Method Of The Study
CHAPTER – V
METHOD OF THE STUDY

The present chapter has been developed to discuss the method of study which covers
5.1 The sample
5.2 Design of the study
5.3 The tools used
5.4 Procedure
5.5 The statistical techniques used for analysis of data
5.6 Precautions observed
5.7 Constraints and difficulties faced during the experiment.

5.1 THE SAMPLE

Most of the educational phenomena consist of large number of units. It would be impracticable, if not impossible to test, to interview, or observe each unit of the population under controlled conditions to arrive at principals of universal validity. Sampling is the process by which a relatively small number of individuals or measures of individuals, objects or events is selected and analyzed in order to find out something about the entire population from which it was selected (Kaul, 2001).

Sampling is fundamental to all statistical methodology of behavioural and social research. Bad sampling vitiates the data at the source and no amount of subsequent statistical finding will improve its quality. In fact sampling is the part of strategy of research and has by now acquired the status of technical job (Sharma, 2004). Sampling is an important aspect of life in general and enquiry in particular. We make judgments about people, places and things on the tools of fragmentary evidence (Garrett, 1966, 1981; Edwards 1968).
In purposive sampling a sample is built up which enables the investigator to satisfy his specific needs in the project. The principles of selection in purposive sampling are the investigator’s judgment of the typicality of his interest. A sample may be especially chosen because in the light of available evidence, it mirrors some larger groups with reference to given characteristics (Stodla & Storodahl 1967; Garrett, 1981).

The sample in present study is purposive in nature. Firstly, principals of various schools of Gurdaspur were approached by the investigators. Principals of two schools Little Flower Convent School, Gurdaspur and HRA International School, Gurdaspur showed interest and promised to co-operate. Intelligence test (Coloured Progressive Matrices, 1995) was administered to 300 students of two schools.

In accordance with the manual students were divided into three groups, High Intelligence, Average Intelligence and Low Intelligence.

**FIGURE 5.1 SCHEMATIC LAY OUT OF SAMPLE OF STUDY**

In accordance with the manual students were divided into three groups, High Intelligence, Average Intelligence and Low Intelligence.
Students which lie at or above the 75th percentile were placed in high intelligence group, students which lie between the 25th and 75th percentile were placed in average intelligence group, and students which lie at or below 25th percentile were placed in low intelligence group.

Thus, 28 students with High Intelligence, 28 students with Low Intelligence and 64 students with Average Intelligence were selected. Each of three groups of students were randomly allocated to two sub groups i.e. experimental and control group (as shown in Figure 5.1). So, the final sample comprised of 120 students. In the present study, the number of boys and the number of girls in each group were approximately the same and they belonged to middle class socio economic status.

It is beyond the control of investigator to carry out this experimental study on a large sample. There are earlier studies in which small samples are used to conduct experimental studies. Baveja (1988) worked on a sample of 99 students in which 63 students were in experimental group and 36 students were in control group. Jamini (1991) took two sections of chemistry classes in a school. Passi and Sansanwal (1991) while reviewing research in teaching in Buch’s fourth survey of research in education had justified the use of small sample in such experimental researches due to deeper inquest of these studies and available methodological facilities. Kumari (1996) had taken a sample of 136 students from class VI and VII for her study. Gill (2004) worked on a sample of 180 students of class IX. Thakur (2006) studied the effect of co-operative learning on a sample of 112 students. Grover (2006) studied the impact of teacher monitored online instructional on 133 students. Kaur (2006) worked on a final sample of 40 students for her research work. Dhawan (2006) had taken a final sample of 64 students for her study. Harjai (2007) studied the effect of experiential environmental education on sample of 120 students.
5.2 DESIGN OF THE STUDY

A research design is the plan, structure and strategy of investigation to obtain answers to research problems and to control variance (Lindquist, 1956). Experimental method is the most sophisticated way of research, particularly in sciences. In this we study some variables by controlling some variables affecting the previous one. When certain variables can be controlled or manipulated directly in research problem by the investigator, the research procedure is often described as an experiment (Adwards, 1950).

A good experimental design should provide some information with respect to all the objectives of the experiment (Winner, 1971) and be kept as simple as possible (Montgomery, 1984). The designer of an experiment has to do planning of experiment so that experiment, on completion fulfils the objectives of the research (Broote, 1999).

There were different sets of dependent variables. The first 2x3 factorial design was computed by ANOVA for the means gain scores on critical thinking. Here, instructional treatment and intelligence were the independent variables. Gain on critical thinking scores was the dependent variable which was calculated as the differences in post test scores and pre test scores for each subject.

![Diagram of 2x3 factorial design](image)

**FIG. 5.2 SCHEMATIC LAY OUT OF 2X3 FACTORIAL DESIGN FOR MEAN GAIN SCORES ON CRITICAL THINKING**
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The variable of instructional treatment was studied at two levels namely experimental group (T₁) which was taught by outdoor environmental education and control group (T₂) which was taught by traditional learning methods. The variable intelligence was studied at three levels viz High (I₁), Average (I₂), and Low (I₃) levels. The schematic lay out has been presented in Figure 5.2.

Second, 2x3 factorial designs were employed for analyzing scores on gains in social skills. The two independent variables were instructional treatment and intelligence. Instructional treatment was studied at two levels viz (T₁) outdoor environmental education and (T₂) traditional method of learning. Intelligence was studied at three levels High (I₁), Average (I₂), and Low (I₃) levels. The schematic layout of above 2x3 factorial design has been presented in Figure 5.3

FIGURE 5.3 SCHEMATIC LAY OUT OF 2X3 FACTORIAL DESIGN FOR MEAN GAIN SCORES ON SOCIAL SKILLS
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Finally, 2x3 factorial design was employed for mean gain scores on Responsible Environmental Behavior. The schematic layout of the design has been presented in Figure. 5.4

![Schematic Layout of 2x3 Factorial Design](image)

- **T₁** - Experimental Group
- **T₂** - Control Group
- **I₁** - High Intelligence
- **I₂** - Average Intelligence
- **I₃** - Low Intelligence

**FIGURE 5.4 SCHEMATIC LAYOUT OF 2X3 FACTORIAL DESIGN FOR MEAN GAIN SCORES ON RESPONSIBLE ENVIRONMENTAL BEHAVIOR**

**5.3 THE TOOLS USED**

For the present investigation following tools were used

1) Instructional material for implementing Outdoor Environmental Education (Developed by investigator).
4) Responsible Environmental Behaviour Test (Developed by investigator).

All of these tools have been discussed in Chapter IV

**Pilot Study**

A pilot study was conducted on 25 students of class V to determine the effectiveness of various tools developed by the investigator. Pilot study was conducted in three stages. In the first stage critical thinking test, social skills rating scale and responsible environmental behavior test were administered. In the second stage 50 outdoor environmental education lessons were implemented and in the third stage again critical thinking test, social skills rating scale and responsible environmental behavior test were administered. Difference of the pre test and post test scores on critical thinking test, social skills rating scale and responsible environmental behavior test indicated whether lessons and the tools were workable or not. Few changes were made based on the students suggestions.

**5.4 PROCEDURE**

Procedure of the experiment comprised two main stages which are: Selection of the sample and conducting the experiment.

**STAGE I : SELECTION OF THE SAMPLE**

The present study was conducted on 120 students of class V from Little Flower Convent School, Gurdaspur and HRA International School, Gurdaspur. After administrating intelligence test to 300 students, students were selected and allocated to 3 groups viz. High Intelligence, Average Intelligence and Low Intelligence (as explained under the sub heading sample in the present chapter). Each of three groups of students were randomly allocated to two sub groups i.e. experimental and control group. So, the final sample comprised of 120 students.
STAGE II : CONDUCTING THE EXPERIMENT

The experiment was conducted in three phases as given below:

Phase I : Administration of the pre test

This phase involved the administration of the following tests to students of the experimental group and control group i.e. viz

- Critical Thinking Test
- Social Skills Rating Scale (Filled by the class teacher)
- Responsible Environmental Behaviour Test

Phase II : Conducting the Instructional Program

Students of experimental group were exposed to outdoor environmental education program for 50 days.

On the first day 'Unique features of trees' were explained by an activity have you ever met a tree? Students were taken to the area of school garden where there were lots of trees. Investigator discussed the physical traits of trees. Students observed trees then were told to draw and write about any one tree they like. After that students introduced their trees to other class mates.

Hug a tree was the activity for the second day to teach 'Importance of trees’ where students were engaged in non visual and intimate encounter with trees. Students were taken to school garden. Students were paired for this activity. In pair’s one was blind folded and he was the tree hugger. The tree hugger was lead to the tree. The tree hugger touched the tree and tried to memorize its shape, size, location, and texture. The tree hugger was led back to the starting point, blindfold was taken off and he was told to locate his/her tree. Students were swamped and other student was blind folded. Importance of trees was explained at the end.
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‘Natural orchestra’ was the activity of great interest where children had creative engagement with nature. Students were taken in forested area and told to find a musical instrument in wood which had a characteristic sound and made up of natural substances. Students were given 30 minutes for it. Then every student introduced his or her musical instrument. The orchestra was played with different kinds of songs and students really enjoyed it.

To explain the topic ‘What a wonderful leaf!’ students were taken for a walk through the local park. Students took bags for leaf collection. They were told to collect different types of leaves they see. After returning to school, students sorted leaves and used their imagination, glued leaves onto the paper and created rainbow and other different configuration. Different features and functions of leaves were explained to students.

To ‘Save the earth’ activity of tree planting was performed in the school garden. Requirements of school authorities were asked and plants were chosen. Students planted various plants with the help of gardener and other assistants.

‘Ecosystem’ was explained by taking students on a field trip to a nearby pond. Students collected a sample of the pond water and put pond water in a pickle jar and viewed the creatures in the jar with a magnifying glass and recorded what they found. Teacher explained that the pickle jar is an ecosystem that will supply the organisms that now live there with food, shelter, and oxygen. Students learnt about the living and non living parts of ecosystem.

Topic ‘Soil profile’ was taught by taking students to construction site. Students collected different soil samples from the bottom of a deep hole, from a garden and gravel and made a soil profile in a glass jar. This activity helped students understand the components of soil and relate the components to plant growth.
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The students learnt about the ‘Importance of sunlight’ by an experiment. Investigator told students to take a shoe box and put it on top of a very green grassy area. A heavy stone was placed on top of the box so that the box stays stationary. After a week, students were told to look at the grass and record the changes. Investigator explained that due to absence of sunlight the grass under the box has changed has lost its color.

Topic ‘Liquid waste’ was explained with the help of an experiment. Two healthy potted plants were kept in open. Students were told to water one with tap water and second one was watered with soap water. Students were asked to note the difference in two plants every alternate day for two weeks Investigator explained that soapy water has harmed the health of plant in the same way industries produce a lot of chemically impure water which pose a health risk to everyone.

To explain the meaning of ‘Pollution’ and pollutants students were taken to a factory situated on the main road. They were shown the harmful gases and water released by factory. Harmful effects of gases and water containing chemicals were explained to the students.

‘Effects of pollution’ on fishes and plants was explained through a drama on pollution. Students enacted the role of flowers, fishes, and pollutants. Costumes were arranged and after practicing for few days, performance was shown to the whole school. At the end message save the world was given.

‘Air pollution’ was taught by experimentation. Two pieces of cloth were pasted with vaseline and attached on a vehicle’s back and on a tree. The difference between two clothes was recorded by students. Causes of air pollution and methods to control air pollution were explained by investigator.
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Model was used to explain ‘Non Point sources of pollution’. Investigation filled the plastic container with 2 inches of water and draped the doormat over the side of the container to create a large grass ‘hill’. Food colors were used to represent the addition of chemicals, pesticides and leakage of oil. The effect of chemicals after rain was explained. Students learnt that how easily non point source of pollution pollute our environment.

To explain the working and use of ‘Waste treatment plant’ students were taken to the actual site. Investigator explained that waste treatment plant is designed to treat waste water and showed the working of various parts.

‘Noise pollution’ was explained with the help of collage making. Students collected pictures and cuttings of different sources of noise pollution from magazines and newspapers and prepared a collage. Teacher explained the effects of noise pollution on human beings and the methods of controlling noise pollution were suggested.

Differences between ‘Biodegradable and non biodegradable material’ were discussed in detail with an activity ‘What does nature decompose?’ An interesting experiment was performed. A box was filled with soil. Litter, plastic bag, aluminum foil, small piece of glass and polystyrene foam were scattered over soil and then covered with soil. After 4 weeks students were told to empty the box into open sheets of newspaper. Thus the students understood that nature does not decompose everything and plastic bags, aluminum foil etc. when added to soil cause soil pollution.

‘Compost’ was the topic which was taught to the students by teaching them the process and procedure of composting. The children performed the experiments themselves. Investigator also explained the uses of organic manure over chemicals.
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Topic ‘**Natural resources**’ was explained by taking students for nature walk. Importance of different natural resources like soil, water, forest etc was explained. Ways to preserve various natural resources were discussed by the investigator.

An outing to a nearby garden was organized to make general public aware of how to ‘**Save water**’. Investigator explained the different ways in which waste can be saved to students. Students were divided into 20 groups of 3 each. One student in each group carried a poster having message to save water on it. Students conveyed message to people in the park.

Uses and working of ‘**Solar cooker**’ were explained to the student. Students brought uncooked rice and pulses. They were kept in black steel boxes. Students were told to keep an eye on the direction of sun and change the direction of solar cooker accordingly. After the meal was cooked students were served the food. Students learnt that food can be cooked without the use of LPG, kerosene etc. by using solar energy. Investigator explained the differences between exhaustible and non exhaustible natural resources.

Effects of ‘**Soil erosion**’ on river edges were explained with an activity. A river was made in empty space on the ground; water was flown with the help of pipe. The soil from the sides of river was carried by water. Investigator explained that in the same way soil is carried with water and this is called soil erosion. Methods by which soil erosion can be prevented were discussed.

To explain the topic ‘**Terracing**’ a model was prepared on the ground. On a small hill made of sand and mud water was flown with pipe and soil came down. Then investigator with the help of students made small steps on the hill. Again water was flown and less soil came down with water. Investigator explained that these steps prevent soil erosion in hills. Need and advantages of terracing were explained.
To familiarize young students with their surrounding an outing to a 'Post office' was arranged. Students observed the post office carefully. Investigator explained the importance and working of the post office.

The topic of ‘Police Station’ was taught to the students by visiting a police station. Students met the different officials and other staff of the police station and asked them about the duties they perform.

‘First aid’ the topic was taught by explaining the meaning and importance of first aid. Investigator prepared the first aid box with the help of students. Activity showing first aid measures needed during emergencies was performed by students.

Next lesson plan was based on topic ‘Biotic and abiotic components’. It was taught to students by role playing. The students were selected to play the role of biotic (man, plants, animals) and abiotic (solar radiations, moisture, winds, water, soil) components. Students explained their role in the ecosystem. Later on response and recapitulation was found to be excellent.

To explain the topic ‘Herbivores, carnivores, and omnivores’ several groups of students were formed. Each group took out the heap of toys out of the given toy-box. They identified herbivores, carnivores, and omnivores and placed them separately. In the end, the teacher explained in detail, the features of herbivores, carnivores and omnivores.

‘Food web’ was explained by an activity so that students understand how each animal contributes to the overall web of life. Investigator handed out nametags having variety of animals, plants, and insects on them to all of the students. Students stood in a circle. Investigator started the yarn at the largest animal and had the students pass the yarn around going from largest animal down to the
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smallest insect and then on the plants that the insects will eat. Students created a web of life that incorporated large animals, insects, and plants.

Topic ‘Balanced diet’ was explained with the help of a model of train. Balanced diet was written on the engine, open boxes depicted coaches they had vitamins, minerals, carbohydrates, and proteins written on them. Small packets having pulses, wheat, milk, rice, fruits, vegetables were given to students. Students came one by one and kept the packets in the respective boxes. Teacher explained the importance of vitamins and minerals. Diseases caused due to deficiency of vitamins and minerals were also discussed.

‘Birds are everywhere’ was taught practically. Investigator asked students to list types of evidence that can be used to determine the presence of birds. Students were taken out to look for evidence of birds in their outdoor classroom. They were reminded to use their senses. At the end investigator discussed what students have seen and emphasized that birds and wildlife share our surroundings.

For the ‘Identification of native birds’ activity birding lane was planned. Investigator gathered pictures of 10 different birds common to the geographic area. Activity was conducted on path called birding lane. Students were asked to take a walk along ‘Birding Lane’ to find and identify birds including bird photos. Students took pencil and paper and kept the track of the birds they spotted.

Activity adapt a bird was planned to explain ‘Adaptations’ in the wild bird habitat area of outdoor classroom. Students looked through binoculars and saw the bird in detail. They wrote and sketched about the birds they observed. Investigator discussed about the birds adaptation and what clues these adaptations tell about the bird’s food source. Students were also shown pictures of birds that were not in the outdoor classroom. Investigation helped students to
generate list of adaptations. Students were told to create a new species of birds using the adaptations. Students came up with new ideas and really enjoyed the activity.

To explain the importance of 'Protective coloring' an area with short grass where many birds are seen was chosen. Teacher told students to place different colored bread pieces. The bread was gathered later in the afternoon. Students found that the green bread was left because it was not easily seen in the grass. Teacher explained that protective coloration is the protective color pattern of an animal that allows it to stay hidden among its natural habitat. Animals need to survive, so they have adapted to blending into their surroundings.

Students were taught how to make a 'Bird house'. Milk carton was used and covered with masking tape. Entrance hole was cut investigation explained the steps. Students also prepared their own bird houses. After making bird houses they were hung on trees.

Next day Investigator explained to students how to make a 'Bird feeder'. Students were told to cut the top off a plastic carton. It was washed. Pieces of wire were looped around each end of carton. Students prepared their bird feeders and filled the holes of egg carton with different kinds of seeds.

To teach the concept of 'Limiting factor' a physically-involved activity was performed in a fairly large open area in schoolyard. Students looked for one or more components of butterfly habitat. The butterflies were the focus in order to illustrate the importance of providing suitable habitat for wildlife.

'Importance of animals' was explained by organizing a fancy dress show on animals. Children came up dressed like different animals. They spoke about their habitats. It was highly enjoyable.
This activity was highly appreciated by staff and Principal of the school. Prizes were given to three best performers.

The topic ‘Wild animals’ was explained by taking students to a zoo. They observed the animals and birds in the zoo. The caretaker of the zoo told the students about the eating habits of animals and how to take care of the animals. Different ways by which wild animals can be protected were discussed.

Students were involved in an interesting activity ‘Council of all beings’ to give the message ‘Save animals’. Each student was told to pick a card having animal picture on it. Students had to write a report and prepare mask of that animal in four days. After four days students wore masks and sat in big circle. Every student discussed about the animals he was playing. At the end there was discussion ‘what can be done to save animals’. Students participated and expressed their views.

Next day activity was cleaning the school campus; aim was to make students aware about the ‘Waste in school’. Students picked up waste paper, napkins, plastic plates etc. from the school grounds and corridors. They used different colored carry bags to separate various types of waste material. Students also picked weeds from the grass and threw them into the dust bin.

Need to ‘Reduce waste’ was explained by celebrating waste free lunch week. Investigator explained to students how much waste in the school is because of their lunch boxes. A letter was given to parents explaining how to pack lunch which is waste free. Garbage before and after waste free lunch week was weighed and students noted the difference. Students educated their friends and class mates to reduce waste during the lunch break.

Reusing is fun was activity used for explaining ‘Reuse waste’. Investigator explained the meaning of reusing. Students were showed
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number of material from their surroundings which can be reused. Students were given empty bottles, paint, wool, marble chips, and sequins. Students decorated these bottles and made pen holders.

Making and selling of paper bags was the activity, to encourage students to use their creativity to ‘Reuse waste’. Students made their paper bags and decorated them. On parent teachers meeting students sold their bags and donated the money in charity.

To motivate students to ‘Recycle waste’ teacher made the meaning of recycling clear to students and showed some recyclable packaging. Investigator demonstrated how to recycle paper by putting it in hot water and preparing its pulp. Pulp was dried and pressed to prepare paper. Students were made aware that paper can be recycled at home.

Students were taken to nearby garbage dump to explain the ‘Hazards of waste accumulation’. Students were instructed not to touch any thing. Investigation explained students that garbage emits foul smell, attracts flies, rodents, and spread diseases. Plastic bottles, bags etc. cause blockage in drains, harm the soil and cause death of animals.

An eco birthday party was organized for students. Idea was to make students adopt ‘Environment friendly practices’. Reusable cups, plates, table clothes, cloth napkin etc were used. Instead of bringing gifts children donated money, clothes, and old toys etc. to local charity. Students enjoyed and at the same time got the idea that they can celebrate without creating any kind of disturbance in the environment.

‘Greenhouse effect’ was explained with the help of an experiment. Experiment was performed on a sunny day. One jar with thermometer was kept in sun. Second jar was kept on the top of first. Third jar was without any cover and thermometer was kept in it. After
one hour change in temperature was noted by students. Investigator explained that closed jars act as atmosphere and have created a mini green house effect.

To encourage students and their parents to not to do activities which cause ‘Global warming’, investigator made a copy of pledge for each student and explained how they can send less carbon dioxide to the atmosphere each year. Students took the pledge together and took one copy of pledge for their parents. Kids also learnt a lot about helping to improve the environment by working with the community through a special letter writing effort.

To develop students ‘Environmental concern’ poster making competition was organized. Students were informed in advance so that they bring their colors etc. The themes of poster making were Man and Nature, Stop Pollution and Save the Planet Earth. The competition was of one hour duration. Students used their creatively and made beautiful posters. Best three were selected and given prizes.

Environmental rally was organized to spread ‘Environmental awareness’ in general public on the concluding day of the outdoor environmental education class. Green caps were distributed to students. Several banners and posters were displayed by the children. They walked throughout the school from one block to other giving message of saving environment and covered distance outside the school.

The students of control group were taught similar topics by traditional method of instruction.
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Students hanging bird house on a tree with the help of investigator.

Investigator explaining the process of soil erosion.
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Students on a field trip to a pond.

Students cleaning the school campus.
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Students taking pledge on global warming.

Students showing their posters on environment prepared during poster making competition.
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Students performing the activity of plantation.

Investigator explaining balanced diet with help of model of a train.
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Investigator showing waste water treatment plant.

An experiment being performed to explain the differences between biodegradable and non biodegradable material.
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Investigator explaining to students that nature does not decompose everything.

Participants of dance on pollution organized to explain the effects of pollution.
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Students watching birds in a zoo.

Students enacting the roles of flowers and pollutants.

Students watching birds in a zoo.
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Students learning features of herbivores, carnivores and omnivores with toys.

A student hugging a tree.
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Investigator explaining the hazards of waste accumulation near garbage dump.

Students watching birds with binoculars.
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Winners of fancy dress show on animals.

Students explaining different ways by which water can be saved in a park.
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Investigator showing a source of air pollution.

An activity explaining first aid being performed.
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Students speaking slogans and displaying charts in a rally.

Students expressing their views to save environment to general public.
Phase III: Administration of the post test

Immediately after the instructional treatment of 50 days was over, the subjects were assessed by administering the following tests to students of both the experimental and control groups.

- Critical thinking test
- Social skills rating scale (Filled by the class teacher)
- Responsible environmental behaviour test

### TABLE 5.1
**DATA SCHEDULE OF THE EXPERIMENT**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional program</td>
<td>1 April, 2008 – 30 May, 2008</td>
</tr>
<tr>
<td>Post test stage</td>
<td>1 June, 2008 – 3 June, 2008</td>
</tr>
</tbody>
</table>

5.5 STATISTICAL TECHNIQUES

To analyse the data following statistical techniques were employed.

- Description statistical techniques like mean, SD’s of critical thinking, social skills and responsible environmental behavior scores.
- Factorial design 2x3 Analysis of variance for mean gain scores on critical thinking.
- Factorial design 2x3 Analysis of variance for mean gain scores on social skills and its dimensions.
- Factorial design 2x3 Analysis of variance for mean gain scores on responsible environmental behavior and its dimensions.
- For further investigation t test was employed, wherever F ratios were found to be significant.

5.6 PRECAUTIONS OBSERVED

For ensuring effectiveness in experiment following precautions were observed
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- All the subjects were oriented to the tests and outdoor environmental education lessons as per their treatment.
- Investigator herself taught all the subjects to avoid any variation in the teacher variable.
- During the experiments no stress of any kind was imposed on the subjects.
- All the lessons were given in outdoor settings and harmonious atmosphere.
- Investigator ensured that students were not distracted by the novelty of the location.
- Sufficient time was provided for each and every activity.
- While taking students out of school premises, the cooperation of parents and guardians was sought by getting consent letters signed by them.
- Proper care was taken that there are no harmful insects at the place where classes were conducted.
- Outdoor classes were conducted early in the morning in zero periods to save students from scorching heat.
- Every student was provided with separate material during experimentation to avoid any kind of disturbance.

5.7 CONSTRAINTS AND DIFFICULTIES FACED DURING EXPERIMENT

For the knowledge of those who intend to carry out such researches in future it is essential to mention some of the difficulties faced during the experiment.

a) It was difficult to convince principal and teachers of school and get their cooperation.

b) Lot of effort was put in for motivational enhancement of the students so that they attend outdoor classes regularly.

c) Conducting outdoor classes was also a big challenge. As students were not use to of this idea.

d) For taking outside the school premises, school Principal’s, teachers and parents permission was taken.