

NC objectives

K: Recognise that shadows are formed when the light from a light source is blocked by a solid object.

WS: Setting up simple practical enquiries, comparative and fair tests.

Overview

Children will carry out an investigation to find what makes the best shadow.

Key concepts

- Shadow formation
- Comparing shadows
- Fair test

Outcomes

- Children prepare a short email for Shady Shadow explaining which material should be used to make a template to put in front of a torch beam.
- They also explain why they used that material.

Resources / equipment

- Torches and batteries
- A selection of opaque, transparent and translucent materials, e.g.
 - cling film
 - bin bags
 - coloured acetate sheets
 - white paper
 - greaseproof paper
 - thin card
 - thick white card
- Scissors
- An optional writing frame has been provided for this assessment activity.

Teaching notes

- Set the scene for the assessment activity by explaining that there is a new superhero in town, called Shady Shadow. He wants everyone to carry a special torch with them so, when they are in danger, they can shine it on a wall and he will see it and come to the rescue.
- As a class, decide on a simple shape for Shady Shadow's sign.
- *How can we make the best shadow for Shady to see? What do we mean by the best shadow?* Help children to decide how to test for the best shadow. *What can we measure or observe? What will we change and what will we keep the same? What must we do to make sure that the test is fair? How can we remember how dark each shadow was?*
- Discuss how to record results systematically in a table.
- Children cut shapes out of different types of material and place them in front of a torch to test the shadows. They use the results to decide which material to recommend to Shady.
- Check that children have understood that opaque material blocks the light best and forms the darkest shadow.
- Children write an email recommending which material to use so that other people can make a Shady Shadow torch. (They may find that more than one of the opaque materials is suitable.) They also explain how the shadow is formed and why the chosen material makes the best shadow.

	Knowledge	Working Scientifically
Exceeding ARE	Able to explain that a shadow is formed when a light source is blocked and know the difference between a source of light and a reflector of light. Able to suggest a relationship between material used to darkness of shadow using the terms translucent, transparent and opaque accurately and with confidence. Notice that even translucent materials can cast shadows and that shadows differ in darkness and crispness.	Recognise when a test is not fair and be able to develop features of a test to give a better outcome. Recognise when and how to set up comparative and fair tests, be able to make and record accurate measurements, identify simple patterns in their data and explain which variables need to be controlled and why.
On track for ARE	Able to explain that a shadow is formed when a light source is blocked. Able to name several light sources and know the difference between a source of light and a reflector of light. Able to confidently and accurately use the terms translucent, transparent and opaque to describe the properties of some materials and able to suggest which materials, from their investigations, will cast a dark and crisp shadow.	Recognise when a simple fair test is necessary to answer a scientific question. Able with some help to set up a fair test and able to make and record accurate measurements and identify simple patterns in their data. Start to recognise when a test is not fair and suggest improvements.
Working towards ARE	Know that darkness is the absence of light. Know that some materials block light and that this makes a shadow. Be able to describe shadows as being similar in shape to the object that cast them.	With help, make simple observations in testing materials to see if light passes through them and make shadows by blocking light from a source.

N.B. Any children not hitting *working towards ARE* should come under *below ARE* when recording attainment in Active Learn Primary.