CHAPTER-III
THE PRESENT STUDY

3.1 INTRODUCTION

In this chapter the details regarding the methodology of research includes the statement of the problem, the title of the problem, need for the study, purpose of the study, operational definitions of the terms, scope of the study, objectives of the study, hypothesis of the study, variables included in the study, methods of the study, delimitations of the study are presented.

3.2 STATEMENT OF THE PROBLEM

The present study is concerned with the environmental awareness and achievement in Biological science of secondary school students. It examines the main and interaction effects of locality, management and gender on the environmental awareness and achievement in Biological science of secondary school students. It establishes the relationship between the environmental awareness and achievement in Biological science of secondary school students and other variables namely; locality, management, gender, annual income of the family, medium of study, caste, religion, father education, father occupation, library facility, mother education, mother occupation, habit of visiting to science exhibitions, size of the family, works at leisure time and period allotted in the school time table for environmental education. It also predicted the environmental awareness and achievement in Biological science of secondary school students with the help of different sets of socio demographic variables.

3.3 TITLE OF THE PROBLEM

The title of the present study is, “An Evaluative Study on Environmental Awareness among Secondary School Students”.

3.4 NEED FOR THE STUDY

Human beings have always exploited the resources available in their natural surroundings for their benefits. Education is the only the way to boost environmental awareness. In the long run behaviors can be modified through the process of Environmental Education.
It is necessary to protect the environment from pollution and over exploitation of natural resources. To avoid pollution, we need to initiate awareness among people. Just for any disease “Prevention is better than cure”. Protecting our environment is economically more valuable than cleaning it up once, it is damaged. This can only be made possible through initiating Awareness.

The right age group to start this initiation is secondary school age because the students at the secondary level are much more mature than the primary level students with respect to the development of cognitive, affective and psychomotor domains of environmental education. Therefore Secondary level students have been thought to be more appropriate for imparting awareness about environmental problems through environmental education. For this it is imperative that a definitive goal of environmental education involving knowledge and skills about understanding and solving the problems of environment through the development of proper curriculum are developed. The strategy of implementation of the curriculum at different levels of study, especially the secondary level of education has also to be developed. Hence, the students required some awareness regarding the environmental protection.

The above crucial conditions lead the investigator to make an attempt in this area of environmental awareness and achievement in Biological science of secondary school students. Biology may be considered as a science in action in day to day life. It is therefore essential lessons in the subject should be closely connected with the daily life of pupils and with their environment and surroundings.

The title of the present study is, “An Evaluative Study on Environmental Awareness among Secondary School Students”.

3.5 PURPOSE OF THE STUDY

The present study aims at investigating the ability of the secondary school students in environmental awareness and achievement in Biological science. The purpose of the study is an attempt to answer the following aspects.

1. What is the general ability of the secondary school students in environmental awareness and achievement in Biological science?

2. Whether there is any significant influence of main effects namely; locality, management and gender and their interaction effects on the environmental awareness and achievement in Biological science among secondary school students?
3. Whether there is any relationship between areas of environmental awareness and achievement in Biological science among secondary school students?

4. Whether there is any relationship between locality and areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students?

5. Whether there is any relationship between management and areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students?

6. Whether there is any relationship between gender and areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students?

7. Whether there is any relationship between annual income of the family and environmental awareness and achievement in Biological science among secondary school students?

8. Whether there is any relationship between medium of the study and environmental awareness and achievement in Biological science among secondary school students?

9. Whether there is any relationship between caste and environmental awareness and achievement in Biological science among secondary school students?

10. Whether there is any relationship between religion and environmental awareness and achievement in Biological science among secondary school students?

11. Whether there is any relationship between father’s education and environmental awareness and achievement in Biological science among secondary school students?

12. Whether there is any relationship between father’s occupation and environmental awareness and achievement in Biological science among secondary school students?

13. Whether there is any relationship between library facility and environmental awareness and achievement in Biological science among secondary school students?
14. Whether there is any relationship between mother’s education and environmental awareness and achievement in Biological science among secondary school students?

15. Whether there is any relationship between mother’s occupation and environmental awareness and achievement in Biological science among secondary school students?

16. Whether there is any relationship between habit of visiting to science exhibitions and environmental awareness and achievement in Biological science among secondary school students?

17. Whether there is any relationship between size of the family and environmental awareness and achievement in Biological science among secondary school students?

18. Whether there is any relationship between works at leisure time and environmental awareness and achievement in Biological science among secondary school students?

19. Whether there is any relationship between period allotted in the school time table for environmental education and environmental awareness and achievement in Biological science among secondary school students?

20. Whether there is any relation between environmental awareness with regards to environmental areas i.e. Air, Water, Noise, Soil and Environmental concern?

21. Whether there is any significant association between the environmental awareness and achievement in Biological science among secondary school students?

22. Whether it is possible to predict environmental awareness and achievement in Biological science among secondary school students with the help of socio – demographic variables?

23. What is the percentage of variance explained by the socio - demographic variables in estimating environmental awareness and achievement in Biological science among secondary school students?
3.6 OPERATIONAL DEFINITIONS OF THE TERMS

The definitions of some of the important terms used in this study are given below:

**Evaluation**

The systematic application research procedure for assessing the conceptualization, design, implementation, and utility of .... Programs. (Roosi and Freeman, 1993)

**Environment**

Environment (derived from the French word environner meaning to encircle or surround) can be defined as the circumstances and conditions that surround an organism or group of organisms or the social and cultural conditions that affect an individual are community.

**Environmental Education**

“To create an awareness and understanding of the evolving social and physical environment as a whole, its natural, manmade, cultural, spiritual resources, together with rational use and conservation of these resources for development.”

**Environmental Awareness**

Environmental awareness if the ability to understand the problems of environment through the relevant experience and the assistance extend to the society and its individuals to solve these environmental problems.

**Academic Achievement**

Knowledge attained or skills developed in the school subjects, usually designated by test scores or by marks assigned by teachers or by both. (Good, 1973)

Accomplishment or proficiency, performance in a given skill or body of knowledge, progress in school theoretically different from intelligence but overlaps with it to a great degree. (Good, 1973)

Measured ability and achievement level of a learner in school subjects or particular skills. (Derek Rowntree, 1981)
Refers to performance in school or college in a standard series of educational testing. (Taneja, 1991)

Accomplishment of specified objectives, past performance and what an individual or organization has accomplished in the past, in contrast with ability which refers to what an individual or organization can do now (in the present) or in future. (Madhu Raj, 1996 and Sing, 2002)

Successful accomplishment or performance in particular subjects, areas, or courses, usually by reasons of skills, hard work and interest.

**Achievement Test**

A test designed to measure a person’s knowledge, skills, understandings etc in a given field, taught in school, for example a Biological Sciences test or an English test etc. (Good, 1973)

Refers to a test designed to measure the effects of specific teaching or training in an area of the curriculum. (Taneja, 1991)

A standardized test designed to measure and compare levels of knowledge and understanding, in a given subject already learned. (John Bellingham, 2004)

In the present contest, achievement test means, an objective achievement test (OAT) constructed and standardized by the investigator.

**Student**

A student is a learner, are someone who attends an educational institutions. Student is used for any one who is learning including mid career adults who are having vocational education or returning to university.

**Management**

For the present study, management means the authority under which the college functions. In this study colleges under the authority of Government, Private and Aided have been considered for present investigation.
Locality

The academic achievements of students coming from rural areas and urban areas may differ. Hence students are divided into two groups namely rural and urban students and academic achievements have been separately studied. In this investigation locality means rural and urban.

Caste

In the present educational system, which is in vogue, in Andhra Pradesh, students are categorized into scheduled castes and scheduled tribes, back ward castes and other castes not covered under the above two types. In the present investigation the students are divided into three categories basing on their caste, namely SC/ST, BC and OC students.

Gender

Male and Female students (boys) and (girls) are considered sub samples to carry the differential analysis.

Size of the family

It refers to the number of total living members of the family as on the date of collecting the data for the present study.

Sample

- A sample possessing the same characteristics as the population with reference to some variables other than, but thought of to be related to, the one under investigation.

- Some times used to refer to a stratified sample, in which the sub sample numbers are proportional to the size of the strata. (Good, 1973)

A sample drawn from a population in such a way that it should (or does) contain members of various categories and classification in the same proportions as they appear in the population. (Derek Rowntree, 1981)

Sample refers to a group that is selected from a large group or population for examination with a view to making generalizations about the population, as a whole. (Taneja, 1991)
Sample that corresponds to or matches the population of which it is a part with respect to characteristics important for the purpose under investigation. (Madhu Raj, 1996, Sing, 2002 and John Bellingham, 2004)

**Variable**

Any trait that changes from one case or condition to another, more strictly, the representation of the trait, usually in quantitative form, such as a measurement or an enumeration. (Good, 1973)

Refers to a factor in educational research that influences the observation or management of an educational phenomenon. (Taneja, 1991 and a group of experts, 2003)

**Independent Variable**

- A variable to which values may be assigned at will.
- The variable on which an estimation or prediction is based in a regression problem.
- In the plural, often used to refer to variables that are unconnected, when presented graphically, the x-axis or horizontal axis is conveniently used for the independent variable. (Good, 1973)

In a statistical study, the variable whose values are deliberately changed (or natural difference observed) in order to see how this influences the values of another variable (the dependent variable). (Derek Rowntreem, 1981)

Refers to variable whose changes are considered as not dependent upon transformations in other specific variables. (Taneja, 1991)

In experimental research, the aspects of the study that the investigator manipulates or controls in order to observe the effect on the dependent variable. (Madhu Raj, 1996)

An independent variable is one that the researcher manipulates; e.g., a type of instructional programme. (John Bellingham, 2004)
**Dependent variable**

A dependent variable is one that changes in consequence with changes in the independent variable. (John Bellingham, 2004)

A variable whose magnitude depends on or is a function of, the value of the another variable (or other variables); a variable whose value is being estimated (for example by regression techniques) from that of one or more independent variables to which it is related; when represented graphically, the y-axis or vertical line is conveniently used or the dependent variable. (Good, 1973)

In a statistical study, the variable in whose values, we are expecting to see changes as a result of changes, we have made or observed in the values of some other variables (the independent variable). (Derek Rowntree, 1981)

Refers to a variable that is the presumed effect of a presumed cause of an event. (Taneja, 1991 and a group of experts, 2003)

A factor in an experimental relationship which has or shows variation that is hypothesized to be caused by another independent factor or variable. (Madhu Raj, 1996 and Sing, 2002)

### 3.7 SCOPE OF THE STUDY

The main intention of the study is to find the environmental awareness and achievement in Biological science among secondary school students in relation with socio – demographic variables. Environmental Awareness Scale (EAS) and Achievement Test in Biological science (ATB) were constructed and standardized by the investigator to measure the environmental awareness and achievement in Biological science among secondary school students. The socio – demographic variables are measured by using the relevant instruments.

The study attempted to predict the environmental awareness and achievement in Biological science among secondary school students with the help of different socio - demographic variables.
3.8 OBJECTIVES OF THE STUDY

The study has been designed with the following specific objectives

1. To know the environmental awareness and achievement in Biological science among secondary school students.

2. To compare the performance of pupils in rural and urban schools, in Government, Aided and Private schools, in boys and girls and to examine the significance of environmental awareness and achievement in Biological science among secondary school students.

3. To establish the relationships between areas of environmental awareness and achievement in Biological science among secondary school students.

4. To establish the relationships between locality and areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students.

5. To establish the relationships between management and areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students.

6. To establish the relationships between gender and areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students.

7. To establish the relationships between annual income of the family, environmental awareness and achievement in Biological science among secondary school students.

8. To establish the relationships between medium of study and environmental awareness and achievement in Biological science among secondary school students.

9. To establish the relationships between caste and environmental awareness and achievement in Biological science among secondary school students.

10. To establish the relationships between religion and environmental awareness and achievement in Biological science among secondary school students.
11. To establish the relationships between father’s education and environmental awareness and achievement in Biological science among secondary school students.

12. To establish the relationships between father’s occupation and environmental awareness and achievement in Biological science among secondary school students.

13. To establish the relationships between library facility and environmental awareness and achievement in Biological science among secondary school students.

14. To establish the relationships between mother’s education and environmental awareness and achievement in Biological science among secondary school students.

15. To establish the relationships between mother’s occupation and environmental awareness and achievement in Biological science among secondary school students.

16. To establish the relationships between habit of visiting to science exhibitions and environmental awareness and achievement in Biological science among secondary school students.

17. To establish the relationships between size of the family and environmental awareness and achievement in Biological science among secondary school students.

18. To establish the relationships between works at leisure time and environmental awareness and achievement in Biological science among secondary school students.

19. To establish the relationship between period allotted in the school time table for environmental education and environmental awareness and achievement in Biological science among secondary school students.

20. To study the environmental awareness among secondary school students with regard to environmental areas i.e., Air, Water, Noise, Soil and Environmental concern.
21. To establish the association between the environmental awareness and achievement in Biological science of the secondary school students.

22. Which of the 16 independent variables (all the variables in the study) turnout to be significant predictors of environmental awareness and achievement in Biological science among secondary school students?

23. To predict the environmental awareness and achievement in Biological science among secondary school students with the help of socio – demographic variables.

3.9 HYPOTHESES OF THE STUDY

In the light of the above objectives, the following major null hypotheses have been set up for the purpose of this investigation.

1. All the secondary school students would not have the same environmental awareness and achievement in Biological science.

2. Locality, management and gender would not have significant influence on the environmental awareness and achievement in Biological science among secondary school students.

3. There would be no significant relation between areas of environmental awareness and achievement in Biological science among secondary school students.

4. There would be no significant impact of locality on the areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students.

5. There would be no significant impact of management on the areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students.

6. There would be no significant impact of gender on the areas of environmental awareness, environmental awareness and achievement in Biological science among secondary school students.
7. There would be no significant impact of annual income of the family on the environmental awareness and achievement in Biological science among secondary school students.

8. There would be no significant impact of medium of the study on the environmental awareness and achievement in Biological science among secondary school students.

9. There would be no significant impact of caste on the environmental awareness and achievement in Biological science among secondary school students.

10. There would be no significant impact of religion on the environmental awareness and achievement in Biological science among secondary school students.

11. There would be no significant impact of father’s education on the environmental awareness and achievement in Biological science among secondary school students.

12. There would be no significant impact of father’s occupation on the environmental awareness and achievement in Biological science among secondary school students.

13. There would be no significant impact of library facility on the environmental awareness and achievement in Biological science among secondary school students.

14. There would be no significant impact of mother’s education on the environmental awareness and achievement in Biological science among secondary school students.

15. There would be no significant impact of mother’s occupation on the environmental awareness and achievement in Biological science among secondary school students.

16. There would be no significant impact of habit of visiting to science exhibitions on the environmental awareness and achievement in Biological science among secondary school students.
17. There would be no significant impact of size of the family on the environmental awareness and achievement in Biological science among secondary school students.

18. There would be no significant impact of works at leisure time on the environmental awareness and achievement in Biological science among secondary school students.

19. There would be no significant impact of period allotted in the school time table for environmental education on the environmental awareness and achievement in Biological science among secondary school students.

20. There would be no significant difference among secondary school students on environmental awareness with regards to environmental areas i.e. Air, Water, Noise, Soil and Environmental concern.

21. There is no significant association between the environmental awareness and achievement in Biological science of the secondary school students.

22. No independent variable out of 16 (all independent variables in the study) turn out to be significant predictors of environmental awareness and achievement in Biological science among secondary school students.

23. It would not be possible to predict the environmental awareness and achievement in Biological science among secondary school students with the help of socio-demographic variables.

3.10 VARIABLES INCLUDED IN THE STUDY

The following variables were taken into consideration in this study.

Dependent Variables

1. Environmental Awareness

2. Achievement in Biological Science

The present study considers environmental awareness and achievement in Biological science as the main dependent variables.
Independent Variables

1. Locality
2. Management
3. Gender
4. Annual income of the family
5. Medium of the study
6. Caste
7. Religion
8. Father’s education
9. Father’s occupation
10. Library facility
11. Mother’s education
12. Mother’s occupation
13. Habit of visiting to science exhibitions
14. Size of the family
15. Works at leisure time
16. Period allotted in the school time table for environmental education

Total numbers of variables in the investigation are 2 dependent variables and 16 independent variables.

3.11 METHODS OF THE STUDY

The present study is survey type investigation. Various procedures that are followed in the construction and standardization of data gathering instruments and the tools adopted to measure the impact of different variables that are included in the study are discussed. The methods adopted in selection of the sample, collection of data, scoring and analysis are as follows.

The investigator followed the scientific principles and procedures of test construction and developed a preliminary environmental awareness scale. Pilot study is conducted by the investigator to establish validity and reliability of the tool.
The pilot study of environmental awareness scale consists of 100 items covering 5 broad areas such as Air, Water, Noise Soil, Environmental Concern on the sample of 200 secondary school students (9th class) in selected high schools in Chittoor district of Andhra Pradesh. The final environmental awareness scale is prepared after deleting, the invalid 47 items. This procedure of item analysis is adopted from the prescribed standardized procedure. For the present study, the items with ‘t’ values less than 1.98 (0.05 level) were deleted. In this investigation 47 items were deleted and 53 items were retained for final study. For the calculation of the ‘t’ values the procedure suggested by Edwards, (1957) was followed. For the purpose of scoring numerical values (weightages) were assigned to each of the three categories Yes (Y), Some Extent (SE) and No (N) based on the Likert (1932) method.

The achievement test is prepared and standardized by the investigator. Pilot study is conducted by the investigator. The pilot study of achievement test in biological science consists of 120 items in the sample of 200 secondary school students in selected high schools in Chittoor district of Andhra Pradesh. The final achievement test in Biological science is prepared after deleting, the invalid 20 items whose validity index is less than 0.30, from the preliminary test. The final study of achievement test in Biological science consist 100 items. This procedure of item analysis is adopted from the prescribed standardized procedure, for construction and use of tests for class room examinations. For the present study, the difficulty index and validity index of each item are computed, by following the procedure in the Garrett (1973)

A questionnaire is prepared to collect the necessary information about the secondary school students regarding their personal characteristics, home background, school facilities and socio – economic conditions of the family. A sample of 1200 secondary school students representing all categories of high schools is selected by following the standardized procedures. The necessary data is collected in a planned way and are analyzed using appropriate statistical techniques and the results are interpreted accordingly.
3.12 DELIMITATIONS OF THE STUDY

The following are the delimitations of the present study.

1. The study is confined to only Chittoor district of Andhra Pradesh state.

2. The study is confined to 1200 sample only.

3. The study is confined to three managements (i.e.) Government, Aided and Private schools of Chittoor district only.

4. The study is confined only to the 9th class students of the above mentioned management schools of Chittoor District.

5. The present study concerns itself for the subject of Biological science of secondary school students only.

6. The effect of only a few independent variables on the environmental awareness and achievement in Biological science among secondary school students has been studied.

7. Environmental awareness and achievement in Biological science among secondary school students are taken only from the environmental awareness scale and achievement test constructed and standardized by the investigator.

8. The study is based on survey type research, where in the techniques of analyzing the data, are based on the questionnaires only.

9. Environmental awareness and achievement in Biological science among secondary school students depends on a number of demographic factors. It is not possible to include each and every factor in this investigation.