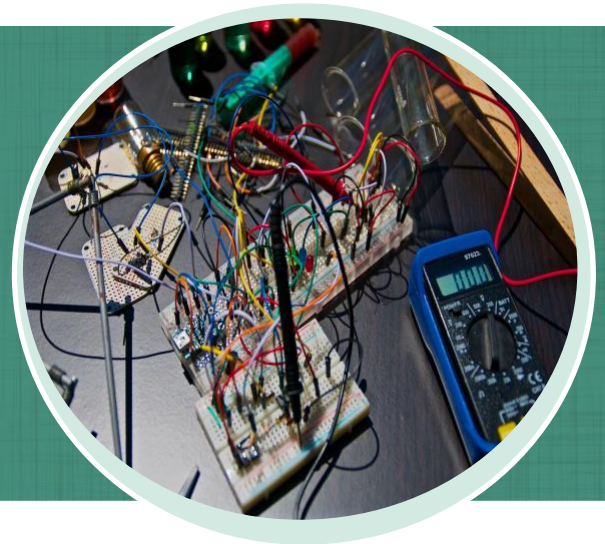


Conductors and Insulators

Electricity All Around Us
Activity
Grade Level: 5-8



Main Objectives

Learners will distinguish electrical conductor materials that allow electricity to flow through them from insulator materials that do not allow electricity to flow through them.

Learning Outcomes

By the end of this activity, learners will:

- understand the difference between conductors and insulators
- identify conductors and insulators

Length of Activity

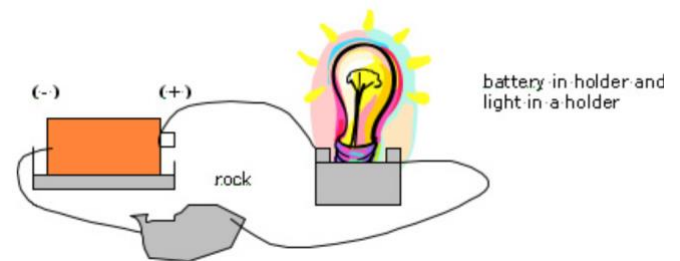
1.5 hours

Materials List

Internet-enabled device
Conductors and Insulators Worksheet
Battery (1.5 V) and holder
Lightbulb (1.5 V) and holder
3 insulated copper wires stripped at both ends
Distilled water
Salt, milk, soft drink, juice, sugar
Pencil, piece of wood, plastic pen, wire, spoon, or other materials to test
5 labelled beakers
Wire strippers

Background

What is a conductor and what is an insulator? When electricity travels through a material, the material is called a **conductor**. If electricity does not travel through the material, the material is called an **insulator**.



Why do some materials conduct (act as conductors) and others do not conduct (act as insulators)? Materials such as plastic, which hold their electrons very closely, do not give up their electrons very easily and therefore do not conduct. Other materials such as metal do give up their electrons freely and will conduct electricity. Materials that do not conduct and are good insulators are important because they keep us safe from electricity. The wires in our homes all have an insulating plastic coating that prevents us from being harmed by the electricity flowing through them.

Activity

Note: Ensure you have a variety of materials for learners to test. You may want to have learners choose their own five objects to be tested in the activity.

Step 1:

- a. Review the background information provided on the first page.
- b. Explain to the learners that they will connect the item to see if it conducts or insulates. If the material permits the light bulb to go on, it is called a **conductor**. If the material does not permit the light bulb to go on, it is called an **insulator**.

Step 2:

- a. Demonstrate using one object so that learners know how to test the items.
- b. Ask learners to use their worksheet to record the beaker contents in the chart (e.g. water and sugar). Predict whether the liquid will conduct or not. Then test it and observe if the liquid conducts. Use your circuit tester to determine whether a liquid conducts or not.

Tips and Extensions

- Items you might like to have your learners test could include: hangers, spoons, forks, erasers, stapler, wax paper, paper, wood, pins, rocks (some mineral rocks will conduct), pens, plastic cups, polystyrene, coins, nails.
- Have learners use a switch to see how the light bulb and be turned on and off. Explore the concept of an open and closed system.

Comprehension

- What did you find out?
- Did you find that some objects were good conductors?
- Did you find that some objects were insulators?
- Were there any materials that you were not sure would conduct or insulate? Why?
- Why do you think wire has a plastic coating on it?