CHAPTER – 2

REVIEW OF LITERATURE

Review of literature is a systematic enquiry done by the researcher in the specific field in order to develop body of knowledge that can enhance the understanding of historical perspective and prevailing trend in the specific selected area of study. It is an essential part of any scientific research study; since it develops researchers understanding and awareness regarding the research work carried out in the past by other researcher in the same area.

A literature review serves two primary purposes; it allows the researcher to demonstrate 'Information seeking ability' and second purpose is it enables the researcher to exhibit the efficiency in reviewing a wide body of work and ability of selecting the most useful sources, there by demonstrating the 'Ability of critical appraisal' (Taylor and Procter, 2008).

The present investigations aimed at studying the environmental knowledge and values of undergraduate students. The investigator while reviewing the available literature reviewed the studies in which environmental knowledge, environmental attitudes, and environmental responsible behavior of undergraduate students were studied. Researcher found three studies focusing on course impact on student's environmental values. Most of the studies were carried out in foreign countries. The researcher could found only nine studies conducted in India which were concerned with the demographic factors affecting environmental awareness or environment responsible habits of students.

The literature reviewed for the present study was divided into the following sections.

2.1 Studies conducted in India

2.1.1 Studies on Environmental Knowledge, Awareness, Attitude and Environment Responsible Behavior.

2.2 Studies conducted Abroad

2.2.1 Studies on Environmental Knowledge, Awareness, Attitude and Environment Responsible Behavior.

2.2.2 Studies on impact of course on environmental values.

2.1 Studies Conducted in India

Gunde and Parit (2015) undertook a study to find out the effect of sex and faculty on Environmental Awareness of the college students. The objectives of the study were:

1. To study the effect of sex on environmental awareness of the college students.
2. To determine the effect of faculty on environmental awareness of the college students.
3. To examine the influence of interaction between sex and faculty on environmental awareness of the college students.

Environment Awareness Ability Measure (EAAM) constructed by Praveenkumar Zha was administered on 300 subjects; 100-100 students from arts, commerce and science faculties, half of them were male and half female. All students were First year college students from Gadhinglaj area of Kolhapur District. The data analyzed by using two-way ANOVA and further analyzed with Scheffe post hoc test. Results indicated that Females have better environmental awareness than the males. 2. Arts students are not significantly inferior to commerce students on environmental awareness. 3. Science students are significantly superior to arts and commerce students on environmental awareness. 4. Sex and faculty are independently affected on environmental awareness, interaction effect is not significant.

Kholi (2015) conducted a study on environmental education, attitude and awareness of students at college level in Nagaland. The objective of the study was to study and compare the attitude and awareness of college students regarding environment. The data were collected from the 19 Colleges of 11 Districts of Nagaland state. The random sampling technique was used for collecting data. The sample constituted of 735 students. A self structured questionnaire and interview schedule was developed to collect the data.

The results revealed that 36 percent of students participated in creating environmental awareness programs, 30 percent did not participated, and 35 percent participated some times. Student attitude towards environment was positive (81 percent), 5 percent had negative, and 15 percent were neutral. About half of the students (52 percent) participated in environmental conservation, 24 percent did not, and 26 percent participated some times. A vast majority of students (92 percent) participated in environmental awareness activities (engaged in mass social works, mass cleanliness drives), 42 percent in mass tree plantations, 48 percent buy eco- friendly products, 55 percent were doing proper waste disposal, 44 percent were participating in environmental seminar and workshops, and 71 percent were doing field study.

Student's awareness about healthy environment in college campus was as follows; 91 percent said that smoking should be banned in college campus, 92 percent said there should be no spitting on the wall, and 92 percent said no chewing tobacco in college campus.

Eighty percent of students showed interest in environmental education subject, six percent showed no interest, and 12 percent said they cannot say. Ninety two percent of students said environmental education was important, eight percent said no.

Thus it can be interpreted that although, only one third of the students participated in creating environmental awareness programs, a large majority participated in environmental awareness activities like tree plantations, buying eco- friendly products, etc and also majority of the students had positive attitude toward environment and showed interest in environmental education subject.

Abbas and Singh (2014) conducted a survey on environmental awareness, attitude, and participation amongst university students. The paper investigated student's environmental awareness, attitude and participation amongst Lovely Professional University (LPU) situated in Kapurthala District of Punjab. The objectives of the study were to

1) find out the level of environmental awareness among students of the university under study

2) examine student's attitudes and sense of responsibility towards the environment and environmental problems and

3) investigate student's participation and level of engagement in environmental activities and protection.

A total of 202 students were selected randomly as sample for the study. The study employed survey method. A Self- structured questionnaire was prepared to obtain information and responses of the sampled population to examine their environmental awareness level, attitudes, concern, and roles towards the environment and environmental protection.

The results of the study revealed that the level of environmental knowledge of the respondents varied from low, medium to high**.** However, out of the total 202 students investigated, only four students fell under the category of low awareness. A number of 69 students fell under the medium category of awareness level amounting to 34.2 percent. The students with higher level of environmental awareness made the largest count of 129 out with valid percent of 63.9. Thus, data from the study generally revealed high level of environmental awareness among the university students.

The study also attempted to find out the attitudes and student's sense of responsibility towards the environment. Their levels of concern were denoted by different degree of strength in attitude from; very worried, worried, sometimes worried, to never worried. It was found that the proportions of respondents who worried about the present status of environmental problems around them carry 38.61 percent which is the largest proportion of the total sampled population. This showed some degree of concern from the students, that they were not only aware of the environmental problems around them, but also had certain feelings towards these environmental issues as a matter of threat. The respondents who were only sometimes worried on these issues carried 30.69 percent. While of those who were of deep concern and were very worried on these problems

carried 29.70 percent. The least of all the respondents` attitudes on these issues fell in the category of those students who were never worried with only 0.99 percent. This proportion is very insignificant. Thus, in general, the study revealed that, students acquired a set of positive attitudes on environment and environmental problems since the larger proportion of their concerns were with the categories of worried, very worried, and sometimes worried, with very least from never worried.

The study also attempted to find out the level of student's participation and involvement towards environmental protection and conservation. This participation in environmental protection could be either direct or indirect.

Direct participation involved students engaging themselves in environmental student's clubs and or organizations carrying out environmental activities. The indirect participation in environmental protection were regarded as individuals being committed to environmental protection and conservation through activities of tree planting, sanitation, proper disposal of waste items and re-use etc. However, the study clubbed all together the direct and indirect participation to environmental protection to determine the participation level in general. The level of student's participation in environmental protection was ranked from Low, Medium to High. Generally, it exhibits low participation in environmental activities and protection. A number of 72 students out of the total 202 respondents amounting to 36 percent fell under low participation. Similarly, 77 respondents with 38.5 valid percent were ranked among the medium category. Thus, combining all together (Low and Medium categories) had a cumulative 74.5 percent. The respondents with high level of participation in environmental activities and protection were 51 with only 25.5 percent. This indicates less number of people participating fully in environmental activities and protection counteracting the high level environmental knowledge and positive attitude.

Thus, result from the study revealed that students had high environmental awareness, and positive attitudes towards environment, but low level participation in environmental protection activities and improvement.

Chutia (2014) carried out a survey on responsible habitual activities for environmental sustainability among undergraduate students. In order to look at the responsible environmental behavior through habitual activities among undergraduate students, this study was undertaken. The objectives of the present study were

1) to study the dimension of responsible environmental behavior among undergraduate students,

2) to measure the responsible environmental behavior among undergraduate boys and girls

3) and also to explore the responsible environmental behavior among undergraduate students of urban and rural locality.

The study was conducted in Nagaon sub-division of state Assam. The sample comprised of 200 undergraduate students selected randomly from different provincialized colleges. A self designed research tool Environmental Behavior Study Scale (EBSS) was administered to collect primary relevant information about daily habitual activities of the students in order to learn responsible environmental behavior. The scoring procedure of each item is different in the scale. One can attain a maximum score of 54 and a minimum of 21. The ranges of score 21-30 imply as unfavorable, 31-44 as favorable and 45-54 as highly favorable behavior towards environment. Descriptive survey method was applied to collect data for this study. The investigator visited all the selected provincialized colleges of Nagaon (Sadar) sub-division and approached the sampled students personally and asked them to fill up the scale as per the guidelines given with.

The results indicated that students mostly showed favorable behavior towards environment. A total of 92 percent undergraduate students and six percent had shown favorable and highly favorable environmental behavior respectively. Only two percent students had shown unfavorable behavior towards environment in this study.

It was observed that a total of 87.5 percent undergraduate boys and 96.15 percent girls showed favorable environmental behavior. On the other hand 8.33 percent of boys and 3.85 percent girls showed highly favorable behavior towards environment and only 4.17 percent of boys showed unfavorable behavior which is '0' percent in case of girls.

Looking at the responsible environmental behavior among the undergraduate students of urban and rural locality it was observed that 1.48 percent urban and 3.08 percent rural students showed unfavorable environmental behavior respectively. On the other hand 92.59 percent urban and 90.77 percent rural students showed favorable behavior towards environment. Similarly 5.93 percent urban and 6.15 percent rural students showed highly favorable environmental behavior respectively.

The results also depicted that there was almost similar mean value between the groups of undergraduate boys and girls regarding responsible environmental behavior. Irrespective of gender and their locality the students showed almost equal type of habitual behavior regarding environment. From the above result it has been observed that whatever the behavior pattern showed by undergraduate students about environment irrespective of their gender and locality was favorable and no significance of difference exists.

Gupta and Gupta (2014) conducted a study on awareness towards electronic waste among college students. The objective of the study was to study the awareness towards electronic waste among college students with respect to gender, academic stream and socio- economic status.

In the study, the investigator used simple random sampling technique for selecting the sample. The sample constituted of 200 students studying in different colleges of Ambala affiliated to Kurukshetra University, Kurukshetra, Haryana. In the study, a scale to measure awareness towards electronic waste constructed by the investigator was used.

Findings revealed that there was no significant difference in the awareness towards electronic waste between the male and female college students. As the mean scores of male college students (68.19) was greater than the mean

scores of female college students (67.51), so it can be concluded that the male students were more aware about electronic waste than female college students.

There was no significant difference in the awareness towards electronic waste between the college students of science and humanities stream. As the mean scores of science stream college students (68.48) was greater than the mean scores of humanities stream college students (67.22), so it can be concluded that the science stream college students were more aware about electronic waste than humanities stream college students.

There was no significant difference in the awareness towards electronic waste between high and low socio- economic status college students. As the mean scores of high socio-economic status college students (68.42) was greater than the mean scores of low socio-economic status college students (67.29), so it can be concluded that the high socio- economic status college students were more aware about electronic waste than low socio-economic status college students.

Thus, it was revealed from the study that although there was no significant difference in the awareness towards electronic waste between male and female students, students of science and humanities stream and between high and low socio- economic status college students but mean score showed that male students, college students of science stream and high socio- economic status were more aware about electronic waste.

Nikhat and Shafeeq (2014) carried out a study on environmental awareness among professional and non-professional undergraduate students of Aligarh Muslim University, Aligarh. The objective of the this investigation was to study environmental awareness among undergraduate students in relation to type of course, gender, socio economic status (SES), religion and academic stream.

The methodology adopted in the study was descriptive in nature. This study used quantitative methods to collect the data on awareness of respondents towards environment. The sample consists of 300 undergraduate students,

150 students from both the professional and non-professional courses of Aligarh Muslim University (A.M.U.), Aligarh. The sample was collected from women's college, medical college, engineering college and various departments of science, social science, arts, and commerce streams of A.M.U. Aligarh. Independent variables were type of course, gender, religion, socio economic status and stream while environmental awareness was a dependent variable. The tool used in the present work was the Environment Awareness Ability Measure (EAAM) developed by Praveen Kumar Jha in 1998. This tool measured the extent and degree of awareness of students about environmental pollution and its protection. The EAAM consisted of five components, viz. (a) causes of pollution, (b) conservation of soil, forest; air, etc., (c) energy conservation, (d) conservation of human health and, (e) conservation of wild life and animal husbandry. There were several items in each component constituting all 51 items on the scale. Each agree item carried the value of one mark and each disagree item carried zero mark, but the negative items were scored inversely.

The result indicated that in professional courses 95 percent of total students have high levels of awareness, five percent of total students had moderate level of awareness and none fell in the category of low level of environmental awareness. In the category of non-professional courses it was found that 27 percent of total students had high level of awareness, 70 percent of total students had moderate level of awareness and three percent students fell in the category of low level of environmental awareness. So we can say that on an average professional undergraduates were more environmentally aware / had high level of environmental awareness in comparison to non-professional under-graduate students. When boys were compared with girls on their environmental awareness, it was indicated that girls were more aware than boys. When students of professional courses belonging to higher socio economic status (S.E.S), middle socio economic status. and low socio economic status were compared with the students of non-professional courses belonging to higher S.E.S., Middle S.E.S. and Low S.E.S respectively on their environmental awareness, it revealed that students of professional courses were more aware than students of non-professional courses belonging to higher S.E.S., middle S.E.S. and low S.E.S.. Similarly, when students were compared on the basis of their

religion, it was found that there was no impact of religion on students over environmental concern. It showed that professional Hindu and Muslim students had equal concerns about their environmental surroundings. Also, science students were more aware than arts students. There was no significant difference between commerce and arts students. Science students were higher in environmental awareness than commerce students. It is evident from the results that all students have a positive effect on environmental awareness but the students of Professional Courses exhibit relatively higher degree of environmental awareness.

Sharma (2014) conducted a study on environmental awareness of college students in relation to sex, rural-urban background and academic streams wise in Himachal Pradesh. In the present research paper an attempt has been made to assess the environmental awareness of students of Govt. Degree College Dharamshala Himachal Pradesh.

In the present investigation convenient random sampling technique was used and 180 students studying in science, commerce and arts streams of undergraduate classes were surveyed. In the present investigation, environmental awareness ability measure developed by Praveen Kumar Jha in 1998 was used to collect requisite data from students. The tool comprised of 51 items and with regards to norms the score 37-51was considered in high, 16-36 in average and 0-15 in low category. The tool was individually administered to the selected sample by the investigator himself.

Result showed that no student was in low category of environmental awareness level. Among male all, the rural male science students had high level of environmental awareness compared to 93 percent commerce and 80 percent arts students. In urban male category, in both commerce and arts stream all students had high level of environmental awareness in comparison to only 93 percent science students. Whereas in case of rural female category, all science students had high level of environmental awareness in comparison to 93 percent commerce and 60 percent arts students. In urban female category, both in science and commerce 100 percent students were in high level of environmental awareness ability scale in comparison to 86 percent arts students.

With regards to effect of sex on environmental awareness, there was no significance difference in environmental awareness ability of male and female students and it was interpreted that male and female students possessed equal level of environmental awareness ability. Also, with regard to area, there was found a significant difference in environmental awareness between rural and urban students and it was interpreted that urban and rural area living makes difference in their awareness level about environment. Also there was found a significant difference between environmental awareness of students belonging to science, commerce and arts streams which showed that academic major plays an important role in creating awareness about environmental issues.

Sivamoorthy, Nalini and Kumar (2013) conducted a study on environmental awareness and practices among college students in Tamil Nadu. The objective of the study was to measure the environmental awareness level and general environmental practices among the college students. For the purpose of collecting primary data, the researcher adopted Standardized scale of environmental awareness ability measure developed by Praveen Kumar Jha in 1998. (EAAM English to Tamil) and self prepared questionnaire on environmental practices. In this research work multi stage sampling method was followed for selecting the respondents from arts and science colleges in Dindigul district, Tamil Nadu. Based on the availability of students only 1st year students were selected. The sample comprised of 210 students.

It was found in the study that vast majority of the students were having high environmental awareness that is 90.47 percent and only 9.52 had moderate and no student had low environmental awareness. Also there was no association between gender and environmental awareness. From this statistical data it was evident that irrespective of gender, students were aware about the environmental protection. Majority of students had moderate level of environment practice. It was seen that there was a significant difference between gender and environment practice. The environmental practice was much high among the female students than male students in the study area.

Also there existed no significant correlation between environmental awareness and environmental practice. Though, environmental education is part of curriculum but students were not practicing commonly in the study area.

Bhardwaj and Behal (2011) carried out a study of environmental awareness and attitude among college students of Delhi. The objectives of the study were to

1) Study the level of student's awareness about environment.

2) Find out the relationship between student's environmental awareness and attitude.

3) Examine the difference in students' awareness and attitude about environment based on: gender, level and academic stream.

Population of the study comprised of all the boys and girls studying in five selected colleges of Delhi. A representative sample of 100 students was taken by using simple random sampling technique. In the sample there were 50 boys and 50 girls. Tools used in the present study to collect the data were Environmental Awareness Ability Measure test, Praveen Kumar Jha and Environmental Attitude tool developed by Dr. N.N Shrivastva and Shashiprabha Dubey.

The results revealed that overall environmental awareness was moderate while environmental attitude was high. There was no significant difference observed between gender towards environmental awareness and environmental attitude.

The significant positive correlation between environmental awareness and environmental attitudes showed that students having more awareness towards environment were having proper attitude towards environment.

There was significant difference observed between different academic stream of students as well as level of study towards environmental awareness and environmental attitude. Science students had more awareness

as well had positive attitude towards environment. There were significant differences among different levels of study. There was found a significant difference in environmental awareness and attitude of undergraduate and postgraduate level of students.

Thus, the study revealed that the level of study improves the level of awareness and attitude regarding environmental issues.

Kose et al. (2011) tried to explore undergraduate students' attitudes towards environment at the end of the course material "Environment, Human, and Society". To achieve this 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. The sample was convenient students who enrolled in the course of Environment, Human and Society during preparatory class. Data in this study were collected from a total number of 376 students. A questionnaire consisting of 2 parts titled 'personal information' and 'measuring attitude towards environment' was utilized as the means of collecting data. It was concluded that undergraduate students had positive attitudes toward the environment as regard to their gender and faculty types. It also made clear that female students were more sensitive toward environment than male students.

Choudary (2010) conducted a study on attitude towards awareness of environmental education among B.Ed. college students in Chennai city. Objective of the study was to study the awareness and attitude of B.Ed college students on environmental education with respect to their gender, medium of instruction, type of college and socio-economic status. Random sampling technique was used to select 404 students from six B.Ed colleges from Chennai city. Self-prepared tool studying attitude and knowledge regarding environment was used for the study.

The results revealed that boys and girls differed significantly in their attitude and awareness of environmental education among the B.Ed college students. Based on the mean value, the females had more awareness and attitude

towards environmental education than boys. Tamil medium students were better in awareness of environmental education than students of English medium of instruction. But medium of instruction did not differ significantly in their attitude towards environmental education. There was found a significant difference in awareness of environment education in three types of colleges. With respect to the type of college, aided college students had poor awareness of environment education, when compared to Government and Private College students. Awareness of environmental education of Government college students was better than the aided and private college students. But there was no difference in their attitude towards environment education.

Students, who had higher Socio-economic status, had higher level of environmental awareness as compared to students from low and average Socio economic status. Also there was a significant difference in awareness of students belonging to low, average and high Socio economic status. But no significant difference in attitude was found.

2.2 Studies Conducted Abroad

2.2.1 Studies on Environmental Knowledge, Awareness, Attitude and Environment Responsible Behavior.

Hardesty, D. (2015) investigated the relationship between local environmental knowledge and environmental concern among college students.

The goal of this project was to answer the following questions: "Does local environmental knowledge influence an individual's level of concern for the environment?" "Does college grade level influence a person's level of concern for the environment?" and "Does degree program types influence a person's level of concern for the environment?"

Two surveys were used in this project: one to measure environmental concern and one to measure local environmental literacy. The survey measuring local environmental literacy consisted of sixteen multiple choice

questions covering the following topics: soil, water, climate, and biosphere. There were four possible choices for each question. The survey measuring environmental concern was the Revised New Ecological Paradigm scale. The NEP consisted of fifteen statements with a Likert response format in which the possible answers were: strongly disagree, disagree, neutral, agree and strongly agree. A short list of demographic information was also created for the participants to answer, which included the following information: gender, age, degree program, years spent residing in Lincoln, NE and grade level.

This survey was published online using the survey creating website Survey Monkey. An introduction to the survey was published along with the survey itself contain information about consent and how to contact the researchers. The introduction also informed the participants that a prize of 20 dollars in cash would be awarded to a random participant who completes the survey. A link to the survey was provided by Survey Monkey, allowing the survey to be sent online to potential participants.

Result indicated that local environmental knowledge is not significantly related to an individual's level of concern for the environment. It can then be stated that local environmental knowledge does not affect environmental concern. College grade level is also displays no significant relationship to an individual's level of concern for the environment and therefore does not affect concern. However, it was found that environmental concern is significantly related to degree program type. Students who major in agricultural sciences tend to display significantly lower levels of environmental concern as compared to humanities, applied sciences/chemistry, environmental studies/fisheries and wildlife, biology.

The root cause of environmental concern is certainly complex. It is possible that many factors play a key role in cultivating concern for the environment within a person, as determined by acceptance of the new ecological paradigm. Surely education plays a role but the type of education is still to be determined.

Althor (2014) conducted a study to understand the environmental values and conservation preferences of tertiary environmental education students studying in Australia. This study explored the values that tertiary environmental education (TEE) students hold for nature and further explores how students believe the conservation practitioners should undertake conservation projects. Objectives of the study were 1) to identify the values that tertiary environmental education (TEE) students hold for the natural environment (henceforth, environmental values) and 2) to identify the attitudes that TEE students hold toward effective conservation decisions (henceforth, decision making attitudes). The Natural Area Values Scale developed by Winter and Lockwood (2004), was used for the study. The survey was carried out using a web-based tool. 301 students were selected for the study.

The results revealed that the vast majority of respondents (99 percent) reported belief in the intrinsic value of nature (the belief that natural phenomenon have a universal value that is independent of humans) ahead of the instrumental value of nature (The belief that natural phenomenon only have values assigned by humans, including spiritual, aesthetic, psychological, scientific and economic values).

Thus results showed that survey respondents hold very high intrinsic values for nature (an average score of 6.57 on a scale of 1-7), very high non-use values for nature (average score 6.29) and low use values for nature (average score 2.72). These results indicate that tertiary environmental education (TEE) students, highly value ethical considerations such as ecocentrism and greater social wellbeing but hold little value for the direct use benefits of natural resources. Importantly, these ethical considerations have a direct correlation to the selections that respondents made for the case study questions. Those respondents with the highest intrinsic values scores, were also the most likely to select the species protection option when asked about conservation case studies.

There were no statistically significant relationships between case choice and respondent demographics. The Pipistrelle case study yielded a single statistically significant correlation; between rural people favoring species conservation over landscape conservation ($p = 0.044$).

Thus, the study revealed that students held high environmental values and rural people were more concerned about species conservation as compared to urban people.

Clinchie. E. Mc. (2014) carried out a survey of University of North Texas (UNT) student's environmental awareness. The purpose of the study was to study the Knowledge and Opinions of students about environment and to find the difference in relation to their gender and academic major (Science and Non-science). The sample comprised of 71 students. The respondents were separated into four main categories: male science majors, female science majors, male non-science majors, and female non-science majors. The research tool included demographic questions, knowledge test (to include pollution, water use, and environmentally-related deaths), opinion scale (whether it was important to care for the environment or not) and free-response questions to study their action in regard to the environment.

The results indicated that students from all categories had average environmental knowledge. The male science students had the highest knowledge and female non-science had the lowest knowledge but there was no significant difference among any of the categories. The opinion of the students for the need to care environment was also average and there was no significant difference between the four categories of students. Open ended questions asked students why caring for the environment was important? The most common answer to this question, among all four categories of students, stated that the planet was theirs. Students commonly said that they lived here, that they needed the earth's resources, and that there was no other place to live. One student wrote "The fabric of society is tied to ecological stability. The basic beauties of the environment need to remain so we don't lose what makes Earth, Earth." This statement spoke to the intrinsic need to preserve the environment, but most students did not echo this sentiment. Most students regarded the environment as the source for the things that they needed in their lives, not something with its own worth or value.

The answers indicating what students did at their homes to care for the environment included recycling, conserving water, walking or carpooling, and using energy-saving appliances. The question that asked students what they did at UNT to care for the environment brought about somewhat similar answers. Approximately 62 percent of students said that they only recycled at UNT and an additional 13 percent of students added that they recycled along with walking to class and conserving water.

Filzah, et al. (2014) from four different universities of Malaysia conducted a study on attitude towards recycling among business undergraduate students in Malaysia. Objective of this study was to probe the recycling behavior among business undergraduate students in Malaysia. Samples of undergraduate business students from the Faculty of Business/College of Business from University Malaya (UM), University Putra Malaysia (UPM) and University Utara Malaysia (UUM) were identified. Convenience sampling method was used for collecting data .The sample size was 370 students.

The result indicated that the attitude of undergraduate business students on recycling was high. The student's behavioral intentions were also found high in relation to recycling.

Based on research findings, it showed that the attitude towards recycling had the highest influence on respondents as compared to other independent variables that is subjective norms, perceived behavior control, behavioral intention and recycling behavior. This implicates that once the respondents possessed a positive attitude towards recycling, the possibility of them to recycle will be higher.

Kong. D. and Ytrehus. E. (2014) carried out a survey on environmental awareness of Shanghai College students. The purpose of the study was to look into the opinions and priorities of the students concerning environmental issues and investigate and analyze the factors which influence respondent's environmental views. The questionnaire had two sections. Section one presented the background about the respondents and section two

measured the understanding level of college students on environmental issues in different respects, which consisted questions like urgency of environmental concerns, idea of renewable energy, the responsibility to protect the environment and favorable rating of renewable energy sources, etc. The questionnaire was conducted among students at Shanghai Jiao Tong University, East China Normal University, Fudan University, and Tongji University in Shanghai China. The survey was conducted in Chinese. The main target population was Chinese students. The total sample size was 753.

This report showed that Shanghai college students in general regard environmental issues with a high sense of urgency. Urban air pollution was regarded as the most urgent problem because the Chinese students had experienced the effects some local environmental problems personally. Global warming was also on average rated as an urgent environmental problem, and females were more concerned about these environmental issues than males do.

When it came to whether environmental concerns should be prioritized over economic growth, 60 percent of the participants completely agreed with this statement. Economic standards seemed to affect the opinion of the respondents; according to the analysis, the higher the family income, the more priority was put on environmental concerns. Similarly, the better developed the hometowns of the students, the more they were willing to prioritize the environmental concerns.

According to the survey, Shanghai college students were in general willing to pay extra for renewable electricity, and the higher the family income of students, the more they were willing to pay for environmental-friendly electric energy, Among all renewable energies, solar power was rated most favorable by the Chinese students. Majority of the respondents regarded that the government has the most responsibility, while the industry also has a lot of responsibility. Only 19 percent respondents hold the opinion that the general public should take the most responsibility. The participants regarded the general public having neither power, influence, nor the resources to take responsibility for the environment protection.

Osman. A. et al (2014) of University Malaysia Perlis and University Teknikal Melaka carried out an exploratory study on the relationship between environmental knowledge and environmental attitude towards pro-environmental behavior of undergraduate business students. The data were collected through a structured questionnaire studying environmental knowledge, attitude and behavior. The sample for the study comprised of 50 undergraduate students. Convenience sampling was used for selecting the respondents. The questionnaire was used as a tool.

The findings of the research revealed that environmental knowledge and environmental attitude were positively related to environmental behavior. Environmental knowledge had significant impact on environmental behavior but environmental attitude was not found statistically significant. The study tried to reveal the link of attitude, knowledge and pro-environmental behavior of undergraduate business students and as a basis for future research in the area of environmental studies. This was concluded from the study that increased knowledge would bring more responsible choices which in turn grow positive attitude and also pro-environmental behavior. However other variables like anthropological background, family education, and social awareness and so on can be considered for explaining pro environmental behavior.

Erdogan (2013) conducted a case study on Environmental Worldviews in Higher Education on Turkish College Students. This study was designed to explore the nature of Turkish college students' environmental worldviews and test hypothesized relations on environmental views, environmental course status, gender, school status and socio-economic status. A sample of 1295 undergraduate students from four Turkish universities was selected for the study and their views were measured on 25 statements. A self-administered survey questionnaire was used to collect the data. Study findings indicated that 56.5percent of students hold pro-environmental views while 24.6percent embrace views associated with the dominant social paradigm and 18.8percent have ambivalent views. Results provided partial support for the hypothesized relationships. Female students, students with low socio-economic status and first-year students have higher pro-environmental orientations. Taking a course on environment makes only

slight difference in opinions. It was concluded that students' environmental orientations change varying extent according to gender, socio-economic status and education which are probably determined by the historical and cultural context and characteristics of the population under study. Results suggest that there exists a reasonable level of environmental awareness; however university policies and practices on the environmental education and issues need to be reassessed and geared toward cultivating environmental sensitivity.

Heyl. M., Moyano. E. (2013) conducted a study on environmental attitudes and behaviors of college students. The aim of this research was to study the influences of gender and class in university engineering students on environment attitude and pro-environmental behaviors.

For convenience, first, third and sixth year students were asked to take part in the research. Surveys were sent, via mail. The final sample consisted of 383 students. Two instruments were used for the study, one to assess environmental attitudes and another to assess pro-environmental behavior.

The results showed that university undergraduate engineering students on average have positive environmental attitudes. Overall, recycling, water and energy consumption are those with higher average scores on environmental attitudes.

The pro- environmental behavior showed a slightly positive average, and is within the range of environmentally positive behaviors (albeit it is very low). The most common behaviors were "closing the taps" and "putting lights out". While the least common ones were "participation in activities" and "recycled paper". Actions that were carried out less frequently were in many cases those that perceived to require more effort, such as cycling, buying organic products and participating in activities related to the environment. With regard to the class, there were no significant differences in environmental attitudes and behavior. Significant differences were found for the environmental attitudes variable with regards to gender, but only among students in their first year. More pro-environmentalism was observed in females than in males.

Rideout (2014) conducted a study on environmental awareness of students of The Liberal Arts College. The purpose of this research was to explore student endorsement of an environmental worldview during the college years. The participants for this study were selected from Ursinus College, a private, 4-year Liberal Arts College in southeastern Pennsylvania (US). This report focused on fresh students and seniors. Most data were collected by systematically sampling from alphabetical lists of resident students from the respective classes over the five year period. The sample comprised overall 779 participants. The survey instrument included the New Ecological Paradigm (NEP) scale, demographic items, and other measures, such as knowledge, and worry over, climate change, and perceived priority for environmental issues.

Results indicated a low pro-environmental level of endorsement among the sampled undergraduates. Women showed higher NEP level of endorsement. Year of sampling had a significant effect that was restricted to one year and appeared to represent a negative effect of the recession on environmental concern. There was no significant difference by class status and academic major. Knowledge of the cause of global warming was at a relatively low level. Knowledge of definition of carbon footprint, showed higher levels of understanding. Despite higher levels of NEP scores, women showed paradoxically lower levels of performance on these two knowledge questions.

Students in general felt that the lack of an environmental component did not indicate that the college thought these issues were unimportant, but more than half felt that if there were such a component, it would increase their belief in the importance of these issues

Karahuseyinoglu. (2013) carried out a study on University students' athlete's attitudes towards environment in Turkey. The major objective of the study was to study attitudes towards environment of students who receive education in different Universities and do sports in various branches in Turkey. The independent variables taken in the study were gender and branches of sports. The sample of the study comprised of 304 students. The students were selected by random sampling method. Survey method was used to collect the data. Environmental Attitude Scale by Uzun and Saglam (2006) was used as tool.

The results indicated that female sports students had higher environmental attitude score than male students and footballers showed highest environmental attitude score and wrestlers showed lowest.

Koutoubi, Harrington, and Garrett (2011) carried out a study on environmental knowledge of college nutrition students. The objective of the study was to assess the environmental knowledge of college nutrition students in regards to: Global Warming, Genetically Modified Organisms (GMOs), Sustainable Food Systems, and United States (U.S.) Organic Standards. Seventy-two undergraduate students of Science in Food Science and Human Nutrition at Washington State University were selected a sample. Environmental Knowledge Questionnaire (EKQ), developed by the investigator was administered to collect data.

The findings of the study revealed that the overall environmental knowledge among college nutrition students was low. Overall knowledge comparing juniors at the beginning of the school year to seniors at the end of the school year was statistically significantly. When comparing Juniors-Beginning to Seniors-Ending, there was statistically significant increase in environmental knowledge in the GMOs, Sustainable Food Systems and Organic Standards sections. There was no statistically significant improvement in knowledge in regards to the Global Warming

Mustafa, H. and Ronzi, Y. (2011)looked into the effectiveness of a campaign at the University Sains Malaysia for a compulsory ban on disposable plastics. Although there was high awareness of the 'Say No to Plastic Bags' campaign, and moderate compliance on campus, whether a compulsory approach would maintain the desired behaviours off campus and over time. They surveyed a sample of 300 first year students and conducted in depth interviews after two years with eight students who were involved in the earlier survey. The impacts of the campaign were moderate based on the level of knowledge, attitude and practice of the students. The compulsory approach caused a minimal level of cognitive dissonance, inconsistent practice outside the campus and the possibility of discontinuation of practice in the long run, but the differences were not significant. Based on the follow up interviews, the study concluded that knowledge alone is insufficient to

motivate long-term behaviours. More important to maintain behavior change is a strong positive attitude towards the issue and continuous support from family and friends.

Tartiu (2011) conducted a case study on attitude and knowledge of college students from Bucharest Academy of Economic Studies regarding municipal waste. The objectives of the study were to study 1) the level of knowledge and awareness regarding municipal waste among students from Bucharest Academy of Economic Studies (BAES), their attitudes and willingness to act in waste related activities, 2) if there are significant differences regarding student's awareness, knowledge and concern according to their gender, age, affiliation (faculty) or job status. A self structured questionnaire was used for the study. A random sampling method was used for selecting the sample. The sample comprised of 257 students.

The findings of the study showed that majority of the students were aware of waste problems. Majority (60.32percent) of the respondents believed that waste is a risk factor, with consequences for public health and the environment. The results revealed that students wanted the provision of frequent, appropriate and practical information on waste management in order to improve their waste management behavior like waste collection schedule, where to complain if there are problems, proper handling of different kinds of waste, and so on.

The results showed that the student's attitude towards the issues of waste was high. The result also indicated that student's attitudes towards waste did not influenced by their faculties and gender. It was found that 68.48 percent of the respondents had high attitude towards the management of recyclable waste.

The majority of students suggested that "more special containers" would solve the problem. Another solutions took into account were: larger containers, more publicity on TV/ radio/ newspapers regarding recyclable waste, private companies specialized in collection and sorting waste, more investments in awareness campaigns and so forth. The majority of students, 87.94 percent of respondents were generally concerned about the environment, natural resources and waste management.

The large majority of the respondents reported that they would contribute by separating recyclable waste; 13 percent said they would contribute by paying an amount agreed upon by the community for a waste collection system, recycling and composting scheme; 12 percent emphasized their desire for participative learning, that is learning by doing in relation to waste issues, such as involving in awareness campaigns.

Aminrad et. al. (2010) evaluated the awareness and attitude of a group of 541 Iranian students from 14 Malaysian universities. Stratified Random sampling technique was used for data collection. The results revealed that environmental awareness of the students was moderate while environmental attitude was high. The study also found that there was no significant difference between groups of students based on gender while environmental awareness results indicated that there were significant difference among different levels of education. It was also found that the media positively affected the level of environmental awareness and attitude of students. The study concluded that increase on age and level of education would improve the level of awareness and attitude towards environmental issues

Aydin and Cepni (2010) carried out a case study on University student's attitudes towards environmental problems in Turkey. The purpose of this research was to find out Karabuk university student's attitudes towards environmental problems. A survey was carried out on 931 students from different faculties of Karabuk University. The survey questionnaire ("The Attitude Scale of Environmental Problems") developed by Sama (2003) was used.

The result revealed that university students had high attitudes towards environmental problems. There was found a significant relationship between the university student's attitudes towards environmental issues and gender. So there was a difference in attitudes according to gender. Males had more positive attitude towards environmental problems than females. Attitudes towards environmental issues showed no significant differences by class level variable. University students attitude towards environmental issues had a statistically significant difference by school type.

Dyehouse, et.al. (2010) from Midwestern University conducted a study to find out the effects of resistance to change on student's environmental knowledge and attitudes when leaving high school. The purpose of this study was to examine the relationship between resistance to change and environmental knowledge and attitudes among engineering students just leaving high school.

The design was cross-sectional, and consisted of a baseline survey that was administered to three groups of first-year engineering students at a large in Midwestern University in the fall semester of 2008, 2009, and 2010. The survey was administered online and students were asked to complete the survey as part of their homework in a required first-year engineering course.

The baseline survey was administered using an online survey system, and consisted of several surveys administered at the same time 1) Demographic information, including student's zip codes of their permanent residence. 2) Resistance to Change Scale. 3) Self-reported environmental knowledge and attitudes survey 4) Environmental knowledge survey.

Results showed that over half of the students did not receive any environmental education in high school and that students were most knowledgeable about topics receiving more media attention (for example global warming) than other topics (for example photochemical smog). Cognitive Rigidity was a significant positive predictor of environmental knowledge for all cohorts while other resistance to change subscales was significant negative predictors. Further, results showed a significant relationship between region and resistance to change. These results suggest those students' views about the relevance of environmental knowledge and issues may influence their learning about the topic. Environmental sustainability is a key responsibility of the educated engineer; thus, understanding entering engineering students' levels of environmental knowledge/attitudes in relation to resistance to change could assist pre-college educators in more effectively addressing sustainability in their curricula.

Muderrisoglu and Altanlar (2010) conducted a study on attitudes and behaviors of undergraduate students toward environmental issues. The objectives of the study were 1) to study the differences between the environmental attitudes and behaviors of undergraduate students studying in different faculties in relation to gender and locality. The data for this study were collected from the undergraduate students of different faculties in the cities of Bolu and Duzce in the Western Black Sea Region of Turkey. The sample for the study comprised of 507 students. The New Ecological Paradigm Scale (NEP) developed was used in determining the environmental attitudes.

Findings revealed that students supported the environmental attitudes. However, this support was not high for each item. Majority of the students (81-92 percent) supported environment attitudes statements that were "humans are severely abusing the environment, plants and animals have as much right as humans to exist, if things continue their present course we will soon experience a major ecological catastrophe, and we need to learn how to develop natural sources on earth".

The environmentally responsible behavior that the students highly participated at 64 percent was their preference for mass means of transportation. The reason for this was the economic situation of students in Turkey who cannot afford to buy a car. The students stated that they highly participated in consumerism behaviors followed by recycling behaviors. The least participation was found for the activism behaviors. It was determined that locality had no statistical effect on environmental attitudes and behaviors. In addition, two important relationships are found between environmentally responsible behaviors and gender. The statistically most important relationship was that male students participate more in consumerism behaviors than female students. The second important relationship indicated that female students participate more in recycling behaviors than male students.

Oguz, Çakci and Kavas (2010) conducted a study on environmental sensitivity and awareness of first and fourth year undergraduate students. The first and fourth year students of landscape architecture, town and regional planning and environmental engineering undergraduate programs at universities throughout Ankara, Turkey were selected as participants since these programs' curricula focus on environment. A questionnaire survey was applied to 212 students face to face. Research findings show that even though students take many courses on the environmental issues, their environmental awareness and environmentally responsible behaviors are lower than the expected and students' grades show no significance on the results. It is concluded that environmental knowledge do not always influence awareness and behavioral intentions, a national strategy is needed for environmental education in higher education, and current curricula should be reconsidered in terms of effectiveness.

Flora (2009) conducted a study on the effect of college student's gender and major on beliefs toward organic food in Ohio US State. The major objective of the study was to measure if academic major and gender influence the perception of organic food at Northeast Ohio University. A sample of 217 participants was selected by convenient random sampling for the study. The data were collected by using electronic questionnaire.

The findings of the study revealed that students perceived organic food as being superior to conventional food in every aspect while not knowing the regulations and production of organic foods. There was no significant difference with respect to gender and academic major in relation to their perception of organic foods.

Thapa (1999) conducted a study on the Relation of Environmental Attitudes and Environmentally Responsible Behaviors among Undergraduate Students. The principal purpose of this study was to explore the Environmental Attitudes and Environmentally Responsible Behaviors and to find out relation of environmental attitudes with behaviors of undergraduate students. Data were collected at a major northeastern American university located in a rural setting, in which 540 students selected as sample from

three different departments, namely, Recreation and Park Management; Hotel, Restaurant and Institutional Management; and Science, Technology and Society. Two tools were used for the study 1) New Ecological Paradigm Scale (NEP scale) to asses environmental attitudes and 2) Environmentally Responsible Behavior Index (ERBI). The ERBI was constructed by Smith-Sebasto (1995) to predict environmentally responsible behavior among undergraduate students.

The students showed high support for attitudinal statements "Despite our special abilities humans are still subject to the laws of nature," and "Plants and animals have as much right as humans to exist". The students showed moderate support for the statements "Humans are severely abusing the environment," and "when there is human interference with nature, it often produces disastrous consequences". Similarly, between 51 percent to 64 percent agreed with the idea that "We are approaching the limit of the number of people that the earth can support," and "If things continue on their present course we will soon experience a major ecological catastrophe." There were about 54 percent who expressed support for the statement "The earth is like a spaceship with very limited room and resources," and 65 percent were in agreement with "The balance of nature is very delicate and easily upset." Respondents also expressed some support (62 percent) with the notion "The earth has plenty of natural resources if we just learn how to develop them." However, fewer than 35 percent agreed to the other issues that reflected a cornucopian stance.

Overall, respondents expressed support for the revised New Ecological Paradigm. After the initial analysis (frequencies) was conducted, the NEP was subjected to a principal components analysis and three factors were identified namely, *ecocentric*, *technocentric*, and *dualcentric*.

Ecocentrism preaches the virtues of reverence, humility, responsibility, and care; it argues for low impact technology (but is not anti technological); it decries bigness and impersonality in all forms (but especially in the city); and demands a code of behavior that seeks permanence and stability based

on ecological principles of diversity and homeostasis. The technocentric ideology, by way of contrast, is almost arrogant in its assumption that man is supremely able to understand and control events to suit his purposes. For the purpose of this study, the first factor was named as *ecocentric*, because the items in this factor generally substantiate the claim that the environment is in a precarious position, and the impact of humans can be detrimental to the survival of humankind. The second factor was named *technocentric*, because the items in the factor represent a techno-fix mentality.

Finally, the last factor was named *dualcentric*, because the items in the factor demonstrated a dual equality attitude. This wave of thinking pertains to symbiotic duality of players, humans as well as the earth. The result for ERBI showed that Between 56 percent and 71 percent of respondents indicated they had highly participated (70-90 percent of the time) in recycling (glass bottles, jars, aluminum cans, old newspaper) and separating trash (recyclable and non recyclable). About 46 percent indicated high participation in purchasing products made from recycled material, and 39 percent noted that they avoided the purchase of products in aerosol containers. Also, 29 percent noted that they bought products because it was packaged in reusable or recyclable containers. Similarly, 35 percent said they had highly participated in watching TV programs about environmental issues, and 28 percent talked to others about environmental issues. In regard to low participation (10-30 percent of the time), items that pertained to the political process (investigating and electing officials) received the lowest participation (81-91 percent). Also, enrollment in a course for the sole purpose of learning more about environmental issues received low participation (73 percent of respondents).

Overall, participation in various environmentally responsible behaviors was not overwhelmingly supportive except for recycling issues. However, similar to the NEP, the scale was subjected to a principal components analysis. Four factors were identified and defined. The first factor was named *Consumerism* behavior, because the items in the factors demonstrated

various purchase behaviors. The second factor was called *Activism* behavior, because the items in the factor pertained to actions/activities that advocated environmentalism. The third factor was named *Educational* behavior, because the items reflected ideas/actions about environmental education. Finally, the last factor dealt with issues relating to recycling; hence, it was called *Recycling* behavior.

Now to find out the relation between environmental attitude and behavior, the attitudinal and behavior factors were compared. The result showed that those persons who held ecocentric and dualcentric attitudes were most likely to individually engage in environmentally responsible purchasing behaviors. On the contrary, those individuals who held technocentric attitudes were not likely to participate. Also, those individuals who reported ecocentric and dualcentric attitudes were likely to demonstrate activism behavior pertaining to environmental issues, whereas those individuals with technocentric attitudes were not likely to participate. Those who expressed ecocentric and dualcentric attitudes were more likely than those with technocentric attitudes to engage in environmentally educational behavior. And those with ecocentric and dualcentric attitudes were more likely than persons with technocentric attitudes to engage in recycling behavior.

Overall, college students in this sample were sympathetic toward the environment; they supported the revised NEP ideology. However, in regard to environmentally responsible behaviors, students were not very participative. In fact, campus activism reflected the least participation, and recycling had the highest participation rate. A possible explanation to the recycling phenomenon could be the fact that the region has a very efficient system of collecting recyclable materials on a weekly basis: Residents in the region are provided an orange bin to put out (with recyclable materials) at their main entrance once a week. Hence, it may be a social norm to partake in this activity, and, because the system is in play, it may have become a normal routine for individuals to participate in recycling.

2.2.2 Studies on Impact of Course on Environmental Values.

Graham. B. et al. (2011) conducted a study on evaluating change in student's environmental values as a result of administering an environment course. The objective of this study was to find out the impact of environmental learning in undergraduate design courses. In this practice paper, the "Design and the Environment" course delivered at the University of Newcastle was examined. The course is trans-disciplinary, delivering environmental content to design students. The New Ecological Paradigm (NEP) tool is used in order to observe the effects of this particular subject on the environmental values of students. Students were asked to complete the NEP questionnaire at the initiation and completion of the course. A total of 25 respondents participated in the pre-course assessment and 24 of these completed the post-course assessment. Additional questions were included in the post-course assessment to gauge the potential influence of the environmental course on student's perceptions of their own future design practice.

The results reveal that the students had a high level of existing awareness of environmental issues. There was an increase in post-course awareness across some key areas of the NEP scale which were "We are approaching the limit of the number of people the earth can support", "The so-called ―ecological crisis facing humankind has been greatly exaggerated", "The earth is like a spaceship with very limited room and resources". Thus there were some indications of positive change in perceptions of eco-crisis. In addition, these findings also identify areas which need to be further addressed in environmentally-oriented design courses; namely, issues of development and resource use.

The results from these additional questions post-course indicate positive student perceptions of their ability to apply their environmental learning to their professional design practice.

Humston. R. and Barney. E. (2007) conducted study on evaluating course impact on student environmental values in undergraduate ecology with a Novel Survey Instrument. The purpose of this study was to explore the effect teaching has on the environmental attitudes and values of undergraduate students and to know if student-active teaching approaches have an effect on attitude changes or not. A pre – post survey was carried out. Two survey instruments were used to assess student attitudes at the beginning and at the completion of a course. An established survey instrument (New Ecological Paradigm: NEP) for measuring environmental values and another developed specifically for this study (Environmental Conflict Overview: ECO) querying student perspectives on specific environmental conflicts. These two were coupled to determine if attitude changes were consistent and to assess specific dimensions of attitude changes. This study was done at two quite different institutions, T Phoenix College (PC) and Virginia Military Institute (VMI).The survey was completed by 10 students at VMI and 31 students at PC.

Results indicated a general shift in environmental perspectives among students at both institutions with a corresponding increase in awareness of ecological principles. The change between pre- and post-course suggests that students at both institutes demonstrated more ecocentric attitudes after completing their respective ecology and environmental biology courses.

The largest change in student values indicated a reduced emphasis on economic gains from exploitation of natural resources. Certainly this reflects an increased acknowledgement that those natural resources serve purposes other than exploitation. Changes in student attitudes were relatively consistent across all issues; therefore, the teaching methods used when reviewing the ecology underlying these issues did not specifically effect attitude changes.

Schmidt (2007) carried out a study on the role of environmental awareness on college students. The purpose of this study was to discover the impact of an environmental education course on student attitudes and behaviors. Sample for the study consisted of 115 undergraduate university students,

with 70 subjects enrolled and 45 not enrolled in environment education course. Pre-test/post-test method was used for the study. New Environmental Paradigm (NEP) survey, and a self structured "behavior checklist" were used as tools to study attitudes and behavior towards environment respectively.

Results indicated a significant difference in pro-environmental attitudes and behaviors between students enrolled in the environment course and not enrolled. Students reported higher levels of environmental awareness than students who had not taken the class, while also reporting more environmentally-conscious behaviors. Students not enrolled in the course displayed overall lower levels of environmental awareness. Results implicated an increase in pro-environmental attitudes and environmentally-conscious behaviors for students taking the course. This increased correlation is in the expected direction and magnitude, suggesting pro-environmental attitudes and behaviors are more heavily linked after taking an environmental education course.

Trends analysis

The following research trends emerged from the reviewed literature:

- The researches found were mainly on environmental knowledge and attitudes of school children and teachers but very few on college students.
- Compared to India, more studies on environmental awareness and attitudes have been conducted abroad.
- The studies in India and abroad mainly focused on studying the environmental awareness, knowledge, attitudes and behavioral practices of undergraduate students. Only one study conducted abroad focused on environmental values of students.
- Out of all the studies reviewed, only three focused on impact of environmental course on student's environmental values and knowledge.
- Majority of the researches conducted were exploratory in nature.

- The methods used in the studies reviewed were mainly survey based.
- Questionnaire was used as the research tool in majority of the studies.
- Sample of the studies mainly comprised of university undergraduate students from different faculties.
- In majority of the studies, variables studied were gender, academic major, level of education, place of living and socio economic status.

Research gaps

The research trends discussed above further revealed deficiencies such as:

- In India, there was not a single study which threw light on environmental values of undergraduate students and studied relationship between the environmental knowledge and values.
- The variables like, mass media exposure, civic responsibility and environment education in school level and family type have not been studied.
- Not single study on environmental knowledge and values of undergraduate students was carried out in Gujarat.

Conclusion

This can be concluded from the trends of reviewed literature that:

- General and concise trends of the findings of the studies reviewed showed that there was a moderate to high level of awareness among the undergraduate students regarding environment.
- The attitude of college students towards environment was also found to be positive in many studies.
- The behavioral traits of students were not found to be more environmental friendly.

- There is dearth of research support on relation of environmental knowledge and environmental values of undergraduate students in India in general and in Gujarat specifically.