

Flowing Electricity

Approach: One to one

Level: Year 4 and year 8

Focus: Exploring knowledge about the electrical conductivity of different materials, and skills in using a simple electrical circuit to check conductivity.

Resources: Conductivity checker —circuit board, bulb, battery and leads; materials— spoon, key, iceblock stick, foil muffin dish, foil paper, plastic car, plastic ruler.

Questions/instructions:

Set up table with circuit board and other supplies.



In this activity you will be finding out what materials electricity can flow through.

1. Before we begin to test some of the materials I want to know what you think. Which of the materials on the table could electricity flow through?

% responses
y4 y8

Predictions:

Tick in the box what you think will happen.					
Lets electricity flow through?	yes	no	maybe	y4	y8
spoon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	70	85
ruler	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	70	78
iceblock stick	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	77	83
plastic car	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	68	80
key	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	78	85
foil muffin dish	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	64	66
foil paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	64	74

Before we test the objects let's check the circuit board and see if the bulb will work.

Check the circuit board with the student.

Now let's test the objects. Join an alligator clip to each end of the object. Make sure the alligator clips don't touch each other.

2. Test each object to find out if they let electricity flow through them. Tell me and I'll record your answer.

Fold open the recording book for the student to see.

Measurements:

Tick the boxes to show what happened.			<i>% responses</i>	
Lets electricity flow through?	yes	no	y4	y8
spoon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	100	100
ruler	<input type="checkbox"/>	<input checked="" type="checkbox"/>	98	98
iceblock stick	<input type="checkbox"/>	<input checked="" type="checkbox"/>	99	99
plastic car	<input type="checkbox"/>	<input checked="" type="checkbox"/>	98	99
key	<input checked="" type="checkbox"/>	<input type="checkbox"/>	97	96
foil muffin dish	<input checked="" type="checkbox"/>	<input type="checkbox"/>	97	99
foil paper	<input checked="" type="checkbox"/>	<input type="checkbox"/>	98	99

3. See if you can tell me the name of something else that electricity can flow through.

What is it made of?

identified a conductor 85 89

4. Now try to think of something that electricity can't flow through.

What is it made of?

identified a non-conductor 95 97

5. Electricity can travel through some things but not others. Try to tell me what is special about things that electricity can travel through.

used term "conductors" or "conducts" 2 13

suggested metals conduct 48 63

identified that in these materials electrons can move freely to carry electricity 0 2

Commentary:

Both year 4 and year 8 students were reasonably knowledgeable about the electrical conductivity of different materials. About eight percent more year 8 students answered correctly, on average. Almost all student tested materials successfully.