Vision Empower & XRCVC

Teacher Instruction KIT

Forests-Our Lifeline

Syllabus: NCERT
Subject: Science
Grade: 7
Textbook Name: NCERT- Science Textbook for class VII
Chapter Number & Name: 17. Forests – Our Lifeline

1. OVERVIEW

1.1. OBJECTIVES AND PREREQUISITES

Objective

- To comprehend that forest is a community of various plants, animals and microorganisms.
- To know the interdependence of plants and animals in a forest.
- To understand the importance of forests.

Prerequisite Concept

- Forest is a habitat , *Grade 6, chapter 9: The Living Organisms*
- Types of plants herbs, shrubs, trees, climbers and creepers , *Grade 6, chapter 7: Getting to know plants*
- Autotrophs, Heterotrophs , *Grade 7, chapter 1: Nutrition in Plants*
- Humus , *Grade 7, chapter 9 : Soil*

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*Kindly Note: Activities marked with * are mandatory*

Structure of Forests

Activity 2: Structure of forests

Interdependence of living things in a forest and the food chain

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Trees

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3.3. LET'S DISCUSS: RELATE TO DAILY LIFE*

4. EXERCISES & REINFORCEMENT

4.1 EXERCISES & REINFORCEMENT

Reinforcement

Activity 6: Poem- Save the Tree

4.2 IMPORTANT GUIDELINES*

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Perform Textbook Activity

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2. LEARN

2.1. KEY POINTS

- Forest is a system comprising plants, animals and microorganisms.
- Many products like wood, paper, gum, oil, spices, medicines etc. are obtained from different trees and plants.
- Trees form the upper layer, followed by shrubs. The herbs form the lowest layer of vegetation. Climbers and creepers are also found in a forest.
- The top part of the trees is called the crown. The crown differs in shape and size in different trees. The branches of tall trees form a roof like structure above other smaller trees and plants and it is called a canopy.
- Different components of forest are interdependent on each other. There is an interaction between soil, air, water and living organisms.
- Living things are categorized as autotrophs (plants which prepare their own food) Heterotrophs (depend on autotrophs for food) and saprotrophs (survive on dead and decaying organisms.
- A food chain is a series of organisms where all the organisms are dependent on previous organisms for food. If any one component of the forest is removed, it affects all the food chains and ultimately the whole forest.

- Scavengers like vulture, jackal and some insects feed on dead animals. Microorganisms and decomposers convert the dead and decaying matter into dark coloured nutrient rich humus.
- Plants grow with the help of nutrients and water in the soil and can regenerate.
- Forests are called the green lungs as they maintain the balance of oxygen and carbon dioxide in the air through the process of photosynthesis
- Forests also influence the climate, water cycle and are also a lifeline for communities living there.
- Forests help to maintain water tables, prevent floods and soil erosion.

2.2. LEARN MORE

None

3. ENGAGE

3.1. INTEREST GENERATION ACTIVITY

Interest generation activity

Activity 1: Forests a habitat

Materials Required: None

Prerequisites: None

Activity Flow

Discuss with the students any of the following questions to prepare them for the day's lesson.

- Ask the students, where would they find animals like lion, tiger, elephant etc.?
- Forests are the habitat of these animals.
- Ask the students what else they find in a forest?
- Have an audio (or video) of different animal insect and bird sounds. See how many children are able to identify. After this an audio of forest sounds (mixed) can also be played to give them a feel of the forest.
- Tell the students that this chapter would deal with the forest system and its benefits.

OR

- Ask the students where do we get oxygen and food from?
- From where do we get materials to make furniture, paper, etc.?

-Ask the students if we find the same kind of trees and plants in a garden.

- Are all of them the same height, shape etc.?

OR

-How is a mango tree different from a rose plant and grass?

- Lead the conversation to bring out the difference between trees, shrubs and herbs.

3.2. CONCEPT INTRODUCTION ACTIVITIES

Structure of Forests

Activity 2: Structure of forests

Materials Required: Plastic models of trees, shrubs and herbs (Note: these models should be proportionate in size such as trees should be much taller than the shrubs).
Prerequisites: None

Activity Flow

- Ask the students to feel the shape of trees, shrubs and herbs and identify them.
- Tell them to make a model of the forest using these trees and herbs with the help of the adult. The herbs and shrubs should be placed below the tree tops.
- Ask them to feel the top of the forest.
- Explain how the crown (the top portion of the trees) of the trees form a roof-like structure called canopy. The shrubs and herbs are under these roofs and form understorey**.** Climbers and creepers are other types found in the forest.
- Lead the discussion such that the students are able to visualize the forests with different types of trees and plants. Explain that the floor of the forest is generally covered with the dry fallen leaves.
- Show them plants around the school to relate to the size of shrubs, talk about how much taller a tree is. If the school has many floors, have a few children stand on the ground floor and then have another student go up to a higher floor and talk to the ones below. This gives a sense of the height of trees. You could also take a string and measure out the length of a tree and then have children stand on either end to get a sense of how long the tree is.
- If possible visit a forest or a park in your neighbourhood. Let the children observe the trees and list the characteristics of those trees (height, leaves, flowers, seed, etc). Explain and assist the children wherever required.
- After their visit, explain to them the difference between a park and a forest. A park is planned and maintained by humans while a forest is maintained by nature. Trees appropriate to the climate compete and grow and maintain the ecosystem naturally in a forest.

Interdependence of living things in a forest and the food chain

Activity 3: Interdependence of living things in a forest and the food chain

Materials Required: Models of grass, insect, frog, snake and eagle. Tactile diagram of food chain
Prerequisites: None

Activity Flow

- Ask the students to identify these living organisms and their food?

- Ask the students to place these models in the order of their dependence on food. Guide them by asking questions like which of these living things prepare their own food? What do insects feed on?
- Students may answer that plants prepare their own food. Insects feed on grass.
- Lead the discussion to form the arrangement as

Grass insect frog snake eagle.

- Explain that it is called a food chain. This can also be explained using the tactile diagram of the food chain. There are many such food chains in the forests.
- Green plants prepare their own food as they are **autotrophs.** Insects and **herbivores** (like Cow, Goat) depend on plants for food. **Carnivores** (like Lion, Tiger) depend on herbivores for food. **Scavengers** (like vulture, Jackal) and few insects depend on dead animals for food. **Decomposers** like microorganisms convert the dead and decaying matter into nutrient rich humus. Humus makes the soil fertile. Plants grow and regenerate with the help of soil and water.
- Ask them what will happen if you remove insects from the food chain? The frogs will die due to lack of food which in turn will affect the lives of snakes, and eagles. Emphasize that if one of the components is disturbed, the system will be disturbed.
- Discuss how insects, butterflies and animals help in the dispersal of seeds. Nutrients from animal dung and dead and decaying plants and animals are released back into the soil by microorganisms.
- Different components of forest are interdependent on each other. There is an interaction between soil, air, water and living organisms.

Trees

Activity 4: Trees- the green lungs

Materials Required: None
Prerequisites: None

Activity Flow

- Ask the students what is the function of the lungs in our body?
- The students may answer that it helps to absorb oxygen and give out carbon dioxide. Explain that the respiration process is essential for our existence.
- Lead the discussion so that students state that plants take in carbon dioxide and give out oxygen during photosynthesis. They help to maintain the balance of these gases in the atmosphere, so they are called the green lungs.
- Explain that plants also play an important role in water cycle through the process called transpiration.

Activity 5: Trees help to prevent soil erosion and floods

Materials Required: 3 vertically cut plastic bottles, plastic cups, soil, plants, dry leaves, water can, and water
Prerequisites: Plants to be grown in one of the bottles.

Activity Flow

- Ask the students to fill the first bottle with soil, the 2nd bottle with soil covered with dry leaves and the 3rdbottle with soil along with plants. Label them as A, B and C.
- (Note -Grow plants in bottle C or place the soil with plants grown)
- The bottles are to be arranged in such a way that the water drained from each bottle can be collected using a plastic cup or transparent containers.
- Sprinkle equal amounts of water from a height with the help of water can just like the rainfall.
- Ask the students what difference they expect in the water collected from the three bottles? Which of them will be clear comparatively?
- Collect the water drained from each bottle in a transparent container and discuss the colour of water collected in each case.
- Ask the students why the water collected from bottle C was clear compared to the water collected from B and A. The water collected from A was muddy.

The students say that bottle C had plants in it.

- Lead the discussion to make the students comprehend how plants slow down the flow of water, act as natural absorbers and help to maintain the water table.
- As the water falls slowly on to the ground as in bottle C, the water does not hit the ground directly and causes floods. The dead leaf on the forest floor does not allow the water to stagnate and at the same time protects the upper layer of soil. The trees also ensure a regular supply of water in streams and rivers.
- You can uproot some plants to show the students how the soil is held firmly by the roots of plants. Ask them to feel the soil held by the roots. This explains how trees prevent soil erosion.

3.3. LET'S DISCUSS: RELATE TO DAILY LIFE*

1. Ask the students whether the forests are disappearing?
   Lead the discussion to bring out the factors like construction of roads, buildings, industries, demand for wood and overgrazing of animals are responsible for the disappearance of forests.

2. Discuss what would happen if forests disappear?
   -There will be an increase in carbon dioxide which will lead to global warming or increase in earth's temperature.
   -Animals and forest dwelling communities will not get food and shelter.

-There will be more floods and soil erosion
-Our life and environment will be endangered.

3. Ask the students what they can do to preserve forests?
   The students may give answers like Plant a tree.

Lead the discussion to get few more points like

- Use less paper, Recycle paper and cardboard and create awareness. While explaining the various methods emphasize the importance of practicing the 3 R's Reduce, Reuse and Recycle.

4. EXERCISES & REINFORCEMENT

4.1 EXERCISES & REINFORCEMENT

Reinforcement

Activity 6: Poem- Save the Tree

Materials Required: None

Prerequisites: None

Activity Flow

Read the poem and ask the students to repeat after you.

Cut me NOT, cut me NOT, cut me NOT.
Look around you, the earth is hot.
Cool and green, I'm a lovely thought.
Cut me NOT, cut me NOT, cut me NOT.
Have some trees, in the empty plot.
Food furniture pharma, supply I a lot.
Save me only now, to save your tot.
Cut me NOT, cut me NOT, cut me NOT.

Ask the students to write a slogan for a green world.

4.2 IMPORTANT GUIDELINES*

Exercise Reading

It is very important that the children practice their learning as well as their reading. Hence have the children read out the newly learned concepts from their textbooks or other available resources.

Perform Textbook Activity

It is good practice to have the children perform the textbook activities. Your textbook activities might not be accessible hence go through this resource to learn how to make textbook content accessible

Provide Homework

To evaluate their understanding and to help the student revise and implement the new learnt concept ensure to provide them with homework. Students should perform one or two of the questions mentioned above or from the textbook exercises with the teacher in Class and the remaining may be given for homework. Also, ensure that the student knows their special skills linked to independently using their accessible books as it will be critical to doing homework independently

References:

- Soil erosion activity: https://www.youtube.com/watch?v=im4HVXMGI68
- Save the tree https://youtu.be/tvbRXxhUD6E

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