Satellites

CONTENT STANDARD: Earth and Space Science

CONTENT TOPIC: Space Science

CONCEPT: Our solar system is composed of many objects which revolve around a star.

CONTENT OBJECTIVE: To understand the earth-sun-moon relationship

INSTRUCTIONAL OBJECTIVES: The learner will:

- Construct a model of our earth-sun-moon system.
- Demonstrate two types of movement involving the earth.
- List the ways that time is related to the movement of the earth and moon.
- Define satellite.
- Distinguish between natural and man-made satellites.
- Demonstrate the relation and movement of the natural satellites of the sun.
- Define and demonstrate an orbit.
- List reasons for man-made satellite placement in orbit.

OUTLINE OF CONTENT:

I. Sun
II. Earth
III. Moon
IV. Definitions
    A. Satellite
    B. Orbit
    C. Rotation
    D. Revolution
V. Natural satellites
VI. Man-made satellites

TIME REQUIRED: 30 minutes

MATERIALS:

Satellite screen, different sizes of spheres

SET:

Today, class, we are going to construct a model of our earth-sun-moon system. We will compare two types of movement involving the earth. We will discuss the ways that time is related to the movement of the earth and moon.

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INSTRUCTION:

The portion of the solar system which interests us the most is composed of one star, (The sun) a planet (The earth) and a moon (Our moon). The earth and the moon are satellites of the sun. A satellite is a smaller object that revolves around a larger object. The earth and moon revolve around the sun. The sun is at the center of the solar system. It is the star closest to the earth. It is a very large ball made of hot gases. The earth is the planet on which we live. The earth gets light and heat from the sun. The earth revolves around the sun. When the earth has moved all the way around the sun, a year has past. The earth rotates on its axis and this takes 24 hours. The sun moves across the sky, but its locations change with the seasons.

The moon moves across the sky. You can see the different phases of the moon. The shape of the moon changes in a cycle that lasts about a month. To explain rotation and revolution, I want _____ and _____ to come up here. _____, you be the sun. You just stand there shining. _____, you be the earth. Your part is a little more tricky. You have to rotate on your axis. That means you turn slowly round and round, don't stop. This is continuous. While you are rotating you must also revolve around the sun. As you spin you must also move in a circle around the sun. A rotation takes 24 hours. A revolution takes a year. The moon is a satellite of the earth. The moon doesn't really shine at night. It reflects the light of the sun. The moon makes a revolution around the earth every 28 days and it seems to change shape as it revolves.

ACTIVE PARTICIPATION:

1. See above. Use three children, have the rest observe. One is the sun, one is the earth, one is the moon. Show how the moon moves around the earth, while the earth moves around the sun.

2. Children are to work in small groups and construct an earth-sun-moon model from different sizes of spheres. Let children demonstrate the movement of the earth using the model which was constructed.

3. Using the Satellite screen and balls. (For information on building a Satellite screen, please contact the SEF):

- Place one ball (start with a large ball) in the center of the screen
- Gently roll different size balls at an angle towards the ball in the center
- Observe what happens as the ball gets closer to the ball in the center
- Try using different sizes and weights of balls for the center and “satellite”, observe and discuss what happens.

CLOSURE:

1. What is the largest star in the solar system? (Sun)
2. It takes one year for Earth to _____ around the sun. (Revolve)

3. It takes one day for the earth to _____. (Rotate on its axis)
4. It takes twenty-eight days for the _____ to rotate around the earth. (Moon)
5. Draw a picture of the sun, Earth and moon