable management within HEIs and external organisations by promoting the effective use of human resources, information and finance for environmentally beneficial activity.

Fernandez, et al. (1999) This article is a summary of research carried out on Spanish secondary school students 14–16 years of age, with the intention of finding out what contributions fieldwork makes toward the understanding of concepts and principles of ecology, and also to ascertain the effects of fieldwork on the defense of the studied ecosystem. Before further research was conducted, an exploratory study was carried out consisting of an initial diagnosis of the pupils’ ideas; fieldwork materials were prepared and an ecology unit for the study of a freshwater ecosystem
was designed, along with evaluation instruments. The experimental design was given shape, thanks to work done with two groups of students on whom a more exhaustive study was performed. The independent variable consisted of a field trip; the dependent variable was the learning of ecological concepts and their application to the assessment of an environmental problem. The study combined qualitative and quantitative research methods. A result of the research work was the conclusion that fieldwork helps clarify ecological concepts and intervenes directly in the development of more favorable attitudes toward the defense of the ecosystem. Both components are seen when making valid judgments for the resolution of problems which negatively affect the ecosystem and for showing the way toward the type of actions and solutions which should be adopted.

Florian (1999) established environmental attitude as a powerful predictor of ecological behaviour. Past studies have failed in this enterprise because they did not consider three shortcomings that limit the predictive power of environmental attitude concepts: the lack of a unified concept of attitude. The lack of measurement correspondence between attitude and behaviour on a general level, and the lack of consideration of behaviour constraints beyond people’s control. Based on Ajzen’s theory of planned behaviour, the present study uses a unified concept of attitude and a probabilistic measurement approach to overcome these shortcomings. Questionnaire data from members of two ideologically different Swiss transportation associations are used. This study confirmed three measures as orthogonal dimensions by means of factor analysis: environmental knowledge, environmental values, and ecological behaviour intention. One other measure, general ecological behaviour, is established as a Rasch-scale that assesses behaviour by considering the tendency to behave ecologically and the difficulties in carrying out the behaviours, which depend on
influences beyond people’s actual behaviour control. A structural equation model was used to confirm the proposed model: environmental knowledge and environmental values explained 40 per cent of the variance of ecological behaviour intension which, in turn, predicted 75 per cent of the variance of general ecological behaviour.

Gerard (1999) Considers attitudes towards interdisciplinary working within built Environment Education. The opinions and experiences of senior academic staff from within a single multi-disciplinary faculty (Faculty of Health and Environment, Leeds Metropolitan University) are used as primary research data. It explores three principle issues: course structures – whether radical common programmes are necessary or whether more incremental change will be more effective; the teaching and learning approaches that are most likely to deliver the required outcomes – common studies, shared learning or project work; barriers to further development – staff relationships, faculty structures, resource pressures and external accrediting bodies. It proceeds to offer a comparative analysis of these views and the recommendations of Construction Industry Board Working Group 9 in educating the professional team.

Jennifer, et al. (1999) High school students' environmental knowledge and attitudes were assessed from a questionnaire administered before and after exposure to a 10-day environmental science course. Results indicated significant differences in both knowledge gain and attitudes of students after exposure. Students' environmental knowledge scores increased by 22% after they completed the environmental science course. In addition, students' environmental attitudes became more environmentally favourable. A statistically significant correlation was found between pretest knowledge scores and pretest attitude scores and between posttest knowledge scores
and posttest attitude scores. In both cases, students having higher knowledge scores had more favourable environmental attitudes compared with students with lower knowledge scores.

Niklas and Tommy (1999) A serious threat to human beings and their environment is the continuous and accelerating overuse and destruction of natural resources. Bearing this in mind, it is unfortunate that efforts to permanently change people's environmentally destructive behaviour through interventions has typically not been met with success. A necessary condition may be an increase in environmental concern and knowledge about the effects and consequences of the ongoing environmental deterioration for future generations. Studies are reviewed that have attempted to show (1) correlations between determinants, such as socio-demographic and/or psychological factors, and environmental concern, and (2) an impact of environmental concern on environmentally responsible behaviour. In general, correlations with background factors are weak. Factors affecting behaviour appear to be knowledge, internal locus of control (positive control beliefs), personal responsibility, and perceived threats to personal health. The need for further research that attempts to specify the process leading to environmentally responsible behaviour is highlighted. A new framework is presented which integrates some of the previous research.

Tina and Jayne (1999) Project GREEN (Garden Resources for Environmental Education Now), a school garden program, was integrated into the curriculum of seven elementary and junior high schools in Kansas and Texas. The objective of the study was to evaluate whether students participating in garden activities were gaining more positive attitudes about environmental issues. Students’ environmental attitudes
were significantly more positive after participating in the school garden program with post-test mean scores 0.26 points higher than the pre test mean scores. Demographic comparisons indicated that female and Caucasian students, as well as students from rural areas, had more positive environmental attitudes after participating in the garden program compared to other students within each respective group.

Institutional Research Study (1999-02) overall findings from the student environmental attitude survey indicated that nearly half of the student respondents are “very” concerned about the environment. In addition, nearly all of the student respondents believe that recycling really helps the environment. Findings indicated that on campus student respondents recycle significantly more aluminum cans and plastic products than their off campus peers. Almost three quarters of the student respondents believe that it is somewhat easy to be environmentally friendly at the University.

Gakhar and Bindu Kalra, (1998) reported the “Environmental Awareness among the urban and rural senior secondary school students in relation to intelligence and socio economic status” It comprised of 100 students of XI std, the correlation and ‘t’ ratios were worked in this content the significant positive relationship between the variables of intelligence and environmental awareness in case of both urban and rural sample.

Pareek&Asok Kumar Sidana (1998) conducted a study on environment awareness among secondary school students. They used the descriptive survey method. A sample of 1000 students was used, analysis and interpretation was given
in the study. His findings were the level of awareness among students came out to be
good (i.e., student’s pose). Enough knowledge about various aspects of environment.

Bhattacharya, (1997) studied environmental awareness among higher
secondary students of science and non science streams. A measure of environmental
awareness developed by Singh and Rao was used to collect the data and the collected
data were evaluated mean, standard deviation and ‘t’ test. Students belonging to the
science discipline were comparatively better in terms of their environmental
awareness as compared to non science students.

Franz and Michael (1997) Secondary school pupils of rural and urban
residencies in Bavaria were monitored with respect to their environmental perception
by focusing on factor analytic structures, this study surveys attitudinal and
behavioural preferences. A total of about 2400 pupils aged between 11 and 16 years
from two types of residential location responded to a paper-and-pencil questionnaire
and rated the items on a multiple-choice Likert-scale. Additionally, an 1100-pupil
sample of suburban residency was included in the study. The variables covering
conservational attitudes and attitudes towards exploitation of nature as well as
reported environmental behaviour (environmental action and verbal commitment)
were taken from a previous study. The study yielded two main findings: first, there
were no differences between the responses of the three groups, except on the
dimension for ‘Verbal Commitment’; the urban and suburban pupils professed a
stronger verbal commitment to their environment than did rural pupils. Second, rural
pupils' self reported verbal commitment to their environment was significantly less
than their self reported environmental action; urban and suburban pupils do not differ
in their verbal commitment and their reported environmental action. Potential reasons
for this discrepancy as well as consequences for educational approaches were discussed.

Michael A. Tarrant H. Ken Cordell (1997) Five different environmental attitude scales were regressed on an 11-item self-reported general environmental behaviour index derived from a confirmatory factor analysis. Correlations between each of the 5 attitude scales and the behavioural index were computed and a Fisher's Z-transformation was used to test for the effect of six respondent characteristics (gender, residence, education, income, age, and political orientation) on the attitude-behavior correlations. Although all of the five scales were significantly correlated with the behavioral index (p < .001), correlations for some attitude scales were highly affected by respondent characteristics. Of the 5 scales examined, the Environmental Concern (EC), New Environmental Paradigm (NEP), and Awareness of Consequences (AC) scales were associated most strongly with behaviour, but the EC and NEP also were significantly affected by respondent characteristics. Implications for future studies and use of the scales are discussed.

Ravindranadhan, (1997) conducted a study of the scheme of environmental orientation to school education. The sample of the study comprised of 230 subjects (Professors, Lecturers, Principals, Head masters, Education officers) from the State of Andhra Pradesh. The tools used for data collection were seven questionnaires. The collected data were treated with percentage. All of them have 30-60% of knowledge in Environmental awareness.

Chris Gayford (1996) A piece of action research is described which involved an alternative approach to Environmental Education with students of 11 to 18 years.
The focus of the work was outside the timetabled curriculum using the school buildings and grounds as a model for environmentally responsible management and behaviour. Emphasis was on adopting criteria which were thought to lead to long-term attitudinal and behavioural change and also those which cast the researcher in a different role and gave a greater sense of "ownership" and control to the participants. The findings suggest that this approach has a good deal to offer in a context where it is becoming increasingly difficult to influence the timetabled curriculum yet where teachers and students feel that the environment is of great importance.

Franz X. Bogner and Manfred G. Wilhelm (1996) The object of this study was to construct a measurement instrument to assess two different environmental world views of adolescents and, additionally, to address the adolescents' verbal commitment and actual behaviour. Using a multiple-choice questionnaire the instrument was designed to identify and measure the existing factors that underlie concern for ecological/environmental problems and behaviour towards environment/nature in the age group of 10 to 16 year old pupils. Within the traditional tripartite model covering cognitive, affective and behavioural components the study selected items that made up the majority of corresponding subscales from various previous studies. Using factor analysis the configuration of the scale's dimensionality was stated. Based on the responses of approximately 2000 Bavarian pupils, subscales were extracted via factor analysis and, subsequently, addressed to different segments of environmental concern ranging from attitudes to verbal commitment and actual behaviour. Correlation coefficients and the standardized Cronbach's $\alpha$-values were also surveyed. Additionally, a Kruskal-Wallis analysis was applied in order to locate the subscales' influences on sociodemographic variables such as gender and age and self-reported
variables such as the pleasure of being a pupil and school performance. The further purpose of the present study is to provide the basis for follow up comparisons of preferences and values in pupils within other countries.

Anthony Weston (1996) If "education" is problematic as such, as radical critics such as Illich and Holt argue, then Environmental Education is problematic too. Despite the seemingly uncontroversial character of the goal of "ecological literacy," for instance, I argue that this notion is deeply flawed: it replaces a living sense of connectedness with a mandated and technical set of skills - perfect for schools, but that is just the problem. In its place I suggest a broader understanding of what we are about as environmentallly-concerned citizens and educators: reconstructing the larger life world in a way more connected to and consistently engaged with the more-than-human world. Schools have a role to play within this reconstruction, but the essential process is much larger and must engage all of us.

Kara and Chan (1996) A postal survey of 992 secondary students in Hong Kong using the Weigel and Weigel environmental concern scale was conducted to investigate their environmental attitudes which were reflected in a readiness to engage in various pro environmental behaviours including paper recycling at school and at home and the use of less tissues and plastic bags. The results indicated that students' expressed great concern about the environment and exhibited a strong willingness to participate in pro environmental behaviour. However, students' over optimism towards technological development and the perceived importance of the benefits of modern consumer goods were two major factors that contradicted their concern for environment. The Pearson correlation coefficient between environmental concern and comprehensive behavioural intention was strong and positive (0.52). Television and
school were cited as major sources of environmental information. Mass media were more important than personal media in the dissemination of environmental information. Female students, older students and students living in private housing held more positive environmental attitudes and were more willing to engage in pro-environmental behaviour. Factor analysis indicated that the environmental concern scale was composed of two factors, personal sacrifice and optimism/issue.

Lucie (1996) According to UNESCO's recent documents, sustainable development is the “ultimate goal of the Man-environment relationship”; thus, the whole educational process should be “reshaped for sustainable development.” In view of the extreme importance of their educational impact, such statements need to be discussed. To which conception of environment, o and of sustainable development does the concept of Environmental Education for sustainable development refer? This article presents theoretical tools that can be used to undertake a critical analysis of these constructs. Finally, the idea of including Environmental Education in the broader scope of an education for the development of responsible societies is considered.

Alexander (1995) The multivariate relationship between environmental attitudes and pro-environmental behaviour was examined. In two studies a structural model linking environmental awareness, emotions, personal-philosophical values, perceived control and behaviour was proposed and tested. The main questions investigated were (a) whether, to what extent, and in which constellation personal belief systems affect environmental behaviour, and (b) the generalizability of the model from two known groups. New instruments were created to measure the model's constructs. Using LISREL VII, Study I confirmed the proposed model. The strongest
effect on environmental behaviour stemmed from personal-philosophical values and emotions. No effects on environmental behaviour stemming from factual knowledge were found. Thirty-nine per cent of the variance in environmental behaviour was explained by the attitudinal components. Study II showed the extent to which persons differ in their environmental behaviour depending on their membership in a ‘green’ drivers’ association, compared with traditional drivers.

Frank, et al. (1993) This review includes an analysis of the 34 Environmental Education studies published since 1974 that attempted to demonstrate changes in environmentally relevant knowledge, attitudes, or behaviours. The authors divide the studies into two major categories in-class and out of class programs and critique the studies' findings and methodologies. Although many of the investigations contained methodological difficulties, some of the findings indicate that future research can refine Environmental Education strategies and curricula.

Arou (1995) indicate that the type of school management have influence on environmental attitude. When the Government school teachers were compared with the Private school teachers they were found to differ significantly in favour of the former group.

Hampel et al, (1995) and Abraham & Nair (1998) also reported a higher environmental attitude in urban population compared to rural subjects. This could be because urban subjects are confronted with more severe environmental problems than the rural that induce higher level of environmental concern in urban subjects than their rural counterparts.
David and Fern (1994) A Statewide survey of Pennsylvanians conducted in 1990 provided data on residents' opinions about ideas contained in the new environmental paradigm (NEP) and behaviours engaged in that are environmentally protective. Although Pennsylvanians expressed support for the NEP, they were not likely to engage in activities that contribute to environmental protection. Correlation analysis revealed that although support for the NEP was predictive of environmental behaviour, the linkages were not strong. Various social characteristics were more predictive of environmentally oriented behaviours than supportive of the NEP.

Hart & Nolan (1992) and Abraham & Nair (1998) stated that the mean environmental attitude score for the boys is significantly greater than that of the girls, it is indicating that the boys possess better attitude towards environmental awareness when compared to girls.

James R. Yount, and Phillip B. Horton (1992) the purpose of this study was to investigate the relationship between factors believed to contribute to the formation of environmental attitudes by college non science majors. Key relationships addressed were the effects of a University environmental studies course on (a) environmental attitudes, (b) the amount of factual information that is brought to bear on an environmental attitude decision (defensibility), and (c) the linkages between the affective and the cognitive domains of freshman and sophomore students. When compared to the control group, the students who attended an environmental studies class did not significantly change their attitudes, but they did exhibit increases in their total \( [F(3, 132) = 5.91, p < 0.01] \) and count \( [F(3, 132) = 4.86, p < 0.01] \) levels of defensibility. These findings corroborate work performed by Kinsey (1978) and Kinsey and Wheatley (1980, 1984). In addition, students in the environmental studies
course who had higher cognitive reasoning scores were more prone to increase defensibility \( F(6, 129) = 3.78, p < 0.01 \). These data imply a linkage between cognitive and affective domains in the environmental attitude decision-making process.

William B. Stapp and Nicholas Polunin (1991) Our world of Mankind and Nature is becoming more and more seriously threatened as human populations and profligacy increase. Yet short of near-future calamity, there should be hope in global Environmental Education as a basis for countering such threats as those of world hunger, acidic precipitation, increasing desertification, nuclear proliferation, ‘greenhouse’ warming, and stratospheric ozone depletion. We need to educate people throughout the world to see these dangers in their global context and to act always within this perspective — be they decision-makers, legislators, or mere private citizens. For their actions and effects compound to make up those of their pandominant species, the likes of which our unique planet Earth can surely never have experienced before, and consequently its all-important Biosphere, constituting virtually the whole of our and Nature's life support, is totally unprepared to withstand. The above means that decisions and concomitant actions at the personal level can and often do affect the globe, to however infinitesimal a degree, and of this all people on Earth should be forewarned, acting on it with clear understanding and due responsibility. Particularly North Americans should realize that their effect is disproportionately large, as they use some 36% of the world's resources although comprising only about 6% of its population. Towards remedying such anomalies and effecting an improved sharing of responsibility among all the world's human inhabitants, an urgent need is, clearly, effective global Environmental Education. We
need a world of concerned people with the knowledge that personal decisions and local actions can affect others very widely, and that each individual human being thus has a role in furthering solutions to environmental, as well as political and social problems. With the need for such thinking and action so clear, and the stakes so very high, why is it that global perspectives are not better integrated into today's educational system? ‘The answer is that the barriers to such integration and concomitant action are many and strong, and due understanding of holism's fundamental importance is barely beginning to sweep our prejudice-bound world.’ These barriers include lack of student interest and pertinent enrolment, lack of international perspective among teachers and in general, and lack of television and other news-media coverage of such real world affairs. A general obstacle lies in the tendency of educational efforts to emphasize differences rather than similarities — scarcely conducive to fostering an interdependent, one-world ethic. Yet global issues should be our ultimate consideration, and holistic practice our means of furthering them for lasting survival. It is clear that we humans no longer have the option of foregoing a global perspective, and that there is dire need for widely-increased global Environmental Education to inculcate greatly-increased respect and concern for the world environment. This is brought starkly to mind on realization that practically all the horrors which now beset our world were known fairly widely already twenty years ago including threats to the stratospheric ozone shield, the ‘greenhouse effect’ on world climate, the effects of deforestation and devegetation with ever-increasing human population pressures, and many more — and that new ones keep on emerging. These latter include build-up of nuclear-waste and other pollutions, AIDS, ever increasing acidic deposition and salinization, flooding of lowlands and other effects of
climatic changes, and further foreseeable problems that are likewise of our own making in being due to human overpopulation, ignorance, and/or profligacy.

Ian Robottom (1987) Ten years on from the landmark Environmental Education conference at Tbilisi, it is salutary to reflect on the extent to which some of the distinguishing characteristics espoused in the nineteen-seventies are manifest in Environmental Education of the 'eighties'. The critical problem-solving interest of Environmental Education recommended in the literature of the 'seventies' was consistent with the social/political concerns of the world community at the time—concerns to which the UNESCO Environmental Education programme was a response. However, this critical problem-solving interest is not commonplace in schools, and still represents a serious challenge to the existing patterns of schooling. Consequently the position that Environmental Education should entail widespread educational reform is nowadays becoming stronger and more evident.

Matthews (1985) The way in which young children aged between six and 11 years are able to represent their journey to school and home area by means of free-recall mapping, verbal description, and the interpretation of large-scale plans and aerial photographs is examined. Children's place 'whereness' and spatial awareness are shown to be influenced by the stimulus techniques used to assess their environmental knowing. Generalization is difficult as children's performances fluctuate dependent upon the place description. When describing their home area children achieve the best results using structured stimuli. Conversely, when recounting their journey to school children are able to recall most detail by free-recall drawing. Verbal reporting appears to inhibit the young child severely, suppressing our understanding of their true environmental capability. What also emerges is that by the
ages of six and seven years many children are able to demonstrate a grasp of intra-
and inter-place relationships, revealing a sound appreciation of ‘objective spatial
thought’. These findings lend further support to those who suggest that by using
inappropriate methods of assessment in the past the young child's capacity to structure
environmental information has been previously underestimated.

Ola and Baruch (1985). The language of decision theory is used to model the
perspectives of two parties in the management of an environmental hazard. These are
(a) individuals whose homes are polluted by radon by-products which thereby pose an
uncertain health hazard and (b) the public authorities concerned about those
individuals' welfare. The analysis provides a way of anticipating ways in which the
perceptions and decisions of these parties are intertwined, as well as how they can
come into conflict. It also suggests ways in which these difficulties might be
ameliorated by altering the respective decision problems. The heuristic value of
modeling decision problems in other contexts is discussed, with brief consideration of
the substantive issues arising with acid rain and seatbelt usage.

Thomas, et al. (1985) Environmental attitudes are conceptualized in terms of
attitude theory as being composed of beliefs and affect towards an object. The
environment as an object is difficult to define and this has implications for the study
of general environmental attitudes. Attitudes are based on values, have horizontal and
vertical structure and tend from general to specific. The overall affect statement is the
summary of this structure. From research done in the United States, it seems possible
to measure global environmental attitudes since five general environmental attitude
scales have reasonable reliability and show some evidence of validity. Environmental
concern appears to be a specific belief which is largely embedded in cognitive
structure and should be considered an opinion rather than an attitude. While changes in this opinion have been documented, it is not clear that environmental attitudes or values have shifted, although attitudes have most probably become more differentiated over the last decade. In the United States positive environmental attitudes tend to show consistency with related beliefs and behaviours. It is concluded that research on environmental attitudes has largely been a theoretical and noncumulative. While it is possible to measure these attitudes, little is known about the basic beliefs, affect or the organization of these components.

Leanne and Carol (1984) This paper reviews selected research on classroom and school environments, using a framework that views schools from three perspectives as places for learning, as places for socialization and as places for psychological development. Studies are included that deal with the impact of noise and classroom design on learning; the relationship between seating position, achievement and status; spatial cognition; the classroom environment and gender role stereotyping; privacy; and density. The need for classrooms to enhance children's feelings of competence, security and self-esteem is also stressed. The goal of the paper is to point out ways in which environmental psychologists can contribute to the improvement of the educational system and to the quality of life in schools.

Christopher (1983) Environmental Education has shown lamentable inertia in scarcely capitalizing on the growth of interest in environmental issues since the 1960s. The present paper explores the general factors contributing to this, which include the failure of environmentalism as a movement to act as a catalyst for Environmental Education, and the problems of attempting to appeal to a wide audience of both specialists and non-specialists who expect different things of
Environmental Education. To day, education about the environment and education from the environment have been dominant, at the expense of education for the environment; and further problems arise in establishing both an educational niche and disciplinary horizons for the subject in order to increase its appeal to educational planners.

Margaret and Asit (1982) Environment can be better managed only if people have understanding and appreciation of it. This can be achieved only through Environmental Education, and that is one reason why Environmental Education is so important and essential at present. Another is to understand our complete dependence on The Biosphere as our only life-support and safeguard it against increasing population-pressures. The basic aim of Environmental Education is to make individuals and communities understand the complex nature of natural and man-made environments resulting from the interaction of their biological, physical, social, economic, and cultural aspects. There are several major requirements which are likely to contribute to its success. These are interdisciplinary, interrelatedness, flexibility, non-dogmatism, problem anticipation, emphasis on problem-solving, and ‘practice what you preach’. Environmental Education alone and by itself will not solve all environmental problems, but Environmental Education is a prerequisite for better environmental management and, ultimately, for safeguarding the Biosphere.