

Rotation: Day/Night

Background Information

We have day and night because the Earth rotates. It spins on its axis, which is an imaginary line passing through the North and South Poles. The Earth spins slowly all the time, but we don't feel any movement because it turns smoothly and at the same speed. The Earth takes a whole day (24 hours) to make a complete turn.

At any time half of the Earth faces the sun. This part has day. The other half of the Earth faces away from the Sun. It receives no light. It is dark and has night.

Before beginning this science lesson you may want to read, *The Truth About the Moon*, by Clayton Bess. Boston: Houghton Mifflin Co 1983 (Juv); ISBN: 0395345510. Have the students look and listen for all the answers to the character Sumu's questions regarding the moon. Ask the students what they might say to Sumu if he asked them about the moon. Later after studying this lesson and reading current facts about the moon, Earth and sun compare the information.

Objectives

By the end of this activity, students will be able to:

- understand the concept of the earth spinning/rotating on its axis in a cyclical fashion.
- communicate astronomical reasons for day and night.
- define and identify sunrise, day, noon, sunset, and night as the Earth spins.

Instruction Time

45 Minutes

Vocabulary Words

- Sunrise
- Sunset
- Day
- Night

Materials

- Globe
- lamp without a lamp shade
- figure of a person cut-out of purple paper
- tape

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Procedure

1. Discuss as a class "Why is there night and day?"; "What happens to make nighttime?"; "What happens to make daytime?"
2. Set the lamp in the middle of the room. Have the students stand in a circle around the lamp facing the light. Tell the class to pretend the lamp is the sun and our body is the earth. Ask: "Can you see the sun now?; Is it day time or night time? Have the students spin their bodies to the right so that they can't see the sun anymore? Is it day or night now?" Ask the students to spin again to their right slowly so that they can just start to see the sun appearing on their right side. Ask: "It was just dark and nighttime and now it is starting to be light again; what time of day is it?" (morning or sunrise) Have the students spin slowly again so that they are facing straight at the sun. Ask: "What time of day is it?" (noon) What meal do you usually eat when the sun is at its brightest in the middle of the day?" Spin slowly again to the right until the students can barely see the sun on their left side. Ask: "It was just bright outside and now it is beginning to get dark again; what time of day is it now?" (evening or sunset)
3. Ask for one volunteer to hold the globe and play the part of the earth. Ask another volunteer to hold the flashlight and play the part of the sun. Ask a volunteer to tape the feet (tab) of the purple paper person on the globe near where we live. Have the rest of the class take a seat so that they can see the purple man. Dim the lights and have the sun turn on his flashlight and point it at the purple man (make sure the globe is oriented with the north pole straight up and the purple man is facing the sun). Ask: "If you were the purple person, would you be able to see the sun right now? Is it day or night?" Ask the class what day of the week it is today. (For the sake of this description we will assume it is Monday; make appropriate adjustment) Have the earth spin (teacher may want to help the student) so that the purple person is pointing away from the sun and in the dark. Ask: "If you are the purple person, can you see the sun? Is it day or night? If today is, what night is it?" (Monday night) Ask the class how the earth should spin so that it is daytime again for the purple person. Emphasize the spin of the globe. Ask: "If you are the purple person, is it day or night? The purple person was just sleeping. Now it is time for a new day. What day is it for the purple person? What time of day is it on the other side of the earth?" Ask the class to help the earth spin slowly until the sun is on the purple persons side. Ask: "It was just day and bright outside for the purple person, now it is about to become dark or sunset. What time of day do you think it is now?" (Refer back to the lamp model in part 1 of this lesson) Now ask the class to help the earth spin until it is night. Repeat the process until it is morning or sunrise. Ask the relevant questions. Continue with the model until you are satisfied that the class understands the concept of the earth spinning to cause night and day.

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Expected Results and Explanation

Upon completion of this activity, discuss the spinning of the earth to cause night and day. Ask: "How many times does the Earth spin around each day?" (once) "How many times does the earth spin in one week (7 days)?" "How many times does the earth spin in one month (30 days)?" "How many times does the earth spin in one year (365 days)?" Have students model "day" and "night" by standing in a circle around the lamp and turning toward and away from the light.