

Shadow

Across my bedroom wall
flapping its giant grey wings:
a monster

Across my bedroom lamp
fluttering its small brown wings:
a moth

“Shadow”

Discussion

Points

- ◆ Do you have a bedroom lamp (show an example or picture of one)?
- ◆ What have you noticed on your bedroom walls when the lamp is on?
- ◆ Have you ever seen a moth in your bedroom? What did it look like and how did it move?
- ◆ Why do you think the two descriptions “Across my bedroom wall flapping its giant grey wings” and “Across my bedroom lamp fluttering its small brown wings” are in the same, very short poem?
- ◆ Why are the giant grey wings “giant” and “grey”, and the small brown wings “small” and “brown”?
- ◆ Why is this poem called “Shadow”?
- ◆ How do you think a shadow is made?
- ◆ How do you think the size of the shadow changes?

Science

Background

- ◆ Light travels very quickly about 300,000 km per second. Although that sounds fast it still takes light approximately eight minutes to travel from the Sun to the Earth.
- ◆ Light travels in straight lines; this is an important idea for understanding shadows, and quite a logical one, because if it didn't it might be able to bend round objects and corners and then we would not have shadows.
- ◆ Shadows are formed because light hits an opaque object (opaque is where light cannot go through) and cannot go round or through it, therefore the area on the other side of the object appears to be darker than the surrounding area.
- ◆ The shape of a shadow can be changed by moving an opaque object closer to or further away from the light source. In the poem the moth moves closer and further away and gets smaller and larger giving the appearance of a monster moth.
- ◆ Transparent objects allow light to pass straight through them, for example, clear glass.
- ◆ Translucent materials allow less light through or reflect or bend the light. Materials such as frosted glass are translucent allowing some light through but not giving a clear image. Many plastics are also translucent.

Key

Ideas

- ◆ Shadows are produced when light is blocked by an opaque object.
- ◆ Shadows vary with the relative distance and direction of object and light source.
- ◆ Darkness is the absence of light.
- ◆ Light can pass through some materials but not others.

Science

Skills

Children should be able to :

- ◆ identify the different sources of light;
- ◆ understand that light travels and takes time to do so;
- ◆ explore and test their ideas;
- ◆ make predictions;
- ◆ collect evidence;
- ◆ use evidence to draw conclusions.

Key

Activities

The youngest children can use their hands to create a variety of still and moving shadows on the wall using a powerful torch or overhead projector. Draw round them on a large sheet of paper and ask children to compare their hand shapes.

Make some simple shadow puppets and perform a shadow play; how can the characters be made bigger or smaller?

In the playground on a sunny day, ask children to explore their shadows. Ask them: What shape is it? Where is it? Is it possible to run away from it? Can it be caught? How can you make a joint shadow with a friend?

Extend the above activity and ask the children to explore how the shape and size of shadows relates to the objects creating them and the distance between object and light source.

Discuss with the children what a shadow is and how it is made. Ask the children to draw their ideas.

Guess or predict what object is producing a particular shadow just by looking at the shadow.

Ask them to look at vertical and horizontal shadows and explore how the length of shadows produced by the sun changes during the day.

Design and make a shadow clock or sun dial: establish the best site for it.

Older or more able children could investigate the relationship between the dimensions of a shadow and the distances between object and light source, and object and "screen". This would be an excellent opportunity to practise drawing graphs, though to get satisfactory results the light source must be small and bright. Does this explain anything about how light travels and what is "in" a shadow? Are shadows flat?

Discuss with children the difference between light and dark. Try to bring out the idea that darkness is the absence of light. How could they make the classroom, or a part of it, dark? What does this do to the light? If practicable, get the children to plan and make a dark area.

Safety : Do not look directly at bright lights. Never look directly at the Sun without wearing protective eyewear. Electric light bulbs get hot and can burn. Be aware of general electrical safety when using mains-powered light sources. See ASE publication *Be Safe!* for information on all aspects of safety in school science.

Numeracy

Skills

Children should be able to :

- ◆ measure and compare accurately;
- ◆ understand the properties of two-dimensional and three-dimensional shapes;
- ◆ understand the concepts of position and direction;
- ◆ understand angles, reflective symmetry, proportions and ratio.

Literacy

Skills

Children should be able to :

- ◆ use figurative language;
- ◆ use the structure of a poem to write an extension, for example, an additional verse;
- ◆ use a variety of poetic forms, for example, haiku.
- ◆ write in the style of the poet.