Vision Empower & XRCVC

Teacher Instruction KIT

Weather, Climate and Adaptations of animals to climate

Syllabus: NCERT Subject: Science Grade: 7 Textbook Name: NCERT- Science Textbook for class VII Chapter Number & Name: 7. Weather, climate and adaptations of animals to climate

1. OVERVIEW

1.1 OBJECTIVES AND PREREQUISITES

Objective

- To understand weather and climate and differences between the two.
- To understand adaptations that animals make in Polar Regions and tropical rainforests.

Prerequisite Concept

• Habitat and Adaptations Grade 6, Chapter 9, The Living Organism – Characteristics and Habitats

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Kindly Note: Activities marked with * are mandatory

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2. LEARN

2.1 KEY POINTS

The day-to-day condition of the atmosphere at a place with respect to the temperature, humidity, rainfall, wind speed, etc., is called the weather at that place. The temperature, humidity, and other factors are called the elements of the weather. The weather of a place changes day after day and week after week.

The average weather pattern taken over a long time, say 25 years, is called the climate of the place. If we find that the temperature at a place is high most of the time, then we say that the climate of that place is hot.

The Polar Regions present an extreme climate. These regions are covered with snow and it is very cold for most part of the year. For six months the sun does not set at the poles while for the other six months the sun does not rise. In winters, the temperature can be as low as -37° C. Animals living there have adapted to these severe conditions. For example, polar bears have white fur, so they are not easily visible in the snowy white background to its predators. It also protects them from cold. It has long curved and sharp claws that helps it to walk on ice.

2.2 LEARN MORE None

3. ENGAGE

3.1 INTEREST GENERATION ACTIVITY

Interest generation activity Activity 1: Summers and winters Materials Required: None Prerequisites: None

Activity Flow

- Ask the students 'do they like the cold or the heat? Do they like being in the city in the summer or go somewhere cool?'
- Did they notice that sometimes during the winter you also face a day which is very hot?
- Ask children about their visits to different places e.g.: coastal areas, hill stations.
- All of these are weather and climate conditions that they will discuss today.

3.2 CONCEPT INTRODUCTION ACTIVITIES

Weather

Activity 2: Weather

Materials Required: Accessible weather report, tactile graph showing weather fluctuation *Prerequisites: None*

Activity Flow

- Take an accessible sample weather report. The accessible format could either be braille or e-copy based on the students reading preference. Orient the student to the different elements of the weather report by making him/her read the sample.
- If there is no accessible sample weather report, do read out a weather report to the children or play a recording of the weather forecast making them understand what all is included in a weather report.
- Explain the concept of weather as the day to day condition of atmosphere at a place.
- Also explain the concept of fluctuating weather through a tactile graph.
- Orient the student to the fluctuating nature of weather parameters in the graphical representation through letting the student feel the x axis, y axis and then the graph line.
- Also, ask the children to feel the temperature in the morning, afternoon and in the evening. The maximum temperature of the day occurs generally in the afternoon while the minimum temperature occurs generally in the early morning.

Climate

Activity 3: Climate

Materials Required: sample climate tables in accessible format (*table 7.2 and 7.3 from the textbook*)

Prerequisites: None

Activity Flow

- Just like the above section, have sample climate tables in preferred accessible format for the student. Help the student read it explain that the temperature readings here are averages (for a month over several years) in contrast to the specific individual day readings in the Weather report.
- Explain the concept of climate as the average of weather conditions.
- Explain other aspects of climate as per the content.

Climate and Adaptation

Activity 4: Polar Regions

Materials Required: tactile word map/ tactile globe, cotton, tactile model of polar region(depicting snow on the ground, glaciers and lakes/ponds), models of polar animals (polar bear, penguin) different samples of fur.

Prerequisites: None

Activity Flow

- Orient the student to the location of the North Pole and South Pole on the tactile world map/tactile globe/ball based on availability.
- Explain the topography of the region as per relevant content. To explain how the land is filled with snow, use cotton to explain what snow feels like when it is fresh and use a dense cotton ball to explain how it feels when layers of snow settle on the ground for long.
- Use the tactile model of the polar region with features of snow on the ground, glaciers and lake/ponds.
- Then based on your relevant content discuss 3-4 types of polar region animals based on tactile models and discuss the various adaptations that each of these animals have based on your relevant content.
- Ensure that whichever tactile model you use, it has a distinct tactile feel for the adaptation you want to describe.
- For e.g. when discussing **polar bears** use a model where the student will be able to understand what fur is, how thick it is, and paws which are clearly wide and large. Also ensure that you inform the student of the color of the animal and size of the animal.
- When discussing **fur** with polar bears show the other different samples of fur. It is important for the student to be able to understand what fur in terms of texture by feeling it and also understand that different animals have different types of fur.
- When discussing penguins ensure that the model has the clear aspect of wings, beaks. Explain the student through touch which part of the penguins' fur is black and which is white. Also explain the concept of how penguins huddle to keep warm

by either putting two penguin models close to one another or by standing next to the student in a huddle to explain the concept. Inform the student of the color of the beak. Also inform the student of the size of penguins.

• Explain the concept of migration of birds as per relevant content.

Activity 5: Tropical rainforests

Materials Required: tactile word map/ tactile globe, models of tropical rainforest animals (elephant) *Prerequisites: None*

Activity Flow

- Orient the student to the location of tropical rainforests on the world map. Explain the location of these regions in link with the tropics and the equator on the tactile globe. Explain the topography of the region and help the student understand the tall trees in the region, the thickness of the forest that forms almost a wall on top and explain the concept of how sunlight can only pierce between the thick tree cover so when it reaches the land far below it only penetrates down.
- Explain other features of tropical rainforest as per relevant content.
- Discuss 3-4 types of tropical rainforest birds/animals based on tactile models and discuss the various adaptations that each of these animals have based on your relevant content.
- Ensure like in the earlier activity, that whichever tactile model you use, it has a distinct tactile feel for the adaptation you want to describe. e.g.: While discussing an elephant, describe its trunk, big floppy ears, tusks and tiny tail are distinctive. It is also important when you discuss animals like elephants to point out to the student that African elephants are different compared to Asian elephants. Inform the student of the color of the elephant.

3.3 LET'S DISCUSS: RELATE TO DAILY LIFE*

- How does the temperature vary through morning, afternoon, night?
- How different seasons have different climates?
- Have you been to a place which snows? If not, what do you imagine it would be like? Have you been to a forest? Which forest have you been to? Can you see polar animals in city zoos? If yes how are they kept and if no why not?

4. EXERCISES & REINFORCEMENT

4.1 EXERCISES & REINFORCEMENT

Reinforcement Activity 6: Weather Reports

Materials Required: weather reports, rubber board, parchment sheet, stylus *Prerequisites: weather*

Activity Flow

- Ask the children to name the elements that determine the weather of a place. Also, ask them to collect a weather report of seven successive days.
- Ask them to compare the temperature of these 7 weather reports and (if possible) let them prepare their own tactile temperature graph on a parchment sheet. Students can refer to the tactile graph used in activity 2.

4.2 IMPORTANT GUIDELINES*

Exercise Reading

It is very important that the children practice their learnings 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

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