CHAPTER – III

METHODOLOGY

3.1 INTRODUCTION

Research methodology involves the systematic procedure by which the researcher starts from the initial identification of the problem to its final conclusion. The role of methodology is to carry out the research work in a scientific and valid manner. The present study was an attempt to examine the attitude of Muslim students towards environment and knowledge on Environmental Education in and around Chennai in relation to gender, locality and type of school management. Parents’ educational qualification, occupation, income, experience and age were also considered. This section explains the hypotheses, sampling, instrument used, procedure, scoring and statistical techniques used for the study.

3.2 SETTING

The present study has been conducted in eight Higher Secondary schools for Muslim students in and around Chennai District. Of the eight schools, two Government schools, two Government Aided schools, two Matriculation schools and two Chennai Public schools were selected.

3.3 SAMPLE

A sample of eight Higher Secondary schools were selected for the research work using the stratified random sampling technique. A total sample of 705 students (380 male students and 325 female students) was selected randomly from these schools in and around Chennai.
### 3.3.1: Sample Distribution Table

<table>
<thead>
<tr>
<th>S.No</th>
<th>Type of the Management</th>
<th>Boys</th>
<th>Girls</th>
<th>Total sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government Schools</td>
<td>123</td>
<td>102</td>
<td>225</td>
</tr>
<tr>
<td>2</td>
<td>Government Aided Schools</td>
<td>105</td>
<td>93</td>
<td>198</td>
</tr>
<tr>
<td>3</td>
<td>Matriculation Schools</td>
<td>98</td>
<td>79</td>
<td>177</td>
</tr>
<tr>
<td>4</td>
<td>Chennai Public Schools</td>
<td>54</td>
<td>51</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>380</strong></td>
<td><strong>325</strong></td>
<td><strong>705</strong></td>
</tr>
</tbody>
</table>

3.3.1.A : The bar diagram showing the sample distribution based on gender and type of school management
3.3.2. Sample Distribution on the basis of Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number of students</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boys</td>
<td>380</td>
<td>53.90%</td>
</tr>
<tr>
<td>Girls</td>
<td>325</td>
<td>46.09%</td>
</tr>
<tr>
<td>Total</td>
<td>705</td>
<td>100%</td>
</tr>
</tbody>
</table>

3.3.2.A The Pie diagram showing the sample distribution on the basis of gender
3.3.3 : Distribution of sample on the basis of locality

<table>
<thead>
<tr>
<th>Locality</th>
<th>Number of students</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>282</td>
<td>40.14%</td>
</tr>
<tr>
<td>Urban</td>
<td>423</td>
<td>59.85%</td>
</tr>
<tr>
<td>Total</td>
<td>705</td>
<td>100%</td>
</tr>
</tbody>
</table>

3.3.3.A : The Pie diagram showing the distribution of sample on the basis of locality
3.3.4 : Distribution of sample on the basis of type of school management

<table>
<thead>
<tr>
<th>Management</th>
<th>Number of students</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Schools</td>
<td>225</td>
<td>31.91%</td>
</tr>
<tr>
<td>Government Aided schools</td>
<td>198</td>
<td>28.05%</td>
</tr>
<tr>
<td>Matriculation schools</td>
<td>177</td>
<td>25.10%</td>
</tr>
<tr>
<td>Chennai Public schools</td>
<td>105</td>
<td>14.89%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>705</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

3.3 4.A : The Pie diagram showing the distribution of samples on the basis of type of school management

3.4 SAMPLING TECHNIQUES
It is the process of selecting the samples from the population, for this purpose the population is divided into number of parts called sampling.

W.G. Cohren has said” The purpose of sampling theory is to make sampling more efficient. It attempts to develop method of sample selection, and of estimation that provides at the lowest possible cost estimates that are precise enough for the purpose.

**3.5 METHODS OF SAMPLING**

- Simple random sampling
- Systematic sampling
- Stratified sampling
- Purposive sampling
- Cluster sampling

In the present study the investigator selected stratified random sampling technique. In this method, the population is divided into several groups that are individually more homogeneous than the total population. The selected items constitute a sample. Since each stratum is more homogeneous than the total population, the nature and qualities of the population are prevalent and identified in the sample also

**3.6 TOOLS USED FOR THE STUDY**

**DEMOGRAPHIC QUESTIONNAIRE**

The Demographic Questionnaire was prepared which was designed to provide information about students’ gender, age, school, living areas, parents’ education, qualification, work status, income, experience and age

**3.6.1 Demographic Characteristics of Students**
<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>380</td>
<td>54%</td>
</tr>
<tr>
<td>Girls</td>
<td>325</td>
<td>46%</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>36</td>
<td>5%</td>
</tr>
<tr>
<td>17</td>
<td>456</td>
<td>65%</td>
</tr>
<tr>
<td>18</td>
<td>213</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Mothers’ Educational Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>79</td>
<td>11%</td>
</tr>
<tr>
<td>SSC</td>
<td>207</td>
<td>29%</td>
</tr>
<tr>
<td>HSC</td>
<td>158</td>
<td>23%</td>
</tr>
<tr>
<td>UG/PG</td>
<td>196</td>
<td>28%</td>
</tr>
<tr>
<td>M.Phil / Ph.D</td>
<td>65</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Fathers’ Educational Level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illiterate</td>
<td>68</td>
<td>10%</td>
</tr>
<tr>
<td>SSLC</td>
<td>76</td>
<td>11%</td>
</tr>
<tr>
<td>HSC</td>
<td>124</td>
<td>17%</td>
</tr>
<tr>
<td>UG/PG</td>
<td>351</td>
<td>50%</td>
</tr>
<tr>
<td>M.Phil/Ph.D</td>
<td>86</td>
<td>12%</td>
</tr>
<tr>
<td><strong>Mothers’ Work Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>553</td>
<td>78%</td>
</tr>
<tr>
<td>Employed</td>
<td>152</td>
<td>22%</td>
</tr>
</tbody>
</table>
### Fathers’ Work Status

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployed</td>
<td>671</td>
<td>95%</td>
</tr>
<tr>
<td>Employed</td>
<td>34</td>
<td>5%</td>
</tr>
</tbody>
</table>

#### 3.6.2 Demographic Characteristics of Gender
The above pie diagram indicates that the boys’ percentage is 54% and the girls’ is 46%. According to the study, school, books, field trips, television, the Internet and newspaper/magazines were the main sources for students to get information about environment. The results showed that students who obtained information from field trip had better environmental knowledge, skill and attitudes. However, students who used newspaper/magazines or books to get information about environment had better environmental behaviour. Moreover, Environmental Education experiences before schooling had influences on attitude, skill and behaviour but not on environmental knowledge. There was a statistically significant effect of gender on environmental knowledge and attitude; however the effect of gender on attitudes toward the environment was statistically significant in favour of boys.

3.6.3 Demographic Characteristics of Age
The above pie diagram indicates that 5% are from the age group of 16 years, 65% are from the age group of 17 years and 30% are from the age of 18 years. The majority of the students are from the age group of 17 years. Adults are having better knowledge and the youngsters are generally less knowledgeable about ecological concepts. According to the results, all the age groups have moderate knowledge related to environment and attitude.
The above pie diagram about mothers’ educational level indicates that around 11% were illiterate, 29% were SSLC grade, 23% were HSC grade, 28% were degree holders and 9% had completed their doctoral degree. Since the women are from both rural and urban area the highest percentage falls on SSLC grade and immediately followed by degree holders. Students having mothers with a degree were more knowledgeable about environment compared to students having mothers with a high school grade. Similarly, students whose mothers had doctoral degrees had more environmental knowledge compared to students whose mothers had a high school grade.

Mothers might share their knowledge with their children, they might discuss local and global environmental problems, and also they might be a model for their
children to get involved in activities related to the environment. Parents’ educational level had a positive effect on students’ environmental knowledge, as well as, pro-environmental attitudes. Students having more educated parents had a chance to discuss environmental issues with their parents and as a result they would keep information considering these issues. Since our study has reported only 29% of SSLC grade and 28% of degree holders the mothers’ educational level is moderately related to environmental knowledge and attitude. The educational background of mothers was reported to be effective on students’ knowledge only.

3.6.5 Demographic Characteristics of Fathers’ Educational Level
The above pie diagram with regard to fathers’ educational qualification indicates that 10% were illiterate, 11% were SSLC grade, 17% were HSC grade, 50% were degree holders and 12% completed their doctoral degree. Around the globe men have to work to stabilize the family, that’s the reason about 50% graduates. Students tended to have higher environmental literacy level if they had parents with a University degree. While educational background of mothers was reported to be effective on students’ knowledge only, the educational background of fathers’ was reported to be effective on students’ attitude as well as knowledge. It was because students spend more time together with their parents playing, reading and studying at home. In respect of the present findings the study has positive relation with the environment attitude as well as knowledge. There is a significant effect of fathers’ educational level on students’ environmental knowledge.
3.6.6 Demographic Characteristics of Mothers’ Work Status

The above pie diagram indicates that 78% were unemployed and 22% were employed both in Private and Government sectors. Students who had working mothers had more knowledge about environmental concepts. The reason might be that, working mothers compared to working fathers might have more time to spend with their children. Therefore, they might have a chance to hold a controversy with their children on environmental issues; or to involve environmental activities with their children. Finding of the current study is that, there is a statistically significant effect of mothers’ work status on only knowledge component of environmental literacy. Even though 78% of mothers were unemployed they had a positive relation with the students knowledge only.

Since compared to fathers, working mothers are more involved in values and the preservation of the species; they might be expected to be more environmentally concerned.
The above pie diagram indicates that the 95% were employed both in Private and Government sectors and 5% were unemployed. Parents’ educational level and working status regarded as an important indicator of socio-economic status. Educated parents might provide their children with rich scientific and environmental resources.

There was a significant effect of parents’ work status on students’ environmental knowledge. Students’ environmental knowledge was based on both their social status and their parents. Therefore, the current study was consistent regarding mothers’ work status; however it was inconsistent considering fathers’ work status. There was not a statistically significant effect of fathers’ work status on environmental knowledge and attitude. Present study revealed that, students who had more educated parents had higher score on environmental knowledge.

3.7 ATTITUDE OF ENVIRONMENT EDUCATION
The tool used for the present investigation was the Taj Environmental Attitude Scale (TEAS) developed by Haseen Taj (2001), Bangalore University. This tool measures environmental attitude of teachers as consisting of six areas dealt within the scale and attitude towards population.

1. Health and hygiene
2. Polluters
3. Forests
4. Wild life
5. Environmental concerns

There are several items in each. Thus constituting the total of 40 items on the scale. For Government, Government Aided and Chennai Public school students Tamil version was used. For Matriculation school students original English version was used. The split-half reliability has been found to be 0.79. The investigator personally visited all the selected schools and met the students for explaining the purpose of study and instructed them as how to respond to the questionnaire. Also, for students, whenever, they had doubt in understanding questions, investigator made things very clear to them. Each item alternatively assigned a weightage ranging from 4 (strongly agree) to 0 (strongly disagree) for positive statements. Inverse of negative statements the scoring is reversed.i.e. from 4 (strongly disagree) to 0 (strongly agree). The attitude score of an individual is the sum total of item scores on all the six areas. The range of scores is from 90 to 160 with the higher score indicating the more favourable attitude towards environment and vice versa (Shobeiri, 2005).
3.8 KNOWLEDGE ON ENVIRONMENTAL EDUCATION

Knowledge dimension included multiple choice questions which assessed students’ knowledge about local and global environmental issues and basic ecological concept. Since the knowledge questions of the Environmental Literacy Test (ELT) were originally designed for University students, some of the questions were not suitable for school students. For this reason, only eight questions, out of 11, related to the local and global environmental issues were taken from the Environmental Literacy Test originated from the NEETF/Roper Survey (1998). Ten questions related to local and global environmental issues and basic ecological concepts were taken from the previously adapted instrument (Alp, 2005), which was originally developed by Leeming and Dwyer (1995) for young children. Moreover, 2 questions, about global warming and biological magnification, were taken from Vlaardingerbroek and Taylor’s (2007) study. The final knowledge dimension included 20 questions with five choices, one of them was correct answer, and three of them were distracters. Each knowledge question included an ‘I don’t know’ to help prevent guessing. In computing knowledge score, each correct response received a numeric value of 1 and incorrect responses were coded 0. Therefore, the maximum score of knowledge dimension was 20, the minimum score was 0. The higher score means the higher knowledge about local and global environmental issues and basic ecological concept. The internal consistency of the knowledge dimension of environmental literacy test was found to be 0.68 by using Cronbach alpha coefficient. Questions from the CHEAKS – Childrens’ Environmental Attitude and Knowledge Scale (1995) were also used.
3.9 STATISTICAL ANALYSIS

Using SPSS statistical analysis package, ‘t’ test was employed to find out the difference in various aspects like the attitude and knowledge on Environmental Education using gender, locality and type of school management, parental education, qualification, occupation, income, experience and age.

3.10 OBJECTIVES OF ENVIRONMENTAL EDUCATION STUDY

The investigator has suggested the following six objectives for teaching Environmental Education.

Awareness

To help individuals and social groups, acquire an awareness and sensitivity to the total environment and its associated problems.

Knowledge

To help individuals and social groups acquire basic understanding of the total environment, its associated problems and humanities critically responsible and present role in it.

Attitude

To help individuals and social groups acquire social values, strong feelings of concern for the environment and motivation to actively participate in its protection and improvement.
Skills

To help individuals and social groups acquire the knowledge and skills of solving environmental problems.

Evaluation ability

To help individuals and social groups evaluate environmental measures and educational programmes in terms of ecological, political, economical, social, aesthetic and educational factors.

Participation

To help individuals and social groups develop a sense of responsibility and urgency, regarding environmental problems and to ensure appropriate action for solving the problems.

3.11 OBJECTIVES OF THE STUDY

1) To find out the attitude and knowledge on Environmental Education among Muslim students.

2) To find out the attitude and knowledge of Muslim students towards Environment Education with regard to gender (boys and girls)

3) To find out the attitude and knowledge of Muslim students towards Environment Education in terms of locality (Rural and Urban)

4) To find out the attitude and knowledge of Muslim students towards Environment Education in terms of type of school management (Government, Govt. Aided, Matriculation and Chennai Public schools)
5) To find out the attitude, awareness and knowledge on Environment Education of the parents in terms of education, occupation, income, experience and age.

3.12 HYPOTHESES OF THE STUDY

Keeping in view the objectives of the study the following null hypotheses have been framed as follows.

Ho₁ There is no significant difference between the Muslim boys and Muslim girls in their attitude and knowledge towards Environmental Education.

Ho₂ There is no significant difference between the Muslim urban and Muslim rural school students in their attitude and knowledge towards Environmental Education.

Ho₃ There is no significant difference between the rural Muslim boys and girls in their attitude and knowledge towards Environmental Education.

Ho₄ There is no significant difference between the urban Muslim boys and girls in their attitude and knowledge towards Environmental Education.

Ho₅ There is no significant difference between the Govt. Aided school Muslim boys and girls in their attitude and knowledge towards Environmental Education.

Ho₆ There is no significant difference between the Government school Muslim boys and girls in their attitude and knowledge towards Environmental Education.

Ho₇ There is no significant difference between the Matriculation school Muslim boys and girls students in their attitude and knowledge towards Environmental Education.
Ho₈ There is no significant difference between the Chennai Public school Muslim boys and girls students in their attitude and knowledge towards Environmental Education.

Ho₉ There is no significant difference between the Muslim students from Government schools and Government Aided schools in their attitude and knowledge towards Environmental Education.

Ho₁₀ There is no significant difference between the Muslim students from Government Aided schools and Matriculation schools in their attitude and knowledge towards Environmental Education.

Ho₁₁ There is no significant difference between the Muslim students from Matriculation schools and Chennai Public in their attitude and knowledge towards Environmental Education.

Ho₁₂ There is no significant difference between the Muslim students from Government schools and Matriculation schools in their attitude and knowledge towards Environmental Education.

Ho₁₃ There is no significant difference between the Muslim students from Government Aided schools and Chennai Public schools in their attitude and knowledge towards Environment Education.

Ho₁₄ There is no significant difference between the Muslim students from Government schools and Chennai Public schools in their attitude and knowledge towards Environmental Education.
There is no significant difference between the Muslim urban girls and Muslim rural boys in their attitude and knowledge towards Environment Education.

There is no significant difference between the Muslim urban boys and Muslim rural girls in their attitude and knowledge towards Environmental Education.

There is no significant difference between the attitude and knowledge on Environmental Education of the Muslim students based on their parents’ education, occupation, income, experience and age.

3.13 VARIABLES SELECTED FOR THE STUDY

The investigator attempted to study the attitude of Muslim students towards environment and knowledge on Environmental Education in and around Chennai. Hence the investigator selected the following variables as independent variables.

1) Gender (Boys, Girls)
2) Locality (Rural and Urban)
3) Types of school management (Government, Government Aided, Chennai Public school and Matriculation school)
4) Knowledge of the student on Environmental Education
5) Awareness level of the student on Environmental Education
6) Attitude of the student towards Environmental Education
7) Parents’ education, occupation, income, experience and age
3.14 DESIGN OF THE STUDY

The investigator used the survey method in this study. The survey method is aimed at finding out the attitude and knowledge towards Environmental Education among the Muslim students of Higher Secondary schools. In the simplest way, the research design is a plan structure and strategy of investigation in order to answer to the research question. “Design is the blue print of the procedures that enables the researcher to test these hypotheses by reaching valid conclusion about relationships between independent and dependent variables” says Best (1978). Hence, to be right towards the goal, it is necessary to have a design for the research being carried out at the very beginning. However, it is also true that “selection of a particular design”, as Best (1978) suggests, and “Is based upon the purpose of the experiment, the types of variables to be conducted”. Therefore, it is apparent that the designs differ, as the problem differs.

The investigator attempted to study the attitude of Muslim students towards environment and knowledge on Environmental Education in and around Chennai in the different schools selected.

The investigator was very much interested in analyzing the attitude of Muslim students and knowledge on Environmental Education in and around Chennai with respect to their gender, locality and type of school management as the main variable. Parents’ education, occupation, income, experience and age were also taken into consideration.
3. 15 METHODS OF STUDY

In the behavioural sciences, generally survey methods such as the historical, the descriptive or the normative survey adopted more frequently as compared to the experimental method. The survey is an important method that has developed greatly since the middle of this century and is valuable for many purposes. The survey covers the grounds to be explored, providing detailed information regarding some prevailing state of affairs, describing the salient features, regarding what has been explored in the course of the study.

The survey research is essential for the collection of facts and information relevant to the problems investigated in educational research. The aim and purpose of the educational survey is to bring to light many facts, which will point out the need for refinement and improvement in the educational system. It involves measurement, classification, interpretation, comparison, evaluation and generalization all directed towards a proper understanding and solution of the problems.

As the present study deals with “Attitude of Muslim students towards environment and knowledge on Environmental Education in and around Chennai”, the investigator adopted the survey method that was found suitable to gather the essential and reliable data.

3.16 CHARACTERISTICS OF SURVEY METHOD

1) It gathers data from the relatively large number
2) It involves definite problem and definite objectives
3) It provides information useful to the solution of local problems
4) It is not concerned with the characteristics of the individual
5) It does not seek to develop an organized body of scientific principles

3. 17 CHOICE OF STATEMENTS

1) The statements should be formed keeping the following set of criteria in mind.
2) The statement should express an idea or opinion.
3) The choices of statement are partially correct and one answer is very wrong.
4) The statements should be formed in simple language.
5) The statements should be formed in such a way that it is easily understood by all the subjects.

3. 18 RELIABILITY AND VALIDITY OF THE TOOL USED FOR THE STUDY

The tools used for the present investigation were already used and were a standardized one, so that, the investigator need not calculate reliability and validity.

RELIABILITY OF THE TOOL

Reliability is one of the important characteristics of a good evaluation technique or test. Reliability is the consistency of a test, yielding the same results in measuring whatever it does matter. The reliability was found to be 0.79 which was determined by spilt- half method.
The split-half method:

This method also yields what is sometimes called a co-efficient of equivalence. The test is split into two equivalent halves usually by pooling the odd numbered items for one score and even numbered items for another score. This usually makes the two scores obtained from a single test reasonably equivalent. In this way, two scores for each pupil are obtained.

3.19 VALIDITY OF THE TOOL

According to Lindquist, “the validity of a test may be defined as the accuracy with which it measures that which it is intended to measure”. Validity of a test can be reported in general, terms; no test has high or low validity in the abstracts.

For the present study, the researcher gave the tools to the juries, experts, and their suggestions were carefully incorporated in the tools which ensures the reliability and validity of tools used in the study.

3.20 STATISTICAL TECHNIQUES USED IN THE STUDY

Treatment of data by applying appropriate statistical measure is a must to justify the objectives of the study. The investigator followed the appropriate procedure in applying the proper statistical treatment for the analysis of the data. They are as follows.

1) Mean
2) Standard deviation
3) ‘t’ test
4) Correlation
The statistical analysis helps the investigator to analyze the attitude, awareness and knowledge of the group on Environmental Education.

### 3.21 DATA GATHERING PROCEDURES

The main procedure of the data gathering procedure is to find out the attitude, awareness and knowledge of the Muslim students in and around Chennai. So, the investigator met the Headmasters / Principals of the concerned schools. The investigator explained about the study and requested permission for data gathering. A pre and post test was conducted to assess the level of attitude, awareness and knowledge of the students about environmental education. Questionnaires were given to the school students. All the students gave responses in the response sheet by choosing one out of four answers or option for each statement, which they feel correct and appropriate. After they completed their responses, the investigator collected the response sheet from the students. Parents of the student samples were also highlighted about the study.

### CONCLUSION

The attitude scale, awareness level and knowledge scale related to the Environmental Education was administered to a sample of 705 Muslim students in and around Chennai District. The attitude score and knowledge scores were computed. These scores were subjected to statistical treatment and the interpretation of the data has been described in the succeeding chapter IV.