



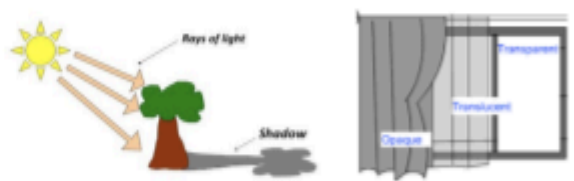

Caroline Haslett Primary School - Science Topic: Light Year 3

What should I already know?	
<ul style="list-style-type: none"> Certain things produce light, usually by burning (e.g. the Sun) or electricity (e.g. street lights) Shiny materials do not make light but do reflect it. Shadows are caused when certain materials block light. 	

What will I know by the end of the unit?	
What is a light source ?	<ul style="list-style-type: none"> A light source is something that emits light by burning, electricity or chemical reactions. Burning light sources include the Sun, flames from a fire and stars. We must never look directly at the Sun as the light produced is very bright and can be harmful to our eyes. This is why we wear sunglasses. Electric lights include lamps, car headlights and street light. Lights that are caused by chemical reactions are much less common. This happens when different chemicals react and light is a product of that reaction. Examples can include glow sticks and fire flies. 
Why do we need light ?	<ul style="list-style-type: none"> We need light so that we are able to see in the dark. This is because the dark is the absence of light. The Sun and stars always give us light but we can only see the stars when it is dark. At night time we cannot see the Sun's light as the Earth turns and our part of the Earth is not lit up by the Sun at night. When we are driving, we need car headlights or street lights to help us. If we are walking or out in the dark, we would need torches to help us see. You should not look directly into the torch as this is dangerous. 

What are not sources of light ?	<ul style="list-style-type: none"> The Moon is not a source of light even though we can see it in the dark. This is because the Sun's light reflects on the surface of the Moon making it appear as though the Moon emits light. Shiny things are not light sources - they appear to be sources of light as they are bright.
How does light travel?	<ul style="list-style-type: none"> Light travels in straight lines. When light is blocked by an opaque object, a dark shadow is formed.

Investigate!	
<ul style="list-style-type: none"> The brightness of torches - can you put torches in order from brightest to dimmest? What would make it a fair test? Why do lights seem brighter in the dark? Explore which objects form shadows when light is shone on them. How can you change the size and shape of shadows by using the same object? What happens when light is reflected from different surfaces? What happens when light is reflected from a mirror? What happens when the angle of the mirror (or light source changes?) 	

Diagrams	
How are shadows formed?	
	<ul style="list-style-type: none"> When light is blocked by an opaque object, a dark shadow is formed. An opaque material blocks light so we can't see through it and shine a light through it. When light is shone onto a transparent object, the light travels through it, we can see through it and it makes a very faint shadow. When light is shone onto a translucent object, some of the light travels through it, we can see bright light sources through it and it makes a fairly dark shadow. The size of a shadow changes as the light source moves. The further away the light source is, the smaller the shadow is. The closer the source of the light, the bigger the shadow.
	

Vocabulary	
angle	the direction from which you look at something
bright	a colour that is strong and noticeable, and not dark
chemical reactions	a process that involves changes in the structure of something
dark	the absence of light
dim	light that is not bright
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for machines
emits	to emit a sound or light means to produce it
light	a brightness that lets you see things.
mirror	a flat piece of glass which reflects light , so that when you look at it you can see yourself reflected in it
opaque	if an object or substance is opaque , you cannot see through it
product	something that is produced
reflects	sent back from the surface and not pass through it
shadows	a dark shape on a surface that is made when something stands between a light and the surface
source	where something comes from
sunglasses	glasses with dark lenses which you wear to protect your eyes from bright sunlight
surface	the flat top part of something or the outside of it
torches	a small electric light which is powered by batteries and which you can carry
translucent	if a material is translucent , some light can pass through it
transparent	if an object or substance is transparent , you can see through it

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Working Scientifically	<p>Ask questions about the world around them and explain that they can be answered in different ways.</p> <p>Set up and carry out some simple, comparative and fair tests, making predictions for what might happen. Tests can be set up and carried out by following or planning a set of instructions. A prediction is a best guess for what might happen in an investigation based on some prior knowledge.</p> <p>Take measurements in standard units, using a range of simple equipment eg. data loggers plus sensors, timers (seconds, minutes and hours), thermometers (°C) and metre sticks (millimetres, centimetres and metres). Make increasingly careful observations, identifying similarities, differences and changes, and make simple connections Taking repeat readings can increase the accuracy of the measurement.</p> <p>An observation involves looking closely at objects, materials and living things, which can be compared and grouped according to their features. Gather and record findings in a variety of ways (labelled diagrams, tables, charts and graphs) with increasing accuracy. Data can be used to provide evidence to answer questions.</p> <p>Data can be used to provide evidence to answer questions. Results are information that has been discovered as part of an investigation. A conclusion is the answer to a question that uses the evidence collected.</p> <p>Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements.</p>
Light	<p>Dark is the absence of light and we need light to be able to see.</p> <p>Light can be reflected from different surfaces. Some surfaces are poor reflectors, such as some fabrics, while other surfaces are good reflectors, such as mirrors. Group and sort materials as being reflective or non-reflective.</p> <p>Recognise and explain that light from the sun can be dangerous for vision and the skin. Explain that protection from the Sun includes sun cream, sun hats, sunglasses, staying indoors or in the shade.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Transparent objects allow light to pass through them and do not create shadows.</p> <p>Shadows change shape and size when the light source moves eg. when the light source is high above the object, the shadow is short and when the light source is low down, the object's shadow is long.</p> <p>Explain, using words or diagrams, how shadows are formed when a light source is blocked by an opaque object. Find patterns in the way shadows change during the day.</p>

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