

# Making Shadows

## Teaching Ideas

**1-PS4-3** Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

### Materials:

Flashlights, puppets and popsicle sticks, observation sheets, assessment sheets - differentiated.

**Vocabulary:** light source, shadow, block (to stop), translucent, opaque vs transparent (not explored in this lesson)

### Introduction:

Take students outside on a 'shadow walk.'

This would ideally be on a sunny day when the sun is higher in the sky and students can observe shadows. (However, on a cloudy day, you could also ask students why there are no shadows.) Record student observations about shadows when you return to class.

Discuss: (At this point, it is ok to ask these questions and not give students the answers.)

- What do you need to make a shadow?
- Do shadows change?

### Explore:

Turn off the classroom lights. With a partner, have students use the stick puppet and the flashlight to explore the questions above. (Use observation sheets.)

STOP - Have students explain what is happening. If they have not already done so, encourage children to spend some more time exploring what happens when they change the position of the flashlight - does the shadow change?

### Explain:

(This could be a good time to read a non-fiction book about shadows.)

- What do you need to make a shadow? You need an object and a source of light. To make a shadow, the object must block a path of light. (Discuss translucent and opaque objects as creating shadows if already known to the class.)
- Do shadows change? Yes, shadows change depending on where the light source is. How? From long to short/no shadow or one side to another depending on where the path of light is directed.

### Assess:

Use the differentiated assessment sheets to check student understanding of the standard 1-PS4-3.