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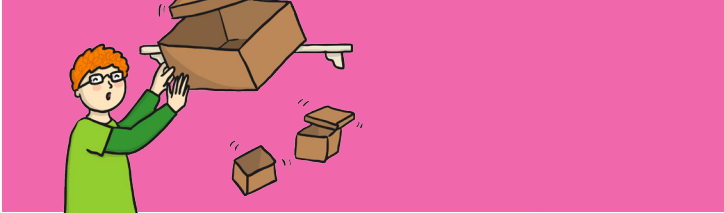
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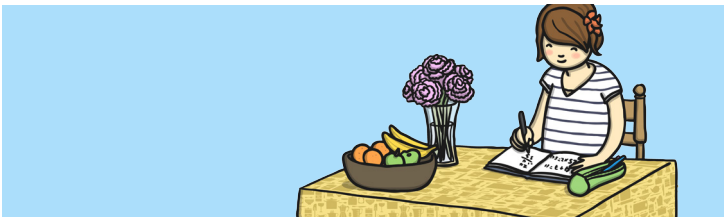
Introduction

This 'Light' unit will teach your class about light, reflections and shadows. They will learn about different sources of light, and that we need light to see. The children will work scientifically and collaboratively to investigate reflective materials, in the context of designing a new book bag. They will work in a hands on way to play a range of mirror games, finding out more about reflective surfaces. Furthermore, they will learn that the sun's light can be dangerous, and will create an advert for a pair of sunglasses or a sun hat that they have designed. The children will have chance to test which objects are opaque in an exciting investigation to design the most effective curtains, and will find out how shadows change when the distance between the object and light source changes. They will develop their scientific enquiry skills, making observations, predictions and conclusions.



Health & Safety (including food allergies)

Ensure that children are aware that they should never look directly at the sun or any bright lights. Remind children not to shine lights towards others' eyes. Suitable torches should be used in the investigations, never laser pointers. Make sure that the mirrors used are child safe, not glass. When carrying out investigations ensure children are aware of how to use the equipment safely.



Home Learning

Create Your Own Light Quiz: In this activity children design their own quiz for a friend or family member, using their knowledge of light and dark, reflection and shadows.

Light, Reflection and Shadows Crossword : In this differentiated activity children have the opportunity to use their understanding of light, reflection and shadows to solve a fun crossword puzzle.



Wider Learning

The [BBC Bitesize Light and Dark](#) web page has lots of video clips and ideas on light, reflection and shadows.

This [website](#) contains useful animations of how shadows change, and includes a statistics activity involving noticing patterns.

Arrange a visit from an optician, photographer or a stage lighting technician to explain how they work with light in their job.

Assessment Statements

By the end of this unit...

...all children should be able to:

- Identify light sources.
- Understand that we need light to see.
- Know that light travels in a straight line.
- Identify reflective surfaces.
- Know that the sun can damage their eyes.
- Know how to protect their eyes from the sun.
- Understand that a shadow is formed when a solid object blocks light.

...most children will be able to:

- Understand that dark is the absence of light.
- Set up an investigation and make predictions.
- Understand how surfaces reflect light.
- Recognise that a mirror appears to reverse an image.
- Identify some parts of the eye.
- Understand how the sun can damage parts of the eye.
- Identify opaque, translucent and transparent objects.
- Know how shadows change size.

...some children will be able to:

- Explain the properties of materials that reflect light well.
- Understand why shadows change size.
- Set up reliable and accurate investigations.
- Make and explain predictions.
- Make and record accurate observations.
- Use scientific language to explain their findings.
- Be able to ask and answer questions based on their learning using scientific language.

Lesson Breakdown

Resources

1. Light and Dark

To recognise that we need light in order to see things and that dark is the absence of light by taking part in a 'feely bag' investigation.

- I can recognise that I need light to see things, and that dark is the absence of light.

- 5 'feely bags' - drawstring bags for children to feel inside without looking.
- 5 objects to place inside them - some ideas include an orange, a shell, a pine cone, bubble wrap, pumice stone, a dice, an avocado or cotton wool.

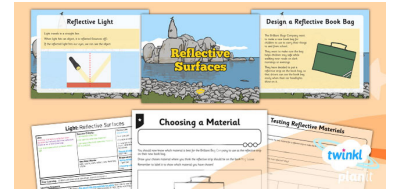


2. Reflective Surfaces

To notice that light is reflected from surfaces by choosing the most reflective material for a new book bag.

- I can investigate which surfaces reflect light.

- Torch per pair
- A5 piece of white card per pair
- 6 materials to test such as CDs, tin foil, paper, different fabrics, bubble wrap, cardboard.
- [Short film](#)

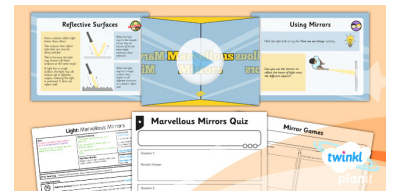


3. Marvellous Mirrors

To notice that light is reflected from surfaces by playing mirror games.

- I can use a mirror to reflect light and explain how mirrors work.

- A mirror per child
- A wavy chalk line (approximately 3-5m long) drawn on the floor, either outside or in the School Hall.
- [Interactive Game](#)



4. Sun Safety

To recognise that light from the sun can be dangerous and that there are ways to protect our eyes by designing and advertising a pair of sunglasses or a sun hat.

- I know that light from the sun can be dangerous and that there are ways we can protect our eyes.

- A mirror per child
- Coloured paper and card
- Colouring pens or pencils

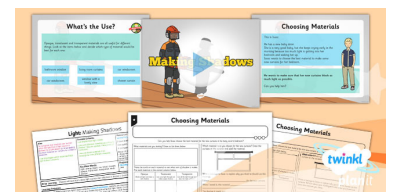


5. Making Shadows

To recognise that shadows are formed when the light from a light source is blocked by a solid object by investigating the best material for curtains for a baby's bedroom.

- I can investigate which materials block light to form shadows.

- 3 equal sized pieces of card per group
- Hole punch
- A torch per pair
- Range of different materials to test - ideas include cotton, cling film, net curtains, voile, upholstery fabric, blackout curtain lining, muslin, tracing paper.



6. Changing Shadows

To find patterns in the way that the size of shadows change by investigating what happens when you change the distance between the object and the light source.

- I can find patterns when investigating how shadows change size.

- A torch per pair
- A ruler or metre stick per pair
- Objects to make shadows
- [Video](#)

