The objective of introducing this Field Work Books is to enhance knowledge on environment among students by creating an awareness through practical experiences gained by means of environmental activities on various environmental components and their existence in environment, their importance and the present conditions.

There are seven (07) such Field Work Books compiled on that basis through which an understanding could be had about environmental aspects connected to forests through students activities, accompanied with a Fact Sheet relating to each of the Field Books. By referring to the basic data and information given in the Fact Sheet, students will be able to have a basic understanding of the relationship between forests and the components which is described (e.g. forests and water) through the activities included therein.

It is expected to use the Fact Sheets and the Field Work Books to improve knowledge on the subject of forestry. The role on the part of students will be to use this Field Work Book as a basis on which they can be conscious of various environmental aspects in the light of the new knowledge; to think deep on the subject, on the basis of the Fact Sheet and to focus on the activities referred to.

This Field Work Book has been prepared for the environmental pioneer students in Year 06 to 13 and it has been designed to enable the completion of every activity within a period of one year.

Instructions which are necessary to carry out the activities are given along with the respective activities. While the activities are designed in such a manner that they can be carried out (to the maximum) in relation to one’s environment, it is our expectation to perfect this Field Work Book in the
future by taking note of the short comings and difficulties that may arise in the implementation and to rectify them. Therefore, we are pleased to request you that such problems faced in the practical use may be intimated to the address given below.

It is further informed that you may obtain the assistance of the Divisional Environmental Officers and the Range Forest Officers in conducting these activities.

These Field Work Books were tested under a pilot project during 2002 - 2003 and every Divisional Environmental Officer was issued with a set of books on an experimental basis. However, it noted that their response in this regard was not very encouraging.

We extend our thanks to the members of the steering committee, Mr. Tilak Hewawasam the (then) chairman of the Central Environmental Authority, Prof. Sarath Kotagama, University of Colombo, Mr. W. R. M. S. Wickremasinghe, Additional Secretary, Ministry of Environment and Natural Resources and Mr. W. Rajapakse, Commissioner, Education Publication Ministry of Education for their services rendered as members of the Steering Committee and staff of the Central Environmental Authority, resources persons who contributed for the preparation of these Field Work books.

Deputy Director General
Environmental Education and Awareness Division
Central Environmental Authority
Parisara Piyasa
104, Denzil Kobbekaduwa Mawatha,
Battaramulla.
Advisory:

Mr. Tilak Ranaviraja
Chairman,
Central Environmental Authority

Mrs. Manel Jayamanna
Director General
Central Environmental Authority

Editing:

Mrs. Lalitha Fonseka
Deputy Director General, (Environmental Education and Awareness)
Central Environmental Authority

Co-ordination

Mr. M. D. Anil Suneetha
Director (Environmental Education and Awareness)
Central Environmental Authority

Editing Assistance:

Mr. Anura B. Marasinghe
Assist. Director (Environmental Education and Awareness)
Central Environmental Authority
Introduction

This Field Work Book titled “Forests and Climate” will guide environmental Pioneer students towards the activities related to them.

Since the Field Work Book has to be used with some knowledge of the scientific background, it is necessary to obtain the assistance of a science teacher of the school.

It is expected to use of the Field Work Book to create an awareness among the students by directing them towards five (5) selected practical environmental activities; to improve their knowledge of the environment and to focus their thinking towards such activities. It is further expected to enhance the ability of students to come to conclusions by observing and studying environmental phenomena and also to improve their exploratory skills on environmental matters.

Therefore, we request all those concerned that their maximum contribution be extended in order to realize the above benefits by performing the activities contained in this work book in achieving the expected objectives.

Further we expect to improve this activity which has been launched as a pilot project to be implemented among school children and therefore the views and suggestions of all group members and teachers who provide the necessary guidance in this regard are highly appreciated.
Forests and Climate

Basic instructions for the use of the Guide Book.

The Guide Book on Forests and Climate has been designed targeting the fulfilment of 5 behavioural objectives for Environmental Pioneer students.

**Expected behavioural objective - 1**

Provides an understanding of the flora and fauna, species found in a natural environment close to the school. Provides guidance for grading plants according to certain characteristics in them in the process of an exploration and also for identifying them with the help of information gained through scientific writings on them.

**Expected behavioural objective - 2**

Plants in a particular area adapt to its climatic conditions. Students understand that some adaptations are inherited while others take place due to various physical factors. Provides an understanding to students for taking down various observations they make.

**Expected behavioural objective - 3**

Students in school understand that forests contribute to sound environmental conditions such as the reduction of environmental temperature etc.

**Expected behavioural objective - 4**

Gives an understanding to students that plants in a forest help bring the moisture of environment to a higher level.
Expected behavioral objective - 5

The beginning of a forest community takes place with the nourishment of soil which containing living organisms such as seeds, with the presence of water. It provides an opportunity for the students to understand the small plants, bushes and small trees which grow in this manner gradually increasing their growth and finally paving way for the establishment of floral species in the forest community. They understand the fact that as trees become larger in size, the number of trees included in a land area unit goes down gradually.

Basic guidance for activities relating to forests in Sri Lanka and the Climate

Separate assignment papers should be prepared for the group.

Instructions to teachers for implementation

- Discuss the expected objectives with the students so that they get an understanding about the assignment papers.
- Discuss with the students and decide on the time frame and dates during which the assignments could be implemented.
- Provide the necessary awareness and co-ordination with regard to information on the assignment about one week prior to the commencement of the assignment, with the assistance of the resource persons available.
- Provide guidance to students with regard to obtaining Fact Sheets etc.. from institutes such as the Central Environmental Authority, Department of Forests Conservation, Meteorological Department etc.
Divide the students into groups and appoint a leader.

Discuss with the respective groups, the objective of the work assigned to each group.

**Forests and Climate**

**Field Activities**

1. **Identifying plants endemic to the area**

   **Expected objective**: To identify the plant species grown in the area where the students live.

   **Implementation**: Obtain the assistance of the teacher of Botany and Agriculture in school.

       : Obtain the assistance of the Forest Conservation Officer of the area.

**Action group and**: Year 6 - 8

**Activities**

1. To organize students into groups of 10 - 15 students following the instructions of the teacher.

2. To undertake a field visit to a natural ecological system subjected to minimum human influence. (a grass land, a forest, a small jungle area.)

3. To note down the number of plant species separately, in an area of 20 m x 20 m.
3. (a) When the number of plants is higher, it is easy to obtain the statistical value of such plants by reducing the size of the sample. If the number of plants in a sample area of 1 m x 1 m is 50, the number of plants which may contain in a sample of 20 m x 20 m is
\[
\frac{20 \times 20}{1 \times 1}
\]

4. To categorize such plants as trees, bushes, creepers, plants, grass types, epiphytes etc. and to identify their botanical names.

5. To obtain information on temperature and rainfall patterns of the area, from a book which provides such information. (an Atlas which contains climatic zones may be used.)

5. (b) To include the value obtained in each category, in a graph by a Frequency Histogram.

6. To discuss the Frequency histogram and prepare a report. (For this purpose, the assistance of the science teacher can be obtained.)

Instruments: a measuring tape of 20 m, a pencil and a field book.

Time: 3 hours.
2. Identifying the climatic adaptation of plants.

Expected objectives: To understand how plants have adapted to the climate of the area, for their existence.

Instructions by: Teachers of Science and Environmental activities teachers of the school.

Activity group and activities: Year 10 - 12 students

1. To divide the students into groups of 3 - 5 according to the instructions of the teacher.

2. To give an understanding (by the teacher) to the students about the leaves and the trunk of plants and their nature depending on climatic factors and the location of such plants.

3. To identify the trees of a selected natural plant community situated in the vicinity of the school; to make notes on the nature of their leaves, trunks and the nature of their existence and to depict such plants by means of rough sketches.
   e.g. the shape, roughness, fleshy and villus nature of the leaves.

4. To discuss with the groups the matters which are observed and prepare a report.
   Instruments: Pencil, half sheets (A4) and a hand lens for each group.

3. Study of the micro environmental temperature control caused by a forest.

Expected objective: Identify the fact that the temperature of the
environment is reduced under the micro environmental conditions caused by a forest.

Instructions by : the science teachers of the school.

Activity group and the activity : Year 10 - 12 students

1. To select an area with trees and an open area without trees in the school premises.

2. To select two specific sites from the two areas for measuring the daily temperature.

3. A teacher to demonstrate and teach the students how to obtain readings using a thermometer

4. To select school hours which are convenient for obtaining temperature readings daily. (mid - day is more suitable)

5. To mark in a circle, the temperature readings obtained from the two selected sites during the month.

6. To study changes in temperature and discuss the reasons for those changes.

Instruments : A thermometer, pencils, graph paper, a stand.

4. The influence caused by a micro environment brought about by a forest (by plants) on relative humidity

Expected objective : To understand that in the micro environment created by plants, the aggregate of vapour in the air rises up.

Instructions by : Science teachers of the school.
Activity:
1. The teacher to demonstrate how to function the wet and dry bulb thermometer and how readings are obtained.
2. To demonstrate how the relative humidity is calculated by the readings obtained as above.
3. To take steps for the calculation of the relative humidity of the two sites used for the activity in (3) above separately by obtaining the relevant readings.
4. To discuss the behavioural pattern of all data obtained after taking the readings from an area with a reservoir, in the same manner, and prepare a report.

Instruments: Wet and dry bulb thermometers, pencils, papers, humidity curve.

5. Study of the creation of a plant succession along with climatic changes.

Expected objective: To have an experience about the creation of a forest through a study of the existence of prominent plant species in an area as a final stage of the gradual changes in the plants on the soil with the incidence of rain.

Activity group and the activity: Year 6 - 13

1. This activity should be done to coincide with the rainy season.
2. To find out the rainy season of the area.
3. To tabulate according to number of plant types in a selected open area during the first six months of a rainy season. (with the start of the rain.)

<table>
<thead>
<tr>
<th>Period</th>
<th>Size of the sample</th>
<th>Plant type and number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 week</td>
<td>50 cm x 50 cm</td>
<td></td>
</tr>
</tbody>
</table>

A quadrat of 50 cm x 50 cm, 1 m x 1 m made of wire or wooden reepers and a metre measuring tape should be used for this activity.

The size of the sample should be smaller when the number of plants is higher. But the size of the sample should be gradually enlarged up to 10 m x 10 m as the plants grow gradually.

(Sizes of 50 cm x 50 cm; 1 m x 1 m; 2 m x 2 m; 5 m x 5 m and 10 m x 10 m are suitable for samples.)

Activity:
1. To select an open area of 10 m x 10 m.
2. To demarcate the boundaries to the above mentioned sizes by wedging.
3. To count the number of plants by changing the quadrat depending on the manner of changing of the number of plants in the small quadrat (50 cm x 50 cm), with the onset of the rainy season. (When the number of plants contained in the quadrat is less than 20, use the larger quadrat.)
4. To include data in the curve as mentioned above and to count the number of plants contained within the area of 20 m x 20 m.
5. To discuss the data with the science teacher and prepare a report.

Instruments: A metre tape (10 metres is enough) / paper and pencils.