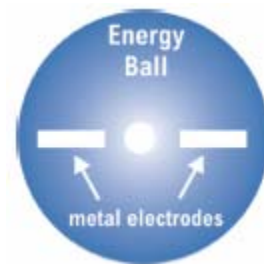


PRIMARY ACTIVITY: Open & Closed Circuits

An Energy Ball is a hollow ball that contains a light and a sound device, both of which are attached by wires in series to two metal electrodes that are attached to the outside of the ball as shown in the diagram on the right. When both electrodes are touched by one person or by several people in contact with each other, the circuit is closed and the ball lights and makes a noise. An Energy Ball can be purchased from most science supply stores, by emailing NEED at info@need.org or by calling 800-875-5029.



Thanks to Linda Fonner, New Martinsville, WV for developing and sharing this activity.

Objectives

Students will be able to distinguish between open and closed circuits.

Students will be able to explain that electricity is a form of energy.

Materials

1 ball, rock, pencil or other small item per student

1 Energy Ball

Procedure

1. Turn on various electrical devices in the classroom (CD player, lights, TV, etc.). Ask students how the devices are able to work. Once students give “energy” as the answer, ask them to define it. ***Energy is defined as the ability to do work or make a change.***
2. Lead an introductory discussion about electricity (electrical energy) as a form of energy.
3. Have all the students stand in a circle, close enough to pass items from one student to the next but far enough apart that their hands just touch. Give each student a ball. Explain to the students that they have to pass the balls from one person to the next, with each person only holding one ball at a time. Give the students time to complete the task.
4. Remove one student from the circle and ask the students to pass the balls as before. They should not be able to complete the task due to the open space. Collect the balls from the students. Have the students remain in the circle.
5. Ask the students for different words they could use to describe the two different scenarios. Make a list on the board. Be sure the words “open” and “closed” appear on the list.
6. Tell the students they are going to pretend that their arms are wires that carry electricity. Have them touch palms in the circle. Hold the Energy Ball between two students and have them stop touching palms. Ask each of the two students to touch a metal strip, but not touch each other. The Energy Ball should light and make noise.
7. Have one of the students stop touching the metal strip, then touch it again. Have a student in the circle stop touching another student’s palm, then touch again. Allow all students the opportunity to open the circuit.
8. Ask the students to compare what happened in the circle with the Energy Ball to what happened in the circle when they were passing the balls around.
9. Wrap up the activity by explaining open and closed circuits, emphasizing that electrical energy needs a closed path to do work.