**Which of these materials make the light go on?**

**Levels:** 1-2  
**NoS achievement aims:** Investigating in science, Communicating in science   
**Contextual strands:** Material world   
**Topic:** Electricity/metals

**Rationale**

Different materials behave in different ways.

Asking children to test items and record their results encourages them to observe carefully and think about how things are the same or different. This provides opportunities to extend their experiences of the natural world, build their language and develop understandings of how the natural world can be represented.

**What you need**

* A simple electrical circuit made using a 1.5-volt battery in a battery-holder, a 2.5-volt bulb in a bulb holder, wires and metal paper clips. (For instructions on setting up a simple electrical circuit, refer to *Making Better Sense of the Physical World*, Activity 8, p. 76.)
* Objects made from a variety of substances, for example, a metal nail, fabric, ballpoint pen, aluminium foil, wooden or plastic pegs, steel wool, coin.

**Focus**

* What is a metal? Can you see any in the room? Where do you see metals at home?
* What is not a metal?
* Are all shiny things metals?
* Are all metals shiny?
* What tests could you carry out to decide if something is a metal?

**Exploration**

1. Explain that one pattern that can separate metals from other types of materials is that metals conduct electricity.
2. Set up the circuit according to the diagram on page 76 of Making Better Sense of the Physical World.
3. Explain to the students that because metals conduct electricity, a metal object will complete the electrical circuit and the light will go on.
4. Model this by testing the circuit with one metal object, and then with a non-metal object. As you do this, model the making-a-prediction-and-testing method as follows:
   * Choose a metal object.
   * State, “I think this is a metal. I predict it will make the light go on."
   * Test your prediction by placing the object in the circuit.
   * State the result, “My prediction was right!”
   * Repeat the process with the non-metal object (“This is a non-metal, so I predict it will not make the light go on.”).
5. Decide, with the students, how to report their findings as they test each object (for example, they could draw and label the results, make a chart and tick or cross off each item, write a sentence for each item, or make an oral statement).
6. For each object, get students to:
   * predict whether they think it will make the light go on
   * test their prediction
   * place the object in one of two groups – either “Made the light go on” or “Didn’t make the light go on”.
7. When all items have been tested, ask the class whether they think the statement, “Only metals make the light go on” is true or false and give a reason for their answer.
8. Help them test their answers by:
   * encouraging them to find out more about each object
   * finding and testing more objects to confirm their ideas.

**Reflection**

* What are the different ways we can record our findings?
* Were any of our predictions wrong? What caused us to make a wrong prediction?

**Activity resources**

Ministry of Education (1999). *Making Better Sense of the Physical World*. Wellington: Learning Media.