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New Get Ahead

# SCIENCE

Teaching Guide



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Based on Revised Pakistan National Curriculum

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# Introduction to the Guide

The Teaching Guides for the *New Get Ahead Science* series provide guidelines for help of the teacher in classroom. This Teaching Guide includes:

- An introduction on how to approach *New Get Ahead Science* in class.
- Teaching strategies mentioned in the national curriculum.
- Sample lesson plans.
- Suggested answers to the exercises in the textbook.
- Suggested worksheet for assessments.
- Suggested scheme of work.

## How to Approach *New Get Ahead Science*

To teach *New Get Ahead Science* in a more constructive manner, teachers are advised to make classrooms more Student-centered. Students are to be given a more active role in the classroom, to be encouraged to present their thoughts and ideas confidently, and be instructed to respect differing opinions. In order to achieve this, teachers are to facilitate students so that they can take more responsibility for their learning journeys. The following summarizes the methodology with which all units of *New Get Ahead Science* are to be approached, in order to make classroom more Student-centered:

- Students to be given a chance to work independently, as well as collaboratively i.e. in groups. Real-life examples to be discussed by teachers and students.
- Students to be given tasks where they share opinions with each other and with the teacher. They are to be encouraged to give reasons for their opinions.
- Teacher to role-model the ideals of respect, collaboration, and active learning in the classroom. During group discussions, all students should be encouraged to work together.
- Teacher should facilitate students only when directions are needed; most of the time, students should work on their own while reading, writing, and discussing the lessons in specific units.

## Contents and Sequence of the Teaching Guide

The Teaching Guide for *New Get Ahead Science* contains suggestions for starting a lesson and provide teaching strategies for each unit. The instructional model focuses on exploring background knowledge, where students participate actively.

## Recommended Schedule for an Active and Student-centered Classroom

Exploring knowledge through essential questions	5 minutes
Teaching Methodology/Activity	25 minutes
Assessment	10 minutes

The first part of each unit contains basic suggestions for taking the lesson forward in a constructive manner. The second part of the lesson contains answers to all questions present in the book. Students should be advised to come up with their own answers and teachers can use the Teachers Guide to assess students' understanding and knowledge.

### Teaching Strategies as per General Science National Curriculum

Examples of effective instructional strategies include, but are not limited to, the following:

- inquiry
- questioning and discussion
- investigation and problem solving
- demonstration and laboratory work
- problem based learning
- utilizing whole class, group, and individual work
- incorporating literacy strategies (reading, writing, speaking and listening)
- using student work to inform instruction

For detailed support on teaching strategies of Science, please visit Chapter 7 pages 55 to 64 in the General Science National Curriculum 2006.

### Assessment Strategies as per General Science National Curriculum

Teachers learn about student progress not only through formal tests, examinations, and projects, but also through moment-by-moment observation of students. To assess students' science knowledge, skills, and attitudes, teachers require a variety of tools and approaches, such as:

- selected response
- constructed/ created response
- performance assessment
- personal communication
- students' self-assessment

For detailed support on assessment strategies of Science, please visit Chapter 8 pages 65 to 73 in the General Science National Curriculum 2006.

## Division of Syllabus into Three Terms:

<b>1<sup>st</sup> Term</b>	Chapter 1 Living and Non-Living Things Chapter 2 Living Things: Animals Chapter 3 Living Things: Plants
<b>2<sup>nd</sup> Term</b>	Chapter 4 Our Body and Healthy Living Chapter 5 Matter Chapter 6 Materials Chapter 7 Heat
<b>3<sup>rd</sup> Term</b>	Chapter 8 Light Chapter 9 The Earth and the Universe

## Scheme of Work

Unit	Lesson No.	Topic wise allocation of periods	Learning outcome
Living and Non-living things	Lesson 1	2 periods	Learn about living and non-living things.
	Lesson 2	2 periods	Understand the basic needs of living things.
	Lesson 3	2 periods	Growth in living things and identify the young ones of animals.
	Lesson 4	2 periods	Learn how living things move.
Living things: Animals	Lesson 1	2 periods	Understand that there are different types of animals.
	Lesson 2	2 periods	Differentiate between wild and domestic animals.
	Lesson 3	2 periods	Learn the needs of animals and their homes.
Living things: Plants	Lesson 1	2 periods	Identify parts of the plants and what plants need.
	Lesson 2	3 periods	Compare leaves shape and sizes.
	Lesson 3	2 periods	Identify the different types of flowers.

Our Body and Healthy Living	Lesson 1	2 periods	Name the parts of the body and their functions.
	Lesson 2	2 periods	Learn about the sense organs and their use.
	Lesson 3	3 periods	Understand the importance of cleanliness and taking care of themselves.
	Lesson 4	1 periods	Recognize the importance of taking care of themselves and understand the importance of exercise.
Matter	Lesson 1	2 periods	Learn what matter is and identify the states of matter.
	Lesson 2	3 periods	Compare the properties of solid, liquid, and gas.
	Lesson 3	2 periods	Identify heavy and light objects.
Material	Lesson 1	2 periods	Learn and understand what material are.
	Lesson 2	2 periods	Identify natural materials.
	Lesson 3	2 periods	Identify man-made materials.
Heat	Lesson 1	3 periods	Learn the different sources of heat and uses of heat.
	Lesson 2	2 periods	Understand shade.
Light	Lesson 1	2 periods	Identify the sources of light and explain how humans see.
	Lesson 2	2 periods	Understand importance of heat and light.
The Earth and the Universe	Lesson 1	3 periods	Identify the differences in day and night. Understand how day and night occur. Differentiate four parts of the day.
	Lesson 2	2 periods	Relate seasonal weather conditions to appropriate choice for clothing.
	Lesson 3	3 periods	Naming the four seasons and illustrate the key characteristics of four seasons.

# Living and Non-Living Things

## Lesson Plan 1

### Student learning outcome

Learn to differentiate between living and non-living things.

### Material

Flashcards with pictures of animals and plants of which the students are already aware .  
Non-living things already present in the class.

### Keywords

plant, lion, housefly, frog, sunflower, scissors, fan, cup, ball

### Overview

In this lesson, the students will learn about the difference between living things and non-living things. The students will be made aware of the fact that living things move, grow, breathe, and need food. Non-living things do not need or have the ability to do what living things can do.

### Teaching methodology

Exploring knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. How will a box move?
2. Do horses run fast?

### Method

Teacher will read out page 1 of Students' Book.

- Show illustrations on page 1 and flash cards of various animals like, a cat, a dog, a tree, a bird and a flower. Then explain that these things can move, breathe, grow, and eat. They are the living things. Further questions like 'what do humans, animals, and plants need to grow?' can be asked.

- Students shall be instructed to sit in a circle. Point to the objects available in the classroom (e.g. fan, desk, door, pencil, school bag and even the shirt the students are wearing). Ask students, turn by turn, about these things—whether these things can move, talk, see, or eat. The answer will be no, as these things are non-living. Illustrations given on page 3 of Students’ Book can also be used to show non-living things.

**Assessment**

1. Activity 1, Page 4
2. Exercise question 4, Page 9

**Reinforcement/homework**

1. Collect/draw 5 pictures of non-living things and paste them in your notebook under the heading of non-living things.
2. Collect/draw 5 pictures of living things and paste them in your notebook under the heading of living things.

**Lesson Plan 2**

**Student learning outcomes**

To understand the basic needs of living things.

**Material**

Pictures of different kinds of foods and drinks

**Keywords**

food, water, air

**Overview**

This lesson will explain the basic needs of living things which are food, water, air and a place to live. Most animals hunt and eat meat, however, some animals eat plants and grain. Plants make their food with the help of sunlight.

**Teaching methodology**

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

**Essential questions**

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What do we do when we are hungry?
2. What do we do when we are thirsty

## Method

Read page 2 of Students' Book with the students.

- Ask some students to describe what everyone is doing in the pictures. Initiate a discussion with the students about the different kinds of food they like to eat. Ask them what they drink when they are thirsty. What do they think different animals eat?
- Tell the students that some animals eat meat, like cat, dog, lion, and tiger. Some animals eat grass like the cow, goat, sheep or horse. The birds eat grains and small insects. They all drink water. Plants make their food from sunlight and soil. All living things need food and water to live. Living things also need sunlight and air to live.

## Assessment

Write the name of one food that each of these animals eat.

Animal name	Food it eats
cat	
dog	
hen	
goat	
monkey	
fish	

## Reinforcement/homework

Ask the students to paste pictures of a cat, dog, hen, goat, monkey, and fish in their notebook.

## Lesson Plan 3

### Student learning outcomes:

To learn about growth in living things. Learn to identify the young ones of animals.

### Material

The teacher will show pictures of animals and their young ones. Students will be asked to bring their own childhood photograph.

### Keywords

chick, kitten, foal, calf, puppy

## Overview

In this lesson, the students will learn that growing is one important feature of living things. All the living things animals, humans or plants all grow.

## Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Have you seen kittens grow into a cat?
2. Do plants grow? How do you think plants grow?

## Method

- Begin the lesson, by first asking the students to share their photograph with other students. Talk to them about their ability to come to school, as they have become bigger and stronger. The students can also share with everyone, if his/her parent leave them in school and pick them up as well after school time is over. Students may share if they have a baby brother or sister at home? Have they seen how he/she is now able to sit up, recognize them, and able to play with them. Similarly, discuss that the young ones of animals are also taken care of by their parents. The teacher can show pictures given on page 5 of the Students' Book and explain how different living things grow.
- Read out page 6 and show photographs of animals and their young ones.

## Assessment

Activity to be conducted by the students with the help of the teacher.

1. To show that plants grow from seeds into big plants or trees, each student will bring a small plate, a few chickpeas (chana), and a small piece of cotton wool. The students will be asked to first put the cotton wool on the plate, chickpeas will be put on the cotton wool. A little water will be sprinkled on the cotton wool. The plate will be put on the window sill. The students will then observe the plate to see the germination of a plant.
2. Exercise question 3, Page 8

## Reinforcement /homework

Match the animals with their young ones

Animal	Young
lion	duckling
duck	fry
sheep	fawn
deer	lamb
fish	cub

## Lesson Plan 4

### Student learning outcomes

Learn how living things move.

### Material

A chart showing pictures of different animal movements.

### Keywords

flies, swims, runs, jumps, crawls, walks

### Overview

In this lesson, the teacher will emphasise the movement of living things. Birds fly, fishes swim, some animals can walk and run while some even crawl, slither, or glide. Some plants also move according to the sunlight they get.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

At the start of the lesson engage the students in conversation by asking the following questions:

1. Why can't a cat fly?
2. How do the fishes move from one place to another?

## Method

- Ask some students to come to the front of class and show how a bird flies, and a frog hops. Discuss how they have to run fast while playing football or hide and seek.
- Explain to them that all living things move in different ways. Birds have wings so they can fly. Fish live in the water and that is why they can swim. Some animals run, hop, crawl, or jump. Name some animals that run fast, e.g. horses, cheetah, etc.

## Assessment

Match the animal to the movement it makes.

- |                |                |
|----------------|----------------|
| i. bird        | runs           |
| ii. child      | faces sunlight |
| iii. sunflower | flies          |
| iv. fish       | jumps          |
| v. frog        | swims          |

## reinforcement/homework

How do the following animals move?

- |                  |         |
|------------------|---------|
| i. horse         | gallop  |
| ii. snake        | glide   |
| iii. butterflies | flutter |
| iv. elephant     | amble   |
| v. lion          | prowl   |

# Living Things: Animals

## Lesson Plan 1

### Student learning outcomes

Understand that there are different types of animals.

### Material

The teacher will use flash cards of different sizes and colour of animals.

### Keywords

tortoise, elephant, giraffe

### Overview

Students in this lesson, will learn about the difference in animals. They already have knowledge of animals like cat, dog, cow and goat. They are also aware of fishes, peacock, tiger, lion, and elephant etc. This lesson will help them understand the difference in animals regarding their size, shape, colour etc. Also how these differences help them to protect themselves from prey or weather conditions.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Why do you think animals are of different colours?
2. Why are all animals not of the same size?

### Method

- Read page 10 of Students' Book with the students, then show them flash cards of different animals e.g., elephant, lion, whale, monkey, giraffe, tortoise, whale, peacock. After displaying the flash cards or pictures of animals, gather responses from students about the differences in these animals. Following questions can be asked:
  1. What is the difference between these animals?

2. Do all the animals live on land?
  3. Which animals are small and which are large?
  4. Which of these animals live in water?
- Arrange the flash cards on the soft board according to size, and where the animals live, i.e. in water, or on land.

## Assessment

Activity 1, page 10.

## Reinforcement/ homework

1. Circle which animal moves slowly?
  - a. Tortoise
  - b. Cat
  - c. Dog
  - d. Elephant
2. Circle the animal which does not have fur on its body?
  - a. Cat
  - b. frog
  - c. Cow
  - d. Fish
3. Draw two animals smaller than you in size.

## Lesson Plan 2

### Student learning outcomes

Learn to differentiate between wild and domestic animals.

### Material

Charts showing: 1) wild animals: zebra, elephants, giraffe, tiger, and lion  
2) domestic animals: cow, goat, dog, cat, and horse

### Keywords

tiger, deer, bear, goat

### Overview

This lesson will help build the concept of wild and domestic animals. Students will be introduced to animals in this lesson, by describing animals which live in the forest/ jungle as wild animals. The other kinds of animals they will learn about are domestic animals which live in our home or farms.

## Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Why don't we keep lion, tigers, and elephants in our homes?
2. Which animals do we keep at home? Why?

### Method

- Before reading out page no.11 of Students' Book, ask the following questions to encourage discussion about the topic:
  1. Does anyone have a pet at home? If yes, which animal is your pet? If no, then which animal would you like to keep as a pet?
  2. Why don't we keep a lion or an elephant at home?
- Tell the students why these animals cannot live with us in our homes, as these are wild animals. Read out page 11 of Students' Book and explain that wild animals live in the jungle. They hunt other wild animals for food. Domestic animals help us. Dogs can be kept as guards. Sheep, cows, and goats are farm animals. We also eat the meat of these animals and drink milk they give us. We even use their skins to make shoes, handbags, and coats.

### Assessment

Answer the following questions:

- i. Is an elephant a wild animal?
- ii. Where do wild animals live?
- iii. Name two farm animals.
- iv. How do dogs help us?

### Reinforcement/homework

1. Ask students to bring pictures of wild and domestic animals and paste these pictures in their notebook under separate headings wild and domestic animals.
2. If bringing pictures is not possible, ask them to draw in their notebook.

## Lesson Plan 3

### Student learning outcomes

Learn the needs of animals and their homes.

### Material

Pictures showing a bear in his den, bees in a hive, a monkey in the trees, a bird in a nest or cage, a dog in a kennel.

### Keywords

pond, hive, nest, kennel, burrow, den

### Overview

This lesson focuses on the basic needs of animals and their homes. If an animal is domesticated it is given a place to stay for protection. Even wild animals find shelter in caves, or they dig holes or burrows. In order to survive all animals need food, water, air, and a place to live.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson ask some questions to explore background knowledge of students:

1. What do you think animals need to survive?
2. What would happen if we do not have a house to live in and no food to eat?

### Method

- A discussion to be initiated as to whether the students live in a house or an apartment. We may live in either of them but we call it our home. Where do animals live? Read out page 12 of Student book to explain the needs of animals and their homes. Tell the students that some animals live in forest, some underwater and some on land. But where do they make their homes? Some wild animals take shelter in dens, and burrows. Where do domestic animals live? Dogs live in kennels. Cows live in barns or sheds. Parrots live in cages
- All living things need food, water and air. Some wild animals hunt smaller animals for their food. Some animals which feed on plants, eat the wild grass and plants. The domesticated animals have to be fed by us.

## Assessment

1. Write the names of the homes of the given animals.

Animal	Home
bees	
rabbit	
bear	
dog	
birds	

2. A visit to the zoo can be arranged.

## Reinforcement/homework

Find out where the following animals live.

Animals	Homes
crocodile	
snake	
monkey	
parrots	
fish	

# Living Things: Plants

## Lesson Plan 1

### Student learning outcomes

Learn to identify the parts of the plant and what plants need.

### Material

The teacher will bring a real plant intact with all its parts. He/She will also show the chickpea plant which the children had planted previously in class.

### Keywords

Flowers, fruits, leaves, stem, roots

### Overview

The students will be introduced to the different parts of the plant. Each part of the plant has its own importance. These parts are also useful for humans.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson ask some questions to explore the background knowledge of students:

1. What are plants?
2. Why are plants important for us?

### Method

- Read page 14 of Students' Book along with the class. A picture of the plant will be drawn on the board or a poster of a plant can be shown to the class. With the help of this picture, point to the different parts of the plant and ask the students to name them.
  - Name the colourful part of the plant. The flower is the colourful part of the plant.
  - Which part holds it in the soil? The root holds it in the soil.

- Which part helps in absorbing sunlight? The leaves help the plant in absorbing sunlight.
- What does a plant need to grow? A plant needs water air, soil, and sunlight to grow.
- Now ask students to observe their chickpea plant. Students can use observation sheet given on page 15 of Students' Book to record their findings.

**Assessment**

1. Draw a plant in your notebook and label all its five parts.
2. Write down the names of the things a plant needs to grow.

**Reinforcement /homework**

Exercise question 3, page 19

**Lesson Plan 2**

**Student learning objectives**

Learn about different leaf shapes and sizes.

**Material**

Leaves of different sizes and shapes. Leaves of banana plant, papaya, rose, grass, periwinkle, neem. A chart showing different kinds of leaves.

**Keywords**

banana, neem, papaya, water

**Overview**

The students are now familiar with the different parts of the plant. In this lesson, they will learn about the different shapes and sizes of leaves.

**Teaching methodology**

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

**Essential questions**

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Do all the students in your class look alike?
2. Do all the trees have the same size and shape of leaves?

## Method

The lesson will begin with reading page 16 of Students' Book.

- Show students different kinds of leaves. Ask the students, if they know names of the plants that the different leaves are from. Some trees have big leaves while some plants have small leaves. Some leaves have curly edges and some have smooth edges. Some plants even have round leaves.
- The teacher can also use a chart to show the different kinds of leaves.

## Assessment

Activity 2, page 17

## Reinforcement/homework

Show students how to dry, small leaves between two sheets of white A-4 size paper. Ask them to place a few small leaves on one sheet of paper, cover it with the other A-4 size white paper. Place the leaves and paper under a pile of books. Leave them for a week. Carefully take the two A-4 sheets out. Remove the topmost sheet. The leaves have dried.

1. Paste them in your notebooks.
2. Make a similar collection of different shapes of leaves.

## Lesson Plan 3

### Student learning outcomes

Identify the different types of flowers.

### Material

The teacher will bring a few flowers to class. A chart of different kind of flowers will also be displayed in class.

### Keywords

poppy, jasmine, rose, sunflower, periwinkle

### Overview

The students are aware of the different parts of the plant and leaves. Flowers are the part of the plant which gives it colour. Flowers are of different sizes according to the number of petals. They have a different scent and colour.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What part of the plant is colourful?
2. Can you name some flowers?

## Method

- Ask the students to name some flowers they have in their garden or they have seen. The class will then brainstorm to provide names of flowers which will be noted on the board.
- Ask if the students have seen and smelt the flowers they are naming. What did they smell like? They smelt sweet. Differences in the scent of flowers to be discussed. Students will also be told that flowers make the fruits and seeds for the plant. The bees and the other insects are also attracted by the flowers.
- Conduct Activity 5 given on page 18 of Students' Book.

## Assessment

Activity 3 and 4, page 18

## Reinforcement /homework

Exercise question 1, page 19

# Our Body and Healthy living

## Lesson Plan 1

### Student learning outcome

Name the parts of the body and their functions.

### Material

The teacher will bring a chart of a child showing the parts of the body.

### Keywords

mouth, eyes, ears, nose, hands, feet, neck

### Overview

The main purpose of this lesson is to reinforce the names of the different parts of the body and their functions.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

- 1 Why do most animals have two eyes?
- 2 Which body parts do you use while playing football/cricket?

### Method

- After asking 'essential questions', explain to the students the functions of the different human body parts using page 20 of Students' Book.
- Play 'Simon Says' in the class, as explained on page no 52 of Students' Book.

## Assessment

Match the body organ with its function

Body organ	Function
hands	see
legs	smell
nose	walk
eyes	hold

## Reinforcement /homework

1. Answer the following questions.
  - i. How do we see?
  - ii. How does the nose help us?
  - iii. What helps us to hear?
2. Draw a picture of a boy and name the following parts of the body: Hair, head, legs, arm, face, neck.

## Lesson Plan 2

### Student learning outcomes

Learn about the sense organs and their use.

### Material

A bottle of perfume, a glass of water with a dropper, a small bell, candy.

### Keywords

taste, sight, hearing smell, touch

### Overview

By now the students have knowledge of the eyes, ears, nose, mouth, and hands. They will now understand how some of these body parts help us, as our sense of sight, smell, hearing, tasting, and feeling which enable us to enjoy our life.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Will we be able to see if we had no eyes?
2. How do we taste the chocolates?

## Method

Read page 21 of Students' Book with the students.

- The following activity can be conducted in class to clear the concepts of students. On a table keep different things covered with a cloth, e.g., a bottle of perfume, a glass of water with a dropper, a small bell, and candy.
  - Ask the students to close their eyes and write a few words on the board. Ask the students if they could read what was written on the board with their eyes closed. They will realize they can only read with their eyes open i.e., sense of sight.
  - Spray the perfume in the room. Ask the students if they can smell anything and which organ they used to smell.
  - Students will be asked to close their eyes once again, the teacher will go to some students and put a few drops of water on their hands. Could they feel the drops falling on their hand? Sense of touch.
  - Ask the students to close their eyes and then ring a bell. Ask the class if they could hear the bell this is due to the sense of hearing.
- At the end of the lesson distribute candies in class, some of which will be sweet and some sour. Students will realize the sense of taste.

## Assessment

1. Exercise question 4, page 25
2. Ask students to make a list of some sounds they hear on the road, some things they have eaten which were sour, sweet or bitter, unusual smells. Ask how it feels to touch things soft or hard.

## Reinforcement/homework

Activity 1, page 22

## Lesson Plan 3

### Student learning outcome

Learn about the importance of cleanliness and taking care of themselves.

### Material

A toothbrush, a hairbrush, toilet soap, a towel. A chart about cleanliness.

## Keywords

healthy, brush, teeth, toilet, exercise, shower, sweets

## Overview

Students now have an understanding of their body and the importance of the five senses. In this lesson, the students will be told about the need to keep clean. The importance of healthy habits, which include eating proper meals at the right time.

## Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What time do you go to sleep?
2. What will happen if you do not shower for many days?

## Method

- Show the flash cards of different fruits and vegetables, ask the students if they like eating fruits and vegetables. The students should recognize the fruits and vegetables and call out their names. The class will then discuss which were their favourite and why. Explain the benefits of eating fruits and vegetables.
- Discuss with the students at what time they go to bed? At what time do they get up in the morning? Do they brush their teeth twice a day? Do they wash their hands before and after eating? Do they wash their hands with soap after using the washroom? The student response on the questions will be noted on the board. Display the cleanliness chart and put emphasis on acquiring good habits. The students will also discuss how they can keep healthy, by following the good habit chart.

## Assessment

1. Activity 2, page 22 to be done in the book
2. Activity 5, page 24 to be done in the book
3. Exercise question 3, page 25

## Reinforcement/homework

Exercise question 1 (parts iii-v), page 25

## Lesson Plan 4

### Student learning outcome

Learn to recognize the importance of taking care of themselves and the importance of exercise.

### Material

a chart about good habits

### Keywords

cleanliness, healthy, remove, germs, exercise, walking, and breathing

### Overview

In addition to taking care of ourselves, exercise is also very important for our well-being. In order to be healthier, we should also spend some time doing exercise, by playing some outdoor games.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Which outdoor games do you play?
2. Do you think it is good to exercise your body?

### Method

- Initiate discussion by asking essential questions. Read page 23 and 24 of Students' Book and conduct Activity 6 given on page 24. List down the answers given by students on board, e.g., playing football, skipping, jumping, running, cycling and running. Ask the students what they do when they are indoor (e.g., doing homework, watching TV, drawing, playing a board game).
- Explain that in order to play any game they must have the strength to play outdoor or indoor. It is important to eat healthy food and to exercise. It is a good habit to go to sleep early at night and to get up early in the morning. Taking a bath daily, wearing clean clothes brushing your teeth, having breakfast before coming to school are ways to keep your body healthy. Avoid eating unhealthy snacks like chips, fries, cold drinks, and burgers. This will keep us from being sick and unhealthy.

## **Assessment**

Answer the following questions.

- i. Is it healthy to play outside?
- ii. What is your favourite game?
- iii. What do you like to do indoors?
- iv. Should we wash our hands with soap and water?
- v. What time do you go to bed?

## **Reinforcement/homework**

Exercise questions 1 (i-ii), 2, page 25

## Lesson plan 1

### Student learning outcome

Learn what matter is and identify the states of matter.

### Material

a few solid objects (a jug of water, a glass, a cup, a plate, a thermos with ice, and another thermos with hot water), few pictures of solids and liquids, a chart paper

### Keywords

occupies, weight, matter, space.

### Overview

This lesson will explain to the students that everything that we see around us is matter. Matter is anything which occupies space and has weight.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Name some solid objects.
2. Now name some liquids you drink.

### Method

- Ask the students to raise their hands when they see a picture of a solid object. They are to sit quietly if the picture of the object is of a liquid. A chart paper will be displayed on the soft board, which is divided into solid and liquid. When the students put their hands up, the picture of the solid is put in the solid column. If the picture is of a liquid, it will be put in the liquid column. .
- Now ask some students to come up to the teacher's table and separate the solids. They will be asked, if they can change the shape of the desk. (No, all the desks in the classroom have the same shape, size, and they take up space).

- Pick up the jug of water. The students are to observe the shape of the jug. Some water will be poured into a glass, a cup, and a plate. The students will be explained that water has taken the shape of the utensil it was put into. Water has weight. Everything around us is made up of matter, it occupies space and has weight.

## Assessment

Activity 1, page 26

## Reinforcement /homework

Paste in your notebook:

1. 3 pictures of solids
2. 3 pictures of liquids

## Lesson Plan 2

### Student learning outcomes

Learn and compare the properties of solid, liquid, and gas.

### Material

some solid objects, glass of water, a bottle of cold drink, a few balloons, some ice cube in a thermos, candle

### Keywords

space, occupies, weight

### Overview

Matter is found in three forms. The students will be asked to observe things around them to understand what matter is.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. From your school bag, take out your science book, pencil, lunch box. Do they all look the same? Can you change their shape easily?
2. Can you feel the air around you?

## Method

Read pages 27-28 with the class.

- Point to various objects in the classroom e.g. door, desk, books, pencil etc. Ask the class about the shapes of these objects.
- The students will be asked to hit their desk with a pencil. Did it make a sound? Yes. The students will be explained that a solid will make a sound and it will not easily change its shape.
- Show the glass of water and the water in the bottle. Some water will be poured on to a plate and the glass. Water takes the shape of the plate and the glass. Some water can also be poured on the floor. The water spread all over. A liquid can change its shape according to the container. Take the ice cubes out of the thermos on to the plate. The ice cubes on the plate melted and took the shape of the plate. A liquid can take the shape of the container.
- Distribute balloons among the students so that they blow them up. When the balloons are pressed all the air is released and the balloons return to their original shape. This shows that air takes up space.
- With the help of a burning candle the concept of gas will be explained. The candle will begin to melt when it is burnt, the smoke moves when it was blown out. Gas has no shape. It can move easily and it is not hard.

## Assessment

1. Activity 2 and 3, page 27
2. Activity 4, page 28

## Reinforcement/homework

1. Answer the following questions.
  - a. What is matter?
  - b. Name 3 solid objects in the classroom.
  - c. Name 3 liquids that you like to drink.
  - d. What do you fill in the balloon?
  - e. The steam coming out of hot cup of tea gas or liquid?
2. Exercise question 1, page 30

## Lesson Plan 3

### Student Learning Outcome

Identify heavy and light objects.

### Materials

The students have to bring two small objects, one heavy and one light.

## Keywords

space, weight, heavy, light, object

## Overview

The students should have understood that matter occupies space. In this lesson, the students will be taught that matter also has weight.

## Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Is your school bag heavy or light?
2. Pick up your pencil is it light or heavy?

## Method

- After reading page 29 of Students' Book, set up desks in front of the class. All the objects brought to the class will be put on the desk in front of the class. Students will come to the front desk turn by turn, to select an object by picking it up and holding it for some time. The objects will then be re-arranged according to their weight. Students should be able to tell the class which objects were heavy and which were light.
- Explain to the students that objects which are heavy have more weight and that lighter objects have less weight.

## Assessment

1. Activity 5, page 29 (with the help of the teacher)
2. Exercise question 3, page 30

## Reinforcement/homework

Answer the following questions:

- i. What are the three states of matter
- ii. What is a liquid?
- iii. Give one example of gas.
- iv. Why is an object heavy?
- v. Give two examples of a light object.

## Lesson Plan 1

### Student learning outcome

Learn and understand what materials are.

### Material

The teacher will take some objects and place them on a tray. The tray will be covered.

### Keywords

material, natural, man-made

### Overview

This lesson explains that a material is something that is used to make a new object. Materials can be of different kinds hard, soft, and pliable. Clay can be used to make bricks or a flower pot, while a sand castle can be built with sand. Sand can also be used to make glass.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Why are all the things in the classroom not made of wood?
2. What is the desk made of?

### Method

Read page 31 of Students' Book.

- Uncover the tray and show the students a shopping bag. Ask the class what is the bag made of? Plastic. Do the same for a flower pot (clay) and a book (paper). Also, point out objects in the classroom. E.g. the door, desk, the wall, pencil case, a water bottle, a shirt.
- Explain that all the objects are made of some kind of material man-made or natural. Natural materials are those which come out of the ground, made from plants or

animal hair or skin. Man-made material is using natural material and by changing them it becomes a new material.

## Assessment

Activity 1, page 31

## Reinforcement /homework

1. Students will be divided into two groups. One group will be assigned to list names of things which are made of natural material like cloth, leather, metal, and wood. The other group has to names things which are made from man-made materials like plastic, nylon, glass, and synthetic leather.
2. The students have to write 5 things made from natural materials and 5 things made from man-made materials in their notebooks.

## Lesson Plan 2

### Student learning outcomes

Learn about natural materials

### Materials

Some objects e.g., paper, pencil, jewellery, a cushion, a handbag, a toy car, a spoon, a cardboard box, a pair of shoes.

### Keywords

leather, jewellery, furniture

### Overview

Any material which is made by using plant, animals, and rocks from the ground is considered to be a natural material. Students will brainstorm in class to name the materials that they know are natural.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What is your school bag made of?
2. Is your pencil made of wood or plastic?

## Method

Read page 32 of Students' Book.

- Show different objects to the students and ask which material was used to make these objects. For example, paper (wood), cushion (cotton), pencil (wood), handbag (leather).
- The teacher will explain to the students that all the things shown to them are made of natural materials. Any material that comes from plants, trees, animals, and the ground is natural material. The fuel we use in cars, bus, trains also come from the ground as oil.

## Assessment

1. Exercise question 1, page 34
2. Exercise question 2, page 34 (to be done in Students' Book)

## Reinforcement /homework

1. Divide the students into three groups. Each group will be given one of the three natural material groups, i.e. things we get from plants, things we get from animals, and things we get from the ground. Students will also get a word bank like paper, pencil, fruits, vegetables, medicines, handbags, milk, meat, clay, minerals, and oil. Students will then list things in the correct group in their notebooks.
2. The students can also paste pictures of the objects they know of in their notebooks.

## Lesson Plan 3

### Student learning outcome

Identify man-made materials.

### Material

Students will be asked to bring objects made of plastic or nylon.

### Keywords

glass, nylon, plastic

### Overview

By now students are aware that all things are made from materials. There are two types of materials natural and man-made. Man-made materials are made from natural material that have undergone various processes to make a new material.

## Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Show images on page 33 of Students' Book and ask what each object is made of.
2. Can you name anything else made of plastic?

## Method

- The students will place the objects they have brought to school on their desk. Begin the lesson by first asking what their object is made from. Explain that these materials have been made by man using different chemicals to produce materials similar to natural ones. These items are more durable than the natural materials.
- The students will be asked to look around them and identify which objects are made of man-made material or natural materials.

## Assessment

1. Write 4 names and draw pictures of thing made of man-made material.
2. Write 4 names and draw pictures of things made from natural material.

## Reinforcement/homework

1. Exercise question 3, page 34
2. Exercise question 5, page 35

## Lesson Plan 1

### Student learning outcome

Learn about the different sources of heat and uses of heat.

### Materials

a chart showing the Sun, wood, electricity, and gas, a piece of coal, a candle, and a matchbox

### Keywords

coal, electricity, candle, gas, burning, matchbox

### Overview

In this lesson, the students will explore the difference between natural source and man-made sources of heat.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What does the Sun give us?
2. Why do we need heat?

### Method

Begin the lesson, by reading page 36.

- Ask the students how they feel when they played in the Sun during their playtime. Explain to the students that the Sun is the most important source of natural heat. Plants also use sunlight to make their food, so that they can grow.
- Continuing with the discussion, ask what other things provide us with heat? The other sources are burning coal or wood, electricity, and gas. The teacher will take a matchbox and light a candle. The students will place their hand over it to feel the heat. The students will also be asked to rub their hands and then place them on their face. Do their hands feel warmer? Yes, they were. By rubbing two objects heat is produced.

## Assessment

Answer the following questions

- i. Does the Sun give us heat?
- ii. Do we get heat from a matchstick?
- iii. Do your hands get warm by rubbing them?
- iv. Do gas and electricity help us in cooking our food?
- v. What other things are a source of heat?

## Reinforcement /homework

1. Collect pictures of appliances which help us to give heat.
2. Paste the pictures in your notebooks and label them.

## Lesson Plan 2

### Student learning outcome

Understand shade.

### Material

Pictures of a big tree, a shed, an umbrella, fire burning for a barbecue, the sun shining brightly

### Keywords

shadow, protected, source

### Overview

This lesson will be used to explain what is meant by shade. By brainstorming in the class, a word web can be drawn on how light helps us.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. When you stand in the Sun does an image follow you?
2. What is the image that follows you called?

## Method

- The lesson begins by asking the students where they sit to have their snack during their lunchtime in school? They sit under the tree, in the classroom, under a shed in the ground. Why? Because it is hot outside under the Sun. The teacher will explain that they need protection from the Sun. What is shade? Shade is formed when the rays of the Sun are blocked. The tree, the classroom and the shed had blocked the sunrays, and shade was formed. In this way, we are protected from the direct heat of the Sun.
- Brainstorm with the students, how does heat help us? It helps us in cooking our food, drying our washed clothes and even keeping us warm during the cold winter months. We use the fire of the wood or gas to cook food, the hot sun to dry the washed clothes and also the heater to warm our rooms in winter.

## Assessment

Activity 2 and 3, page 37

## Reinforcement /homework

1. Answer the following questions.
  - a. Give three ways in which heat helps us.
  - b. What is shade?
2. Draw a picture of a tree or any other object which provides shade in your notebook.

# Light

## Lesson Plan 1

### Student learning outcomes

Identify the sources of light and explain how humans see.

### Material

a torch, a candle, an electric lamp, and a matchbox

### Keywords

torches, bulbs, tube lights, candles

### Overview

The students are aware of the fact that they can see clearly in the daytime because of the light of the Sun. The Sun is the major natural source of light in the day. As night begins to fall other sources of light are used. These sources are the man-made sources of light.

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. How can we see in the dark?
2. Can you name the things which help us to see in the dark?

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Method

- The lesson will begin by asking students how do we see things in the daytime? On the board draw a big yellow circle. Then begin a brainstorming session with the class discussing that while we can see things in the day with the help of the Sun, but what about in the night?
- We can see a little with the light of the Moon and stars. But we have other ways by which we can see in the dark. We can turn on the electric light bulbs, gas lamps, and even a candle will help us to see. Can you name some other things we can use to give us light? If we burn a wooden stick. In the daytime it is easy to see things

around us, but when it is night time and it becomes dark, we cannot see. The bulbs, candle, torch, Moon and the stars help us to see in the dark.

Oil lamps

torch

Fire

SUN

star

Bulb

candle

- It will be then explained that the most important source of light is the Sun during the day. The Moon and the stars at night also give us some natural light.

## Assessment

Activity 1, page 39

## Reinforcement /homework

1. Answer the following questions.
  - a. Name the sources of natural light at night.
  - b. Which objects give us both light and heat?
  - c. What helps us to see at night?
  - d. What helps us to see in the day?
2. Draw pictures of things we use to give us light in the night in your notebook.

## Lesson Plan 2

### Student learning outcome

Understand importance of heat and light.

### Material

a picture of the Sun, a burning fire, an electric lamp, a candle, matchbox

### Keywords

sunlight, light, sources, reading

### Overview

The students have already been explained that the Sun gives us heat and light. In the same way all man-made sources of heat can also be used to give us light.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. If we put our hand near the candle, is it hot?
2. Does the fire give out light?

## Method

- Discuss how when the Sun is shining during the day, we get light and at the same time, we also feel the heat. Similarly, if we burn a fire at night, we get the light from the fire and we can also have a barbecue!
- Arrange the students in a circle, one student will be blindfolded and made to stand in the centre. The students will call out his/her name and he /she has to rush to that particular student. Will he/she be able to do so? No, because he was unable to see who was calling him. This shows that we need light in order to see. During the day we have sunlight and at night we have artificial light made by electricity, gas, wood or candles.

## Assessment

1. Activity 3, page 40
2. Exercise question 2, page 41

## Reinforcement /homework

Exercise question 3, page 41

# The Earth and the Universe

## Lesson Plan 1

### Student learning outcome

Identify the differences in day and night. Understand how day and night occur. Differentiate four parts of the day.

### Material

a torch, a ball, a chart to show the movement of the Sun in the sky during the day

### Keywords

bigger, lights, heat, morning, night, sky, stars, rotates

### Overview

Earth is a planet which revolves around the Sun. As it is revolving, it is also rotating on its Axis. This rotation of the Earth gives us the phenomena of day and night.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	25 min
Assessment	10 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. What do we see in the sky during the day?
2. Why does it become dark when the sunsets?

### Method

- What shines brightly in the sky during the day? The Sun is shining in the sky. The sun is a star which is the closest to the Earth. Explain with the help of a ball and a torch. The students will be told to imagine that the ball is the earth and the torch is the Sun. Shine the torch on the ball, the part facing the torch will be bright and the part where the light does not fall remains dark or not bright. Similarly, the part of the Earth on which the Sun is shining has day, while the other part has night.
- A chart will be used to explain how the Sun moves in the sky to give us the four parts of day. The Sun rises in the east in the morning and sets in the west in the evening. In

the morning the Sun rises and when it moves high in the sky it becomes afternoon. After some time the Sun has moved towards the west, when it becomes evening. When the sun sets, it is night. This movement of the Earth on its axis is known as Rotation.

## Assessment

1. Activity 1, page 43
2. Activity 3 and 4, page 45

## Reinforcement/homework

Answer the questions.

- i. Name the biggest star.
- ii. When does the Sun rise?
- iii. When do we have night?
- iv. Does the Earth go around the Sun?

## Lesson Plan 2

### Student learning outcomes

Relate seasonal weather conditions to appropriate choice for clothing.

### Material

flash cards of different kinds of clothes

### Keywords

sunny, rainy, cloudy, snowy, windy

### Overview

The changes in the environment occur in a regular pattern which is known as the Weather. Students will explore the change in weather conditions and connect the effects of the weather on their lives, through the four seasons.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

### Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. Is it hot today?
2. Was it cloudy yesterday?

## Method

Begin the lesson by asking the students what is the weather like today. Hot. Yesterday? Cloudy.

- The teacher will explain what weather is. The weather is the change in the day to day temperature. The students will be asked as to what kind of weather they like and why? This change in weather also changes with the seasons.
- Show flash cards of different kinds of clothes and the students have to tell which clothes will be worn in the appropriate seasons.

## Assessment

Exercise question 2, page 51

## Reinforcement /homework

Using chart paper, draw pictures of:

- i. a rainy day
- ii. a cloudy day
- iii. a snowy day
- iv. a windy day

## Lesson plan 3

### Student learning outcome

Naming the four seasons and illustrate the key characteristics of four seasons.

### Materials

a chart showing the 4 seasons

### Keywords

spring, summer, autumn, winter

### Overview

The phenomena of the four seasons are due to the Earth's revolution around the Sun. When the sun is in the Northern hemisphere it is Summer. When the sun moves to the Southern hemisphere, it is Winter in the Northern hemisphere. In between, it is either the Spring season or the Autumn season.

### Teaching methodology

Explore knowledge through essential questions	5 min
Method/activity	30 min
Assessment	5 min

## Essential questions

Before starting the lesson, ask some questions to explore the background knowledge of students:

1. When do we have rainy season?
2. Which season do you like?

## Method

- Display charts of the four seasons. The students will be asked to name the seasons. The students will tell the class turn by turn, what the different seasons mean to them.
  - Spring season brings new leaves on the trees, flowers, and butterflies.
  - Summer season brings with it hot and rainy weather, but it also brings mangoes, watermelon, grapes.
  - Autumn season, trees begin to shed their leaves, it becomes cooler.
  - Winter season brings cold weather, rains and snow, but we also have oranges and dried fruits to eat. We sleep in woollen blankets. If it is very cold and snowing, we turn on the heaters or burn wood fires to make the room warm.

## Assessment

1. Activity 6, page 49
2. Activity 7, page 50
3. Exercise question 2, page 51

## Reinforcement /homework

1. Draw the four seasons on a chart paper. Mention clothes, food–fruits and vegetables– and the weather.
2. Answer the following questions
  - a. In which seasons do the plants get new leaves?
  - b. Does the summer season have long days?
  - c. In which season do the trees shed their leaves?
  - d. In which season does the snow fall?
  - e. Name any 3 fruits we eat in summer.
  - f. Name any 3 fruits we eat in winter.

# Answers to the Exercises

## Unit 1

1. Answer the following questions:
  - i. Is a cat a living thing or a non-living thing?  
A cat is a living thing.
  - ii. Can non-living things grow and move?  
No, they cannot grow and move.
  - iii. What does a seed grow into?  
A seed grows into a new plant.
  - iv. How does a frog move?  
A frog jumps.
  - v. What do plants need in order to grow?  
Plants need sunlight, air, water, and soil to grow.
2. True / False:
  - i. True
  - ii. True
  - iii. False
  - iv. False
  - v. False
3. Fill in the blanks:
  - i. Living things can breathe, grow, move, and eat.
  - ii. Plants move to face the sunlight.
  - iii. Plants need light and water to grow.
  - iv. A baby boy grows into a man.
  - v. A baby girl grows into a woman.
4. Non-living things: car, wristwatch and candle  
Living things: plant, snake, frog

## Unit 2

1. Answer the following questions:
  - i. Where do wild animals live?  
Wild animals live in the forest.
  - ii. Give two examples of wild animals.  
Tigers and lions.

- iii. Answer depends on student.
  - iv. Where do bees live?  
Bees live in hives.
  - v. Do you think animals can survive without food?  
No, they cannot survive without food.
2. wild animals: tiger, deer and bear  
domestic animals : cat, parrot, cow

### Unit 3

1. Answer the following questions
- i. What do plants need to live?  
Plants need water, soil, sunlight and air to live.
  - ii. Is a banana leaf long or small?  
A banana leaf is long.
  - iii. Which part of a plant makes seeds?  
The flowers make seeds.
  - iv. Do you think a plant will survive if you keep watering it but do not keep it in sunlight?  
No, the plant will not be able to survive.
  - v. Why do you like flowers?  
Flowers are beautiful to look at and they have a sweet smell.
2. Write true / false:
- i. True
  - ii. False
  - iii. True
  - iv. False
  - v. False
3. Refer to illustration on page 14

### Unit 4

1. Answer the following questions:
- i. The ears help us to hear.
  - ii. We have five sense organs.
  - iii. By taking a bath.
  - iv. We should go to bed early to stay healthy.
  - v. We will get sick.

2. Write true or false:
  - i. False
  - ii. True
  - iii. False
  - iv. True
  - v. True
3. Fill in the blanks by choosing the correct word from the box:
  - i. water
  - ii. cut
  - iii. twice
  - iv. comb
  - v. diseases
4. Choose the correct sense used.
  - i. Hear
  - ii. Sight
  - iii. Taste
  - iv. Smell
  - v. Touch

## Unit 5

1. Orange and mobile
2. Write true or false:
  - i. False
  - ii. True
  - iii. False
  - iv. True
  - v. True

## Unit 6

1. Write true or false.
  - i. False
  - ii. True
  - iii. True
  - iv. False
  - v. True
2. Soft: pillow and feather  
Hard: cup and desk

3. Give the names of four things made of wood and four things made of plastic.

Wood	Plastic
table	shopping bag
chair	pencil case
door	garden pipe
pencil	plates

4. Answer depends on students.

5. Leather belt

Glass jug

Gold jewellery

Nylon umbrella

## Unit 7

1. Answer the following questions.

i. We get heat from the Sun, electricity, gas and burning wood.

ii. Heat is produced.

iii. We dry our clothes in the heat of the Sun.

iv. Electricity and gas

v. They become hot.

2. Write true or false.

i. False

ii. True

iii. True

iv. False

v. True

3. Tick the objects which produce heat.

Items	Produce heat	Does not produce heat
fan		
heater	✓	
ball		
candle	✓	
fire	✓	
blanket		

## Unit 8

1. Answer the following questions
  - i. The Sun gives us heat and light.
  - ii. It would be dark.
  - iii. Candle and fire.
  - iv. The Moon and the light bulb.
  - v. No, the Moon does not have its own light.
2. Rearrange the given list according to the light they give.

Lamp	4
Sun	1
Bulb	2
Tube light	3
Candle	8
Torch	7
Street light	6
Car headlight	5
3. List three ways in which the Sunlight helps us in our day to day life.
  1. It gives us heat.
  2. It dries the washed clothes.
  3. It helps the plants to make food.

## Unit 9

1. Fill in the blanks
  - i. rises
  - ii. high
  - iii. heat
  - iv. Moon
  - v. day
  - vi. night
2. Answer depends on the students.

## باب 5

گلاس میں مادے کی تین حالتیں لے کر آئیے۔ ٹھوس (Solid): کتاب، مائع (Liquid): پانی، گیس: ایک خالی غبارہ۔ بیان کیجیے کہ کیسے کتاب کی شکل تبدیل نہیں ہوگی۔ ایک گلاس اور پیالی میں پانی ڈالیں۔ بحث کیجیے کہ کیسے شکل تبدیل ہو جاتی ہے۔ غبارے میں ہوا بھریے۔ ہوا دراصل گیس ہے۔ طلبا سے کہیے کہ ایک پنسل اور ایک کتاب اٹھائیں اور پہچانیں کہ کون سی چیز بھاری اور کون سی ہلکی ہے۔

## باب 6

طلبا سے پوچھیے کہ مختلف اشیا کس سے بنی ہوتی ہیں، مثلاً کرسی، کتاب، قمیص یا شرٹ، اور پنسل باکس۔ کچھ چیزیں قدرتی مادوں یا میٹریل جیسے لکڑی یا روئی سے بنتی ہیں۔ کچھ انسانی ساختہ (man-made) میٹریلز سے بنتی ہیں۔ تقابل کیجیے کہ لکڑی کی کرسی، پلاسٹک کی کرسی سے کتنی بھاری ہوتی ہے۔ اسی طرح پلاسٹک سے بنے ہوئے پنسل کیس (pencil case) کا دھاتی پنسل کیس سے موازنہ کیجیے۔ بحث کیجیے کہ کیسے کچھ اشیا نرم یا سخت ہوتی ہیں۔ کچھ مثالیں پلاسٹک کا شاپنگ بیگ اور اینٹ، یا ایک تکیہ اور لکڑی کا تختہ ہو سکتی ہیں۔

## باب 7

گلاس کو بتائیے کہ سورج حرارت کا بڑا ماخذ یا ذریعہ (source) ہے۔ ان سے پوچھیے کہ حرارت کے دیگر ماخذ کون سے ہیں جن کے بارے میں وہ جانتے ہیں۔ روزمرہ زندگی میں حرارت کے استعمالات پر گفتگو کیجیے۔

## باب 8

طلبا سے استفسار کیجیے کہ دن میں ہمیں روشنی کہاں سے حاصل ہوتی ہے۔ بیان کیجیے کہ سورج ہمیں قدرتی روشنی مہیا کرتا ہے۔ پھر پوچھیے کہ رات میں ہمیں روشنی کہاں سے ملتی ہے۔ واضح کیجیے کہ بلب، ٹارچ، موم بتی وغیرہ مصنوعی یا انسانی ساختہ (man-made) روشنیاں ہیں۔ بیان کیجیے کہ جو اجسام یا اشیا ہمیں حرارت فراہم کرتی ہیں، ان سے روشنی بھی ملتی ہے۔ ایک کھیل کھیلیے۔ ایک طالب علم کی آنکھوں پر رومال باندھ دیجیے اس طرح کہ وہ دیکھ نہ پائے۔ اس کے سامنے مختلف اشیا رکھیے۔ قدرتی طور پر وہ انہیں دیکھ نہیں سکتا / سکتی۔ اب اس کی آنکھوں پر سے رومال اتار دیجیے اور پوچھیے کہ اُسے کیا نظر آ رہا ہے؟ دیکھنے کے لیے روشنی کی اہمیت بیان کیجیے۔

## باب 9

طلبا سے پوچھیے کہ دن اور رات میں ان کی سرگرمیاں کیا ہوتی ہیں۔ بیان کیجیے کہ زمین کی محوری گردش کی وجہ سے دن اور رات بنتے ہیں۔ دن کے اوقات میں سورج کی مختلف پوزیشنوں کو زیر بحث لائیے اور ان کا تعلق گھڑی پر وقت اور طلبا کے معمولات (daily routine) سے جوڑیے۔ موسموں اور ملبوسات کی اقسام پر گفتگو کیجیے۔ چاروں موسموں اور ان کی خصوصیات کو بیان کیجیے۔ طلبا سے پوچھیے کہ انہیں کون سا موسم پسند ہے اور کیوں۔

## باب 1

طلبا کو جانوروں، پودوں، پرندوں، پتکھے، کرسی، کار وغیرہ کی تصاویر دکھائیے۔ طلبا سے کہیے کہ جو تصویریں دکھائی گئی ہیں ان کے درمیان فرق بیان کریں۔ ان سے پوچھیے کہ ہمیں زندہ رہنے کے لیے کس کی ضرورت ہوتی ہے۔ طلبا کو جانوروں اور ان کے بچوں کے نام سکھائیے۔

## باب 2

طلبا کے ساتھ اس بات پر تبادلہ خیال کیجیے کہ مٹی اور شیر میں سے کس جانور کو وہ اپنے گھروں میں رکھیں گے۔ بیان کیجیے کہ کچھ جانور جنگلی ہوتے ہیں اور جنگل میں رہتے ہیں، جب کہ کچھ جانور گھریلو (پالتو) یا سدھائے ہوئے ہوتے ہیں۔ جانور حرکت کر سکتے ہیں مگر ان کی حرکت مختلف ہوتی ہے، کچھ دوڑتے ہیں، کچھ پھدکتے ہیں، کچھ ریگتے ہیں، اور کچھ اڑتے ہیں۔ طلبا سے کہا جاسکتا ہے کہ جانوروں کی حرکات اور ان کی آوازوں کی نقالی کریں۔

## باب 3

طلبا کو ایک اصلی پودا اور اس کی جڑیں، پتے، تنا اور پھول دکھائیے۔ ان سے کہیے کہ پودے کے مختلف حصوں کے نام بیان کریں۔ بحث کیجیے کہ پودے ہمارے لیے کس طرح فائدہ مند ہیں: ان سے پھل، سبزیاں، اور درختوں سے لکڑی حاصل ہوتی ہے۔ طلبا کے گروپ بنا دیجیے اور انہیں پھولوں کے نام لکھنے کی ہدایت کر دیجیے۔ مختلف پھولوں اور مختلف سازز اور شکل و صورت کے پتوں پر مشتمل چارٹ دکھائیے / بورڈ پر لگا دیجیے۔

## باب 4

ایک طالب علم کو کلاس کے سامنے کھڑا کر دیجیے۔ طلبا سے کہیے کہ جسم کے حصوں کے نام لیں۔ Simon says کھیلیں۔ ٹیچر کہیں گی کہ سامن کہتا ہے اپنے سر کو چھوئیں۔ طلبا کو چاہیے کہ اپنے سروں کو چھوئیں۔ جو طلبا یہ نہ کریں وہ کھیل سے باہر ہو جائیں گے۔ جسم کے تمام حصوں کے ساتھ یہی عمل دہرائیے۔ طلبا سے پوچھیے کہ وہ کیسے دیکھتے، سنتے، سونگھتے، چکھتے اور محسوس کرتے ہیں۔ انہیں حسیات (senses) کے بارے میں بتائیے۔ کلاس میں یوم صفائی منانے کا اہتمام کیجیے۔ ہر طالب علم کے ناخن، بال، کپڑوں، اور جوتوں کا جائزہ لیجیے۔ صحت مند رہنے کے لیے صاف ستھرا رہنے کی اہمیت پر زور دیجیے۔ طلبا کو سکھائیے کہ کلاس میں رکھی ہوئی ردی کی ٹوکری یا کوڑا دان (dustbin) استعمال کریں اور کمرہ جماعت کو صاف ستھرا رکھیں۔

قومی نصاب برائے جنرل سائنس کے مطابق جانچ (Assessment) کی حکمت عملیاں استاد طالب علم کی تعلیمی کارکردگی سے نہ صرف روایتی ٹیسٹ، امتحانات اور عملی کام (پروجیکٹ) کے ذریعے واقف ہوتے ہیں بلکہ طلباء کا لمحہ بہ لمحہ مشاہدہ بھی اس میں معاون ہوتا ہے۔ سائنس کے بارے میں طلباء کی معلومات، سائنسی مہارتوں، اور رویوں کو جانچنے کے لیے اساتذہ کو مختلف النوع اوزار (tools) اور طریقہ ہائے کار کی ضرورت ہوتی ہے۔ مثلاً:

☆ مخصوص رد عمل

☆ تعمیر/تخلیقی رد عمل

☆ کارکردگی کی جانچ

☆ ذاتی ابلاغ (personal communication)

☆ طلباء کی خود تشخیصی (self-assessment)

سائنس کی تشخیصی حکمت عملیوں پر مفصل ہدایات کے لیے قومی نصاب برائے جنرل سائنس 2006 کا باب 8، صفحہ 65 تا 73 ملاحظہ کیجئے۔

## رہنمائے اساتذہ کے مشتملات اور ترتیب

رہنمائے اساتذہ برائے نیوگیٹ ایڈ سائنس میں سبق کا آغاز کرنے کے لیے تجاویز شامل ہیں نیز ہر باب کے لیے تدریسی حکمت عملیاں بھی فراہم کی گئی ہیں۔ ہدایاتی ماڈل کا مرکز و محور سابقہ یا پہلے سے موجود معلومات کو کھگانا ہے جس میں طلبا کی سرگرم شرکت کی حوصلہ افزائی کی جاتی ہے۔

ایک فعال اور طالب علم محور کمرہ جماعت کے لیے سفارش کردہ ترتیب کار (شیڈول)

5 منٹ	سابقہ / پہلے سے موجود معلومات کو کھگانا بذریعہ بنیادی سوالات
25 منٹ	آموزش (learning) بذریعہ بحث / سرگرمی
10 منٹ	نتیجہ / حاصل بذریعہ جانچ

ہر باب کا ابتدائی حصہ تعمیری انداز میں سبق کو آگے بڑھانے کے لیے بنیادی تجاویز پر مشتمل ہے۔ دوسرے حصے میں کتاب میں موجود تمام سوالات کے جوابات دیے گئے ہیں۔ طلبا کی حوصلہ افزائی کی جائے کہ وہ اپنے ذہن سے کام لیتے ہوئے جوابات دیں اور پھر استاد ان جوابات کی بنیاد پر طلبا کی تفہیم اور معلومات کی جانچ کر سکتے ہیں۔

## قومی نصاب برائے جنرل سائنس کے مطابق تدریسی حکمت عملیاں

موثر ہدایاتی تدریسی حکمت عملیوں میں مندرجہ ذیل شامل ہیں (تاہم حکمت عملیاں انہی تک محدود نہیں ہیں):

- تحقیق و تفتیش (انکوائری)
- سوالات اور گفتگو
- تحقیق اور مسئلے کا حل
- عملی مظاہرہ اور تجربہ گاہی کام (لیبارٹری ورک)
- مسائل پر مبنی آموزش (problem based learning)
- پوری جماعت، گروپ، اور انفرادی کام سے استفادہ
- خواندگی کی حکمت عملیوں (پڑھنا، لکھنا، بولنا اور سننا) کی شمولیت
- طالب علم کے کام کی بنیاد پر ہدایات کی فراہمی

سائنس کی تدریسی حکمت عملیوں پر مفصل ہدایات کے لیے قومی نصاب برائے جنرل سائنس 2006 کا باب 7، صفحہ 55 تا 64 ملاحظہ کیجیے۔

نیوگیٹ اہیڈ سائنس سیریز کے لیے تیار کردہ رہنمائے اساتذہ کمرہ جماعت میں استاد کی معاونت کے لیے ہدایات فراہم کرتی ہیں۔  
اس رہنمائے اساتذہ میں شامل ہے:

- کمرہ جماعت میں نیوگیٹ اہیڈ سائنس کی مؤثر تدریس کا طریقہ
- قومی نصاب میں مذکور تدریسی حکمت عملیاں
- سبق کی تدریس کی منصوبہ بندی کے نمونے
- نصابی کتاب میں دی گئی مشقوں کے مجوزہ جوابات
- جانچ (assessments) کے لیے مجوزہ ورک شیٹ
- کام کی مجوزہ اسکیم

## نیوگیٹ اہیڈ سائنس کی تدریس کیسے کی جائے

نیوگیٹ اہیڈ سائنس کی مزید تعمیری انداز میں تدریس کے لیے اساتذہ کو مشورہ دیا جاتا ہے کہ طالب علم کو کمرہ جماعت کا محور بنائے۔ طلبا کو کمرہ جماعت میں زیادہ فعال کردار دیا جائے، اُن کی حوصلہ افزائی کی جائے تاکہ وہ اپنے خیالات اور تصورات کو اعتماد کے ساتھ پیش کریں، نیز انہیں مختلف آرا کا احترام کرنا بھی سکھایا جائے۔ یہ تمام مقاصد حاصل کرنے کی غرض سے اساتذہ کے لیے ضروری ہے کہ طلبا کی معاونت کرتے ہوئے انہیں آسانیاں فراہم کیجئے تاکہ وہ زیادہ ذمے داری کے ساتھ اپنا سفرِ آموزش (learning journeys) طے کر سکیں۔ مندرجہ ذیل سطور میں ان تدریسی طریقوں کا خلاصہ کیا گیا ہے جن سے کام لیتے ہوئے کمرہ جماعت کو زیادہ سے زیادہ طالب علم محور بنانے کے لیے نیوگیٹ اہیڈ سائنس کے تمام ابواب پڑھائے جائیں گے:

- طلبا کو انفرادی اور اجتماعی، یعنی گروپ میں، کام کرنے کا موقع فراہم کیا جائے۔ اساتذہ اور طلبا حقیقی زندگی سے مثالیں زیر بحث لائیں۔
- طلبا کو ایسے کام ر ذمے داریاں تفویض کی جائیں جنہیں انجام دیتے ہوئے وہ آپس میں، اور استاد کے ساتھ تبادلہ خیال کر سکیں۔ طلبا کی حوصلہ افزائی کی جائے کہ وہ اپنی رائے یا خیالات کے پس پردہ وجوہ بیان کریں۔
- استاد کے لیے ضروری ہے کہ وہ کمرہ جماعت میں خود کو عزت و احترام، شرکت اور فعال آموزش (active learning) کے آئیڈیل کے طور پر پیش کریں۔ گروپ کے مباحثوں کے دوران مل جل کر کام کرنے کے لیے طلبا کی حوصلہ افزائی کی جائے۔
- استاد کو طلبا کی معاونت اس وقت کرنی چاہیے جب انہیں رہنمائی کی ضرورت ہو؛ پڑھتے، لکھتے اور مخصوص ابواب میں اسباق پر بحث کرتے ہوئے بیشتر وقت طلبا اپنے طور پر کام کریں گے۔