

CAN YOU SEE ME?



LESSON 2: WHICH IS THE SHINIEST?

Key vocabulary:

light, dark, shadow, mirror, bright, dim, reflect, eye, shiny

Resources:

A small plastic mirror (reflective tiles could be used) and torch per group, pieces of black card (A5), a collection of objects, both shiny and not shiny, e.g. a piece of smooth and a piece of scrunched up kitchen foil, a clear and/or black plastic CD/DVD case, CDs or DVDs, pieces of white and black card, some 2p coins; if possible some new ones as well as some very old and grubby ones (old coins can be soaked in vinegar/cola to clean them, or rubbed with dirt to make them grubby)

Key information

The main purpose of the activity is to familiarise children with the idea that light is reflected off an object. Some children may think that the object 'gives out' light, others may not include the light source and the object in descriptions of shiny objects. To help children understand the idea of 'reflection' it might be useful to talk in terms of light 'bouncing off' objects.

LESSON SUMMARY:

In this lesson children will develop their understanding of how light is reflected from surfaces, and investigate how different surfaces reflect different amounts of light. By the end of the lesson children will be able to compare different materials on the basis of their 'shininess' and relate this to how they reflect the light.

National curriculum links:

Notice that light is reflected from surfaces

Learning intention:

To investigate how different objects reflect different amounts of light

Scientific enquiry type:

Grouping and classifying

Working scientifically links:

Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Success criteria:

- I can describe how objects reflect light.
- I can suggest why some objects are reflect more light than others.
- I can explain what 'shiny' means.

EXPLORE:

Organise the children into groups and give each group a mirror and a torch. Explain that they are going to play a game to see what happens when they shine the torch onto the mirror. Ask them to use the mirror to move the beam of light around the room. Next, ask one child in the group to say where they want the beam to go.

Ask: *What would happen if we didn't use a mirror but used something else to shine the torch onto?*

Discuss with the class that whilst mirrors are good at 'bouncing off' (reflecting) light, not all objects are as good. This lesson is about exploring how 'shiny' objects are. Explore the word shiny with them.

Ask: *What does it mean?* Agree with the class that we use the word shiny to describe how good something is at reflecting light.

Hold up a selection of objects, e.g. a piece of foil, a CD and a piece of black card. Ask children to think about these items and about which of them would be best at reflecting light. Suggest that they write their answers on a piece of paper, and say that you will review these predictions later.

ENQUIRE:

Explain to the children that their challenge will be to investigate different objects to see how they reflect light. Show children how to make a 'shininess tester', which they will use to investigate how shiny different objects are. Take a piece of black card and fold it in half so it is open at about 90 degrees. Hold the card over an object on the table, put the torch quite close and shine it onto the object. Look to see how bright the reflection is on the card to help decide how shiny the object is.

You could ask the children to use a simple scale of shininess (not shiny/shiny/very shiny), but some children could be encouraged to make this more detailed for an extra challenge (e.g. a scale of 0 to 5 where 0 = no reflection and 5 = reflection from a mirror). There are two versions of a writing frame, Which object is shiniest? (Resource sheet 1) available if required, which support both approaches.

Give each group a tray of equipment that includes a torch, the card and a selection of the objects and ask them to investigate how shiny each object is.

Tell them to look at their predictions and ask: *Why do you think that?* Also ask them: *How can you make this a fair test?* Suggest they consider things such as the position of the card and the torch, and the distance of the torch from the card and object. The challenges are differentiated by the amount of support given in planning and carrying out the test. Group children according to prior attainment in setting up and carrying out comparative and fair tests.

Challenge 1: Ask children to investigate which is the shiniest object

Encourage children to use their observations to classify the shininess of objects. The children can use the writing frame (Resource sheet 1) to help them collect and record information about the objects they have been given.

Challenge 2: Ask children to investigate which is the shiniest object and explain why

Encourage children to use their observations to rank the shininess of objects. The children can use the writing frame (Resource sheet 2) to help them collect and record information about the objects they have been given. Can they explain why some are shinier than others with respect to the amount of light reflected.

Challenge 3: Ask children to investigate which objects reflect the most light

Encourage children to devise their own way of collecting and recording the information they need to carry out this investigation, and to decide how to control variables to make sure they carry out a fair test. Help them to present the information clearly, and encourage them to start to explain why some objects are shinier than others, with reference to how much light reflects from the object into our eyes.

REFLECT AND REVIEW:

Ask: *Which objects are the shiniest? Did these match your predictions? What do you think makes something shiny? What characteristics do shiny/dull objects have in common?*

Play the Light and run-around game (Slideshow 1). In this game children will be asked a question and then have to move to a different part of the room to show which answer they think is correct.

Place pieces of paper, labelled A, B, C and D, in the four corners of the room. Show slide 1 and ask the children to read the question. Give them some thinking time before you ask them to move to the corner of the room that matches their answer. Choose a child in one of the corners (it doesn't have to be the right answer) and ask them to explain why they think it is that answer. When they have given an answer, ask any child if they want to move and allow some children to move if they would like to. This can be repeated, and you may also want to ask the children to put their hands up if they agree with the explanation given (or want to add anything).

EVIDENCE OF LEARNING:

Review the information that the children collected during their testing of different objects. Watch children's choices of answer during the Light and run-around game. Listen carefully to their explanations about why they chose that response.

Are they able to describe how objects reflect light? Do they mention the light falling on to the object from a source as well as it reflecting to their eyes? Are they able to describe how different objects reflect different amounts of light? Do they make comparative comments about objects that were more or less shiny in the context of the amount of light that they reflected, and make some connection between this and the material from which an object was made, or its surface?