Vision Empower & XRCVC

Teacher Instruction KIT

The Sky

Syllabus: Karnataka State Board Subject: Environmental studies Grade: 5 Textbook Name: Environmental Studies- Text cum work book-English medium- Fifth standard Chapter Number & Name: 14. The sky

1. OVERVIEW

1.1. OBJECTIVE & PREREQUISITES

Objective

- To know about the solar system.
- To understand about earth, its shape and size, and its movement.
- To understand the movements of the moon and its phases.
- To know about the meteors, asteroids and comets.

Prerequisite Concept

• Our planet Earth - EVS ,Grade 3, chapter 23: The Earth –Our Home

Content Index

Kindly Note: Activities marked with * are mandatory

1. **OVERVIEW**

- 1.1. OBJECTIVE & PREREQUISITES
- 2. LEARN
- 2.1 KEY POINTS
- 2.2 LEARN MORE
- 3. ENGAGE
- 3.1. INTEREST GENERATION ACTIVITY
- Interest generation activity

Activity1: Story- The sky is falling story

3.2. CONCEPT INTRODUCTION ACTIVITIES

The Sun

Activity2: The Sun

The Earth

Activity 3: The Earth

Concept of day and night Activity 4: Day and Night Solar System

Activity 5: Solar system

The Moon

Activity 6: The earth's satellite: The moon

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

4. EXERCISES & REINFORCEMENT

4.1 EXERCISES & REINFORCEMENT Reinforcement

Activity 7: Solar system- scramble

4.2 IMPORTANT GUIDELINES* Exercise Reading Perform Textbook Activity Provide Homework

2. LEARN

2.1 KEY POINTS

- Solar System: The Sun and its family is known as the Solar System. Our Solar System comprises 8 planets, 173 satellites, thousands of asteroids, meteoroids and comets. The Sun is a star. It is closer to the Earth than any other star. Therefore, it looks bigger and brighter than all other stars. It is the centre of the Solar System. It exerts a gravitational pull on all its members, which orbit around it. The heat and light of the sun is essential for human beings, plants and animals.
- Planets: are large (almost) spherical objects that revolve around the sun. Planets move in fixed orbits around the sun. There are 8 planets in our solar system. Planets may be made of rocks, metals and gases like hydrogen, nitrogen and methane. They receive light and heat from the Sun. The earth is also a planet and is the only known place in the universe which supports life.
- In the order of their distance from the Sun, the names of the planets are -Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.
 - Mercury: It is the nearest planet to the Sun. It has no water and is the hottest planet. So it has dry climatic conditions. It has a rocky surface, large craters and mountains. It revolves around the Sun faster than any other planet. It is brown in colour.

- Venus: It is the second planet from the Sun and smaller than the earth. It is the brightest planet in the solar system. It is also known as morning star, Silver Star and evening star.
- Mars: It is the fourth planet from the Sun and is also known as the Red planet. Its red soil is formed because of iron oxide. It has huge volcanic craters, giant canyons and canals. The canals are now as dry as dust. Thus it looks like a desert.
- Jupiter: It is the fifth planet from the Sun and the largest planet in the solar system. It is 100 times bigger than the earth. It is a gaseous (gas) giant planet. It has a Great Red Spot. It is three times the size of the earth. There are thin icy and dusty rings around this planet.
- Saturn: It is the sixth planet from the Sun and the second largest planet in the solar system after Jupiter. It is also made up of gases. It has thousands of rings of ice, rocks and dust. This makes it look beautiful and attractive.
- Uranus: It is the seventh planet from the sun. Like Jupiter and Saturn it is made up of gases. It is seen as a blue-green disc. It has rings, which are opaque. Explain to them about opaque material as well. Opaque material: material which does not allow light to pass through them at all . Example: wood, metals, books; etc. It is covered by thick clouds.
- Neptune: It is the eighth planet from the sun. Its composition is similar to that of Uranus. Its colour is bright blue. It is one of the coldest planets in the solar system due to its great distance from the sun.
- Meteoroids: Small fragments of rocks and debris in space are called meteoroids. When they enter the earth's atmosphere, they burn up in the atmosphere due to friction and a streak of light is produced. They are known as shooting stars.
- Asteroids: These are small irregularly shaped rocks made up of metal or minerals that orbit the sun. Most of them are found between Mars and Jupiter in an area known as the asteroid belt.
- Comets: A comet is an icy body that gives out gas or dust. They revolve around the sun. They can be seen at night, when they come close to the earth. When they come close to the sun they produce a long tail which is made up of gas and dust. Some comets appear at regular intervals. Halley's Comet appears once in 76 years. The last time it appeared was in 1986.

2.2 LEARN MORE None

3. ENGAGE

3.1. INTEREST GENERATION ACTIVITY

Interest generation activity

Activity1: Story- The sky is falling story Materials Required: None Prerequisites: None

Activity Flow

• Read aloud the following story to introduce the lesson:

Once a hare was lying asleep in a grove of coconut trees. Suddenly, a ripe coconut fell down on the ground making a loud noise. Hearing it, the hare woke up startled, "oh! The sky is falling!" At once, he started running frantically.

Minutes later, another hare saw him and asked, "Why do you look so scared?" "The sky is falling!" shouted the panicked hare. Hearing this, the other hare too joined him. With time, many more animals joined them. Even the lion saw the vast number of beasts running crazily.

Then, he roared loudly. Hearing the roar, the animals stopped. Soon the lion learnt of the matter. He understood that there was some misunderstanding, because as he looked up at the sky, it was not falling. "Has anyone seen the sky falling?" he asked.

Trembling, the hare stepped forward and told the lion what he knew. Hearing this, the lion said, "Show me the place where you were asleep." Afraid, the hare pointed to the tree where he was asleep. On inspecting the place, the lion saw the fallen coconut fruit. Then, he told the beasts what he had seen and added, "My dear hare, you should have looked around before creating such a hue and cry." The hare was embarrassed and asked everyone for forgiveness.

Moral: Do not jump to conclusions without checking the real truth and do not blindly follow a person.

• With this story, the teacher can take a link to the sky chapter and what and all is there in the sky with the following activities.

3.2. CONCEPT INTRODUCTION ACTIVITIES

The Sun

Activity2: The Sun Materials Required: materials around them, chalk Prerequisites: None

Activity Flow

- Take the students out in the morning and in the afternoon and then in the evening for 5 minutes. So that they feel that the sunlight is more in the afternoon as well as brings out to their attention, which direction the sunlight is coming from.
- The next day ask them, what difference they felt at these three different times.
- Do you feel that the sun is moving around? But clear this doubt in the next section that it is not the sun but the earth which revolves around the sun.
- Explain to the children that it is the day when the sun rises and it is night when the sun sets.
- The Sun provides us with light and heat. It appears to rise in the east and set in the west.

The Earth

Activity 3: The Earth

Materials Required: tactile globe Prerequisites: None

Activity Flow

- Explain to the children that Earth is our home and it is a unique planet in the Solar System. It occupies the third place from the Sun. It is the only planet of the solar system where there is life, because it has ideal conditions for life, such as temperature, water and a suitable atmosphere with life supporting gases.
- Then show them the tactile globe.
- Movements of the Earth:
- The earth has two movements- rotation and the revolution.
- The Earth spins continuously on its axis from west to east. This is called rotation. The Earth also revolves around the Sun along its orbit. This is called revolution. The earth continues to rotate on its axis while it is revolving around the Sun.
- To show them rotation and revolution ask them to rotate first and then revolve around their table/chair/object. To make them understand the movements of earth.
- You can also use the globe to show rotation and ask the children to touch it.

Concept of day and night

Activity 4: Day and Night

Materials Required: string/rope Prerequisites: None

Activity Flow

- Make two groups, in which one group should have 4 students and these four students together would represent the sun.
- Ask these 4 students to make a circle, standing very close to each other so that their shoulders should touch and facing their back towards the centre.
- And they have to raise their both hands parallel to the floor and hold one common string/rope which would form a circular path.
- Their hands and the rope would be representing the rays coming from the sun.
- Now from the other group, one by one the students should come. That student represents the Earth.
- The student (Earth) should follow the rope and move in the circular path, which would be considered as the Earth revolving around the sun in its orbit.
- But along with revolution, the Earth rotates around its axis so the student (Earth) has to rotate as well.
- While the student is rotating, he can take the reference of the rope so that he follows orbit to go around the sun and does not lose his place.
- Now when the front of the student (Earth) is touching the rope that means the front side of the earth is facing the sun and receives light but the back does not. So the side facing the sun had day (light) and the other side of earth does not receive light and has night.(dark)
- Similarly when the back is in touch with the rope that means sunlight is falling on that side and it has day, while the front has night.
- During the Earth's rotation, one side of the earth faces the sun and receives light. This part of the Earth has day (light), the other side of earth does not receive light and has night (dark). Since the earth rotates from west to east, the Sun appears to rise in the east and set in the west.
- Every student should get a chance to represent Earth, so that they understand the concept of Day and Night better.

Solar System

Activity 5: Solar system

Materials Required: Model of solar system, tactile diagram of solar system Prerequisites: None

Activity Flow

- Show them the model of the solar system with all the planets and then the tactile diagram.
- Tell them about each planet one by one. They should have touched that planet to know its position and size as compared to the other planets.
- After telling them about each planet, the teacher can give planets names to the students and she can represent the sun. Each student would represent one planet

and each of them has to stand in their place with reference to the sun. For example, a student who represents Mercury will stand closest to the Sun and a student representing Neptune will be standing farthest to the Sun. After they all stand in their places, one by one each student can move from his place to check whether the arrangement is correct or not.

The Moon

Activity 6: The earth's satellite: The moon

Materials Required: tactile diagram showing phases of the moon Prerequisites: None

Activity Flow

Explain to the children about full moon and new moon

- A celestial body revolving around the planet is called a satellite. The Moon is the only natural satellite of the Earth. It revolves around the earth. It does not have light of its own. It reflects the light from the sun during the night.
- Full moon: The moon is said to be in full phase/full moon when the illuminated half of the moon is fully in position for us to see it. This occurs during the time when the earth, moon and sun are located in a relatively straight line with the earth between the moon and the sun. The tilt of the earth allows the moon to be illuminated, and we see the side of the moon that is fully in sunlight.
- New moon: The "new moon" phase of the lunar cycle happens when the sun, moon and earth are located in a straight line, with the moon between the earth and the sun. The illuminated portion of the moon is facing away from us at this time with the shadowed half of the moon facing towards us, making it appear nearly or totally invisible.
- Teachers should use a tactile diagram showing phases of the moon to explain the above mentioned points.
- For this, the teacher can ask one student to be the earth and hold a ball in his/her hand, which would be a moon and in the centre a chair which would represent the Sun.
- Now they know the concept of day and night and sun rays from the sun.
- This activity is to show the movement of the moon, so as the Earth rotates the moon also revolves around the Earth, so when the children (Earth) will rotate, then he would also move the ball (Moon) in his hand.

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

• Gases in the atmosphere like carbon dioxide, methane and water vapour trap some of the heat from the sun's rays, which would otherwise go back out into space. This

keeps the Earth at a comfortable temperature, and prevents it getting too cold – like a giant greenhouse.

4. EXERCISES & REINFORCEMENT

4.1 EXERCISES & REINFORCEMENT

Reinforcement

Activity 7: Solar system- scramble Materials Required: Tactile diagram of scramble

Prerequisites: Planets in the Solar system

Activity Flow

• Do this activity in the class. Give them the tactile diagram of this scramble and use the clue to find the phrase.

EMRCYUR

VSNEU

HERAT

MRAS

EJURTPI

ASRUNT

ASUUNR

NPNUEET

• Unscramble the letters to find the names of all the planets in our solar system. Then use the code to find the hidden phrase.

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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