

	Year 3	Topic: Light
National Curriculum links: <ul style="list-style-type: none"> • Recognise that they need light in order to see things, and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change. 		

Prior learning	Future learning
<ul style="list-style-type: none"> • Explore how things work. (Nursery - Light) • Talk about the differences in materials and changes they notice. (Nursery - Light) • Describe what they see, hear and feel whilst outside. (Reception - Light) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials) 	<ul style="list-style-type: none"> • Recognise that light appears to travel in straight lines. (Y6 - Light) • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. (Y6 - Light) • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. (Y6 - Light) • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. (Y6 - Light)

WHAT PUPILS NEED TO KNOW OR DO TO BE SECURE	
Show understanding of a concept using scientific vocabulary correctly	
Key learning	Possible evidence
<p>We see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness. Some objects, for example, the sun, light bulbs and candles are sources of light. Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective.</p> <p>The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light.</p> <p>Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. The size of the shadow depends on the position of the source, object and surface.</p>	<ul style="list-style-type: none"> • Can describe how we see objects in light and can describe dark as the absence of light • Can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses • Can define transparent, translucent and opaque Can describe how shadows are formed
Key vocabulary	
light, light source, Sun, sunlight, dangerous	

Common misconceptions

Some children may think:

- we can still see even where there is an absence of any light
- our eyes 'get used to' the dark
- the moon and reflective surfaces are light sources
- a transparent object is a light source
- shadows contain details of the object, such as facial features on their own shadow
- shadows result from objects giving off darkness.

Apply knowledge in familiar related contexts, including a range of enquiries

Activities

- Explore how different objects are more or less visible in different levels of lighting.
- Explore how objects with different surfaces, e.g. shiny vs matt, are more or less visible.
- Explore how shadows vary as the distance between a light source and an object or surface is changed.
- Explore shadows which are connected to and disconnected from the object e.g. shadows of clouds and children in the playground.
- Choose suitable materials to make shadow puppets.
- Create artwork using shadows.

Possible evidence

- Can describe patterns in visibility of different objects in different lighting conditions and predict which will be more or less visible as conditions change
- Can clearly explain, giving examples, that objects are not visible in complete darkness
- Can describe and demonstrate how shadows are formed by blocking light
- Can describe, demonstrate and make predictions about patterns in how shadows vary

Lesson 1

LO: to explain that we need light to see things and that darkness is the absence of light

TAPS science lesson explaining light

https://pstt.org.uk/application/files/7014/7015/6579/Y3eg_Light_Explanation.pdf

Key Assessment Questions

Can children identify a range of light sources?
Can children explain that dark is caused by the absence of light?
Can children explain that they need light to see things?

Lesson 2

LO: to investigate which surfaces reflect light

Key Assessment Questions

Can children explain reflection?
Can children identify reflective materials?
Can children select the most reflective material for a purpose?

Lesson 3 <u>LO: to explain how a mirror works and use a mirror to reflect light</u>	Key Assessment Questions Can children explain why mirrors are good reflectors? Can children use mirrors to reflect light onto different objects? Can children explain how mirrors work in different tasks?
Lesson 4 <u>LO: to learn how the light from the sun can be dangerous and how we can protect our eyes</u>	Key Assessment Questions Can children explain the benefits and dangers of the sun? Can children explain about UV light and its dangers? Can children describe ways to protect our eyes from the sun?
Lesson 5 <u>LO: to investigate which materials block light to form shadows</u>	Key Assessment Questions Can children explain how light travels? Can children sort different materials according to whether they are opaque, transparent or translucent? Can children use these materials in an investigation into different shadows?
Lesson 6 <u>LO: to find patterns when investigating how shadows change size.</u> TAPS science lesson shadow investigation https://pstit.org.uk/application/files/4214/7015/6579/Y3eg_Light_Shadow_investn_WS_Review.pdf	Key Assessment Questions Can children explain how shadows are formed? Can children plan and set up an investigation about the way shadows change size? Can children observe patterns in the way shadows change size? Can children explain the patterns they find?

If completing topic over a term, objectives can be covered over more than one lesson ensuring scientific enquiry skills (working scientifically) are being developed