

Science Insight

4

Teacher's Resource Book

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© 2024 by Goyal Brothers Prakashan

Educational Publishers

New Delhi, India

Published in Indonesia by PT Yudhistira Ghalia Indonesia

Copublished with: PRIME Publications

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Introduction

Welcome to Science Insight 4: Teacher's Resource Book!

This Teacher's Resource Book serves as a guide to making science education an engaging and impactful experience for young learners. It is designed to complement the **Science Insight 2: Coursebook**, offering essential tools for effective teaching.

This **Science Insight 4: Teacher's Resource Book** contains all the essentials for delivering engaging science lessons. It includes lesson overviews that summarise each chapter, offering a clear structure for planning and reviewing lessons with ease. Detailed plans are included to achieve learning objectives and ensure that key scientific concepts are well understood by students. Answer keys for all coursebook exercises are also provided to save preparation time and maintain consistency in evaluations. These resources work together to support the delivery of meaningful and enjoyable science lessons.

We hope this Teacher's Resource Book becomes an essential companion throughout the teaching journey, offering the necessary support to create meaningful and enjoyable science lessons. Suggestions and constructive feedback are always welcome to help us improve and make this series even better for educators and students.

— The Publishers

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1. Parts of Plants

Overview of Lesson

In this lesson, students will learn the different parts of a plant and the specific function performed by each of these parts. They will also learn how the different parts of plants carry out some special function in addition to the main function, in different types of plants. For example, the root of a carrot plant may store food, which is a special function it performs in addition to the main function of binding the plants firmly in the soil and absorbing water and minerals from the soil. They will get basic idea about germination. The pictures provided along with the text will help the students to learn better.

Plan for Achieving the Learning Objectives

- Step 1.** Ask the students if they have ever noticed the different parts of a plant. You can bring a small plant to the classroom and point out each part to make the lesson interesting.
- Step 2.** Discuss the main function of each part in detail. Tell them how the shape of each part is suited to the function it performs. Give examples of fine root hairs which absorb minerals and thick strong upright stems which give support to the plant. Also discuss what other special functions are carried out by these parts. You can bring onion, ginger, potato, carrot, etc., to the classroom and explain how these store food in addition to carrying out their specific function, to make the lesson interesting.
- Step 3.** Next explain how these special features are of importance for all living things. For example, you can tell that the food stored in the roots, stems, leaves, etc., of plants is eaten by animals. So, life of the living things depends on this food.
- Step 4.** Discuss all the questions in the exercises orally and then ask the students to write them down.
- Step 5.** Encourage the students to save the nature. Also tell them about the importance of nature and what we should do to save the nature.

Answers to Exercises in Coursebook

Remember and Recall (Page 6)

1. Root → The part of a plant that grows underground.
2. Stem → The stalk of a plant.
3. Leaf → A flat structure attached to a stem.
4. Flower → The attractive part of a plant.
5. Fruit → The part of a plant that has seeds inside.

Assess Yourself

- A. 1. b 2. c 3. d 4. c 5. b
- B. 1. Papaya, Watermelon 2. Cumin, Mustard
- C. 1. Flower 2. Fruit 3. Leaf 4. Stem
- D. 1. P → Broccoli and cauliflower
2. Q → Asparagus and celery
3. R → Spinach and cabbage
4. S → Radish and sweet potato
- E. 1. There are two types of roots: tap root and fibrous root.
2. The main function of leaves in a plant is to process food for the plant using air, water, and sunlight. This process is called photosynthesis.
3. A seed needs soil, water, air, warmth, and sunlight to grow into a new plant.

Life Skills and Subject Integration

- F. 1. CHLOROPHYLL 2. STOMATA 3. LAMINA
- G. 1. ✓ 3. ✓

2. Plants: The Producers

Overview of Lesson

In this lesson, students will learn why plants are called producers—because they make their own food using water, carbon dioxide, chlorophyll, and sunlight. They will understand how this food is not only important for the plants themselves but also provides nourishment for animals and humans. The lesson highlights the importance of the process of photosynthesis in supporting life on Earth. Students will also explore how plants store extra food as starch in different parts such as roots, stems, and fruits. Finally, the chapter introduces the role of plants in caring for the environment by cleaning the air—taking in carbon dioxide and releasing oxygen during photosynthesis.

Plan for Achieving the Learning Objectives

- Step 1.** Begin the lesson by telling how plants make life possible for animals on this Earth. Explain the dependence of animals on plants not only for food but for the vital gas (oxygen) necessary for breathing.
- Step 2.** Next discuss the process of photosynthesis and why leaves are known as the kitchen of plants. Tell in brief about the different parts of the plant and where this prepared food is stored.
- Step 3.** Since the students now know the importance of a leaf, explain the structure of the leaf by laying special emphasis on the stomata.

- Step 4.** Discuss and explain about the various components such as water, carbon dioxide, sunlight and chlorophyll, required for photosynthesis.
- Step 5.** Demonstrate the activities related to photosynthesis in class to make the learning interesting.
- Step 6.** Discuss and explain about the various components such as water, carbon dioxide, sunlight and chlorophyll, required for photosynthesis.
- Step 7.** Tell the students how plants utilise the stored food material, e.g. for growth, as modified roots, stems, leaves, etc.
- Step 8.** Explain the interdependence of plants and animals and how the balance of nature is maintained.
- Step 9.** Discuss the importance of planting trees in our surrounding. Tell the students to take care of plants by watering and manuring them.

Answers to Exercises in Coursebook

Assess Yourself

- A. 1. b 2. a 3. c 4. c 5. b
- B. 1. Leaf 2. Oxygen
- C. 1. Stomata allow carbon dioxide to enter the leaf and oxygen to leave the leaf during photosynthesis.
2. Plants need sunlight, carbon dioxide, water, and chlorophyll to make their own food.
3. Plants take in carbon dioxide and release oxygen during photosynthesis, helping us breathe clean air.

Life Skills and Subject Integration

- D. $3 \text{ trees} \times 260 \text{ litres} = 780 \text{ litres/day}$
 $780 \text{ litres} \times 2 \text{ days} = 1560 \text{ litres of oxygen that 3 trees give out in 2 days.}$

3. Growing Plants

Overview of Lesson

By this age, students are aware that plants grow from seeds, but they may not understand the full process or know that plants can also grow from other parts. This chapter explains that plants can grow from seeds (sexual reproduction) or from stems, roots, leaves, or spores (vegetative propagation). The life cycle of a plant is described step by step. It also explores the plant life cycle, pollination, fertilisation, seed structure, and the importance of seed dispersal through wind, water, and animals.