Chapter-II

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In the previous chapter, Background of the study, Genesis of the problem, Need and Importance of the study, Statement of the problem, Objectives of the study, Education and Environment, Scope of the study are presented. In this chapter a brief review of studies related to Environmental awareness, Attitude and knowledge are presented in this second section.

The review of related literature is an important part of the scientific approach and is carried out in all areas of scientific research. This provides the research the means of getting to the frontier in his particular field of knowledge. It helps to understand the theory in the field and gives knowledge with regard to the procedures and instruments which have proved useful. It avoids unintentional replication of previous studies and keeps the researcher in a better position to interpret the significance of his own results. Thus, it could be seen that the review of related literature is very important and essential step in designing any research work.

In this chapter, review of studies conducted in this area are discussed and presented.
2.1 REVIEWS RELATED TO ENVIRONMENTAL AWARENESS, ATTITUDE AND KNOWLEDGE.

Very few studies were carried out to know the level of environmental awareness, attitude and knowledge among the secondary school students both in India and abroad. A brief discussion of the studies conducted on primary school, secondary school and college students are discussed in the following section.

Sahay, R Mary (2005) attempted to investigate the relationship between Environmental awareness of the secondary school students with the following objectives:

1) To study the environmental awareness among the high school students in Pondichery region.

2) To study the relationship between the environmental awareness of the students in terms of a) gender b) locality of the schools c) medium of instruction d) type of family and e) size of the family.

3) To study the difficulties in the environment of the students in terms of a) caste b) type of school and c) religion.

The sample of the study consisted of 198 students from 10 schools in Pondichery region. The tool used in the study was Environmental opinionnaire which was prepared by the investigator.
The statistical techniques used for data analysis were "t"-test and analysis of variance.

The findings of the investigation were as follows:

(i) Environmental awareness among the high school students is above average.
(ii) The medium of instruction in the school and locality of the school influence the environmental awareness among the students.
(iii) The type of schools and different types of religion do not affect the awareness among the students. (14:33-35)

Sreekumari, K. E. Ajitha Nayar (1998) conducted the study to know the Environmental awareness of secondary school children of Kerala. The following are the objectives of the study:

(i) To compare the Environmental awareness of secondary school students with respect to the following variables; a) locale b) type of institution c) difference in syllabus
(ii) To compare the Environmental awareness scores of government and private secondary school students based on locale.
(iii) To compare the environmental awareness scores of rural and urban secondary school students with respect to the proximity to polluted areas.
(iv) To compare the environmental awareness scores of secondary school students with respect to the educational status of parents.

The sample of the study consisted of 600 secondary school students selected on the basis of stratified random sampling technique. The tools used were: (a) A general data sheet to collect the information related to family background and educational status of parents. (b) An awareness test constructed by the researcher was used to identify the levels of Environmental awareness.

The important conclusions of the study were as follows;

(i) The environmental awareness of students varies with their locality, proximity to polluted areas, syllabus and type of institution.

(ii) The development of environmental awareness is related to the cognitive and affective domain.

(iii) Individual and group activities are necessary to develop higher levels of environmental awareness.

(iv) Syllabus has a major role in influencing the environmental awareness.(15:41-46)
Arjuna, N.K (1996) investigated the environmental attitude among rural and urban students.

The objectives of the study were:

(i) To study the environmental attitude of rural and urban children in high schools of Kerala.

(ii) To understand the components of environment in which children from rural and urban areas are not aware.

(iii) To know the areas in which the students from both rural and urban streams are well acquainted.

The sample of 104 ninth grade students (48 urban and 56 rural) were selected from two high schools of Trivandrum district. The tools used in the study were as follows;

(i) Environmental attitude scale (EAS) by Arjuna et al

(ii) A standardized Environmental awareness test (EAS) developed by the investigator.

The findings of the study were:

a) The urban subjects possess a better attitude towards environment than the rural subjects.

b) The urban subjects had better environmental awareness and attitude in the areas like, sanitation, quality of drinking water, noise pollution, and population explosion and energy conservation than the rural students.
c) The rural subjects had better environmental awareness and environmental attitude on aspects like, deforestation, water resources, soil erosion, ecological adaptations and ecological cycles.

d) The rural and urban subjects had better environmental awareness and attitude on areas like tropic relations, energy crises, biosphere reserves, fossil fuels and ecological pyramids.(1:20-22)

Santhosh Kumar Rout, Sukirti Agarwal (2006) attempted to discover the Environmental Awareness and Environmental Attitude of students of high school levels belonging to science and non-science stream, rural and urban backgrounds with gender differences.

Objectives of the study were:

i) To determine the differences between the students of high school levels belonging to science and non-science stream.

ii) To determine the difference between the students belonging to urban and rural backgrounds of high school levels in terms of their environmental awareness and environmental attitude.

iii) To determine the sex difference in the students of high school level in terms of their environmental awareness and environmental attitude.
The sample of the study consisted of 96 students of (boys and girls) of class X and Intermediate colleges of Moradabad city. To measure the environmental awareness and environmental attitude of students the researcher has used the self developed tools.

The findings of the study were:

i) Students of science stream have better environmental awareness and environmental attitude than the students of non-science stream.

ii) The students of urban backgrounds are comparatively better in terms of their environmental awareness and environmental attitude than the students of rural background.

iii) The male and female students do not differ significantly in terms of their environmental awareness and environmental attitude.(12:25-26)

Sandhya Gihar (2006) has studied the environmental responsibility among students in relation to their sex (male and female), locality (rural and urban) and subject stream (science/arts/commerce). The following were the objectives of the study;
To study the level of responsibility, with regard to a) Pollution and environmental protection among the students of IX and XII classes in respect of sex. b) Pollution and environmental protection among the students of IX and XII classes in respect of their locality c) Pollution and environmental protection among the students of IX and XII classes in respect of their subject streams.

The sample of the study comprised of 154 male and, 146 female, 100 rural, 210 urban, 143 science, 79 arts, and 78 commerce (total 300) secondary level students in Bareilly district of Uttar Pradesh. For the selection of the sample, multistage stratified random sampling technique was adopted. The tools used in the study were;

a) Environmental Responsibility Assessment Inventory (ERAI). The tool was developed and standardized by Gihar, Kukreti and Shah (2002). The statistical techniques used for data analysis were, Mean, Standard Deviation and ‘t’-test techniques.

The findings of the investigation were;

i) Male students were having higher environmental responsible behaviour than the female students.

ii) The students of science background were having higher environmental responsible behaviour than their counterparts.(13:27-32)
Mercy Abraham (2005) undertook a study of Environmental Interest of Secondary School students in relation to their Environmental Attitude. Four hypotheses were proposed as follows:

i) Majority of the secondary school students do not have high level of environmental interest.

ii) There is a significant difference between boys and girls in their environmental interest.

iii) There is a significant difference between rural and urban students in their environmental interest.

iv) There will be significant correlation between environmental interest and environmental attitude of secondary school students.

The sample of the study comprised of 624 secondary school students of Kerala, selected on the basis of stratified random sampling technique. The sample consisted of 306 boys and 318 girls, the rural and urban representation being 339 and 285 respectively. The tools used were Environmental Attitude Scale (EAS) developed and standardized by the investigator. Environmental Interest Inventory (EII) developed and standardized by the investigator. The statistical techniques used for data analysis were ‘t’-test and Product Moment Correlation.
The findings of the investigation were:

i) Only a small proportion of the secondary school students have levels of interest in environmental matters.

ii) A gender difference was noticed with respect to environmental interest of secondary school students, boys are more interested in environmental matters compared to girls.

iii) A locale (rural and urban) difference was also noticed with respect to the environmental interest of secondary school students; urban subjects having more interest in environmental matters compared to their rural counterparts.

iv) There existed high, positive and significant correlation between environmental interest and environmental attitude of the total sample as well as the sub samples based on gender and locale. (8:100-105)

Ifegbesan Ayodeji (2002) conducted a study to find out the views of students on environmental education elements in the junior secondary school curricula in Nigerian schools. The hypotheses tested were:

i) There is no significant difference in the male and female students perception of environmental education in junior secondary school curricula.
ii) There is no significant difference in the JSS II and JSS III students perception of environmental education in junior secondary school curricula.

The sample for the study comprised three hundred junior secondary school students drawn from ten secondary school in Ogun state of Nigeria. Stratified random sampling method was used for the selection of the sample. The tool used was, a questionnaire tagged Environmental Education Awareness and Attitude Questionnaire (EEAAQ) developed by the researcher. The statistical techniques used for the data analysis were Frequency counts, Percentages, Mean, Standard Deviations and 't'-tests.

The findings of the investigation were:

i) Students were not adequately aware of Environmental education elements in the junior secondary schools curricula.

ii) No significant difference was found between the male and female students perceptions of environmental education elements in the curriculum. (5:59-64)

**Shivakumar (2007)** undertook a study with the aim of studying the level of favourable attitude of the students towards environment in relation to their Environmental Education. The hypotheses tested were as follows:
i) The environmental education students have higher level of favourable attitude towards environmental pollution than the non-environmental education students.

ii) The sex of the students influences environmental pollution attitude of the students.

The sample for the present study comprised 120 students studying Post-Graduation Departments of Karnatak University, Dharwad. The experimental group comprised of 60 students studying in environmental course in their respective departments. The tools used were:

a) Environmental Pollution Attitude Scale-developed by Dr. M.Raja Manickam. b) Personal data sheet prepared by the researcher to collect the information. The statistical techniques used for the data analysis were, Mean, Standard Deviations and ‘t’-test.

The findings of the investigation were:

i) Standard environmental education course influences the attitude level of the students towards an environmental pollution and related issues.

ii) There is no significant difference between male and female students in their attitude towards environmental pollution and related issues.
iii) A standard environmental awareness education can be implemented at every level of the course irrespective of the discipline.

iv) Environmental education can be the best tool for the control of environmental pollution. (16:34-36)

Ayishabi, T.C (1999) studied the environmental literature of science and non-science students at Degree level. The following were the objectives of the study:

a) To find out the difference in environmental literacy and the three components of environment, viz. awareness of environment, attitude of environment and reaction towards environmental issues between science and non-science students at degree level.

b) To find out the difference in environmental literacy and the three components of environment, viz. awareness of environment, attitude of environment and reaction towards environmental issues between the students of different subjects under science group and non-science groups.

The sample consisted of 200 science and 200 non-science students comprising a total of 400 final year degree students. The sample was selected from four colleges affiliated to the University of Calicut. The tools used were Environmental Literacy Inventory
(Ayiashabi and Narayan Kutty). The statistical techniques used for data analysis was test of significance of difference in Means between the comparable groups.

The findings of the investigation were:

i) Science students are better than the non-science students in their literacy.

ii) All the science students are similar in their literacy, but among the non-science students, i.e, history students are the least environmentally literate.

iii) English students have better awareness of environment compared to the commerce students.(2:23-29)

Rajasrhi Roy (2006) studied the Attitude of the undergraduate pharmacy students towards environmental awareness with the following objectives,

To study the attitude and feelings of students towards the environment who are pursuing pharmaceutical degree programme in pharmaceutical science discipline. The sample of the study consisted of eighty undergraduate students studying pharmacy in three pharmacy colleges in eastern regional states. The tool used for the study was ‘Environmental Consciousness Scale’ which was developed by the researcher. The statistical techniques used for data analysis were Mean, Standard Deviation and ‘t’-test.
The findings of the study were as follows:

i) There is a need for including components for Environmental Awareness in curriculum.

ii) There is a need for emphasizing environmental pollution monitors and control in B, Pharma courses. (11:87-93)

Shobeiri (2007) made a detailed study on Environmental awareness among secondary school students in Iran and India in relation to their residential background, sex, and type of school. The hypotheses tested were:

i) There will be no significant difference in the level of environmental awareness among secondary school students in Tehran and Mysore.

ii) There will be no significant difference between boys and girls students in their level of environmental awareness in Tehran and Mysore.

iii) There will be no significant difference between students studying in different types of secondary schools in their level of environmental awareness in Tehara and Mysore.

The sample of the study consisted of 991 secondary school students (476 boys and 515 girls) was selected from different secondary schools in India (Mysore) and Iran (Tehran city). The students were selected from government and private school by stratified random
sampling technique. The tool used in the study was, Environmental Awareness Ability Measure (EAAM) developed by Praveen Kumar Jha (1998). The statistical techniques used for data analysis was Two-way Analysis of Variance.

The findings of the study were as follows:

i) There is a significant difference in the level of students environmental awareness between two countries.

ii) There is no significant difference between boys and girls students with their level of environmental awareness.

iii) There is an influence of type of school management on level of students environmental awareness.

iv) Type of school management has an impact on Environmental awareness of students in both the countries. In all the sub factors of students Environmental awareness, Iranian government school students scored significantly higher than their counter parts in India.(17:28-34)

Murat Gokdere (2005) conducted a study on Environmental knowledge level of primary school students in Tukey. The purpose of the study was to determine environmental knowledge level of primary school students in Turkey and it was planned to help develop a base line database that would allow effective planning of Environmental education for primary education in Turkey. A case study approach was
used, and data was gathered by survey method. The sample consisted of 524 sixth, seventh and eight-grade students in six schools in the city centre, town and village of Trabzon.

The important conclusions of the study were:

i) Environmental factor affect children's Environmental knowledge.

ii) If children are provided with richer environment and learning material in their live, it would enhance children's Environmental knowledge.(9)

Makki, M. H (2003) conducted a study on Lebanese secondary school students Environmental Knowledge and Attitudes with the following objectives.

a) To assess Lebanese secondary school students environmental knowledge and attitudes.

b) To explore the relationship between participants knowledge and attitudes, biographical and academic variables, and commitment to environmentally friendly behaviour.

The sample consisted of 660 secondary school students of 10th and 11th grades. A questionnaire was administered to assess the environmental knowledge, attitudes, beliefs, intentions and commitment to environmentally friendly behaviours.
Results showed that participants had favorable attitude 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 behavioral commitments. These correlations, however, were low ($r=0.17$ to $0.33$) indicating a definite but rather small relationship between these variables. By comparison, participants' scores on the behavior subscale were significantly and substantially correlated with their environmental affect ($r=0.45$) and intentions ($r=0.46$) suggesting that environmental intentions and affect might serve as good predictors of commitment to environmental friendly behavior. (7:21-33)

Jennifer Campbell Bradley (1999) conducted a study to assess the high school students Environmental Knowledge and Attitudes. A questionnaire was administered before and after exposure to 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 favorable.

A statistically significant correlation was found between pre-test knowledge scores and pre-test attitude scores and between pos-test knowledge scores and post-test attitude scores. In both cases, students
having higher knowledge scores had more favorable environmental attitudes compared with students with lower knowledge scores. (6)

S. Paraskevopoulos (1998) conducted a study on Environmental Knowledge of Elementary School Students in Greece. The education system in Greece has responded promptly to the need for environmental education (EE). However, the existing lack of relevant research may limit the functionality of EE programs in Greece. This study was conducted to develop a baseline database that would allow effective planning of EE. Specifically, the study was conducted to provide information on the environmental knowledge of 5th and 6th graders in a Greek city. A total of 686 students were surveyed.

The results indicated that children's knowledge about the environment is influenced by their immediate experience as well as by the content of their textbooks. Conclusions were (a) if people are aware of the need for and ways of protecting the environment they will act to preserve it, (b) schools should assume responsibility for educating about environmental protection, and (c) environmental education (EE) can be effective as a part of a school curriculum. (10)

Hans Kuhlemeier (1999) conducted a study on Environmental Knowledge, Attitudes and Behavior in Dutch Secondary education. In the Dutch National Assessment Program, environmental knowledge,
environmental attitudes, and environmentally responsible behavior were studied in a nation wide sample of more than 9,000 students (aged ± 15 years) from 206 secondary schools. Fifty-seven percent of the 9th-grade students had a (very) positive attitude towards the environment, and 35% were prepared to take extra pains or to make (financial) sacrifices for the environment.

The students knowledge about environmental problems was fragmentary and often incorrect, however. Similarly, the environmentally responsible behavior of many of the students was inadequate. The relation between environmental knowledge and environmental attitudes and behavior proved to be very weak. There was a substantial relation between environmental attitude, willingness to make personal sacrifices, and environmentally responsible behavior. Consistent with theories on attitudes, environmentally responsible behavior was more strongly connected with willingness to make sacrifices than with attitude towards the environment. (4)

Elvan Alp (2006) conducted a study on Children’s Environmental Knowledge and Attitudes in Turkey. The aim of this study was threefold: (1) to determine 6th, 8th and 10th grade students environmental knowledge and attitudes in Turkey; (2) to investigate the effect of the grade level and gender on students environmental knowledge and attitudes; (3) to explore how environmentally responsible behaviour is
related to environmental knowledge, affects, behavioural intentions and demographic variables.

Data were obtained by the administration of the Turkish version of Children’s Environmental Attitude and Knowledge Scale to 1977 students from 22 randomly selected schools located in urban areas. The data were analysed using one-way analyses of variance, independent samples 't'-test, and multiple regression analysis. A statistically significant effect of grade level was found on environmental knowledge and attitudes. While the effect of gender on attitudes towards the environment was statistically significant in favour of females, the gender difference on environmental knowledge was not statistically significant. Multiple regression analysis revealed that environmentally responsible behaviour can be predicted by behavioural intentions, environmental affects, gender, and age. Environmental knowledge appeared to be influential on behaviours not directly, but mediated by behavioural intentions and environmental affects. (3:210–223)

Tan Geok-Chin Ivy (1998) conducted a study to gather baseline data on the level of environmental knowledge, attitudes and behaviour of secondary and junior college students in Singapore. For this purpose, an instrument of 55 items was designed and tested on a sample of 1256 secondary (Grade 9) and junior college (Grade 11) students. The students mean environmental knowledge score was 70.9%. The mean
correct response rates for the environmental fact, concept and
generalisation subtests were 68.0%, 68.8% and 78.0% respectively. The
mean environmental attitude and behaviour scores were 66.0% and
70.5% respectively.

When investigating the students main source of environmental
information, it was found that the students gained most of their
environmental knowledge from out-of-school sources rather than from
general education at school. The majority of the students (53.7%)
indicated that they gathered most of their environmental information
from the print media (newspapers and magazines) and electronic media
(radio and television). Only 30.7% of the students indicated that
general education at school was their main source of environmental
information. (18: 181-195.)
REFERENCES


