

Year 3: Light



Kindness Enjoyment Achievement

<p><u>Key concepts:</u> A light source emits light so if the room is dark, you can see it. Some are natural and some are manmade. Examples of light sources are candles, the sun, light bulbs. Objects are easier to see if there is more light. If it is dark, we cannot see. Our eyes do not "get used to it". Dark is the absence of light; even shiny things need light for us to see them.</p> <p>You should not stare at bright lights or the sun or it will damage your eyes.</p> <p>Light is reflected off surfaces; some surfaces (shiny and reflective ones) are better than others at reflecting light. Some objects such as shiny or luminous objects are easier to see because they reflect light better than other surfaces. We can measure the light bouncing off surfaces with a light meter.</p> <p>We see light sources shining directly into our eyes but we see other things because the light source first shines on the object and then it reflects into our eyes. (Light touch: this is redone in Y6)</p>	<p><u>Types of enquiry:</u> <u>Sorting and classifying:</u> Transparent/ translucent/ opaque sorting. Source of light/ not a source of light. Natural/ artificial sources of light. Sort materials by how much light they reflect.</p> <p><u>Fair test:</u> UV beads and sunglasses experiment. Use a light meter to measure and record the amount of light to answer "Which pair of sunglasses is best at protecting our eyes?"</p> <p><u>Use of secondary sources:</u> Not this time</p> <p><u>Change over time:</u> Effect of sunlight: UV beads under sunglasses/ not under sunglasses. How shadows on the playground change over time.</p> <p><u>Pattern seeking:</u> Analysis of playground shadow experiment. Analysis of torch and shadow size results. Experimenting with a torch to change the size and orientation of shadows.</p>	<p><u>Vocabulary:</u> Light Light source Dark Transparent Translucent Opaque, Shiny, Matt Surface Shadow Reflect Bounce Block Straight ray Mirror Sunlight Dangerous</p>
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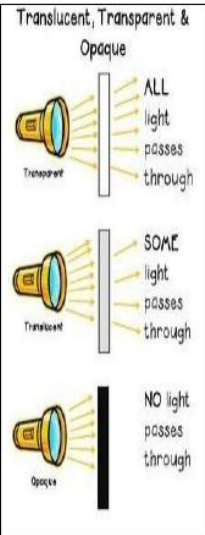
Shadows are formed by an opaque or translucent object blocking the light from the light source.



Left: Light travelling and reflecting off a smooth surface

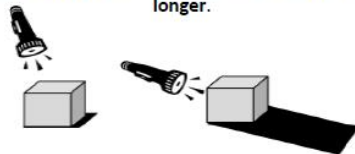


Right: Light travelling and reflecting off a rough surface



LARGE SHADOW when the toy is close to the light
SMALLER SHADOW when the toy is further from the light
TINY SHADOW when the toy is a long way from the light

As the **light source** moves **higher** in relation to the **object**, the **shadow** gets **shorter**. As the **light source** moves **lower**, the **shadow** gets **longer**.



Working scientifically skills:

Questioning:

Ask relevant questions using sentence stems.
 Sort questions which can be answered by secondary sources and those that can't.
 Ask a question of their own to test.

Observing:

Use data loggers to measure amount of light bouncing off different surfaces & for sunglasses experiment.

Make systematic, careful measures of shadows in m & cm (shadows on playground) and cm & mm (shadow puppets & torch).

Identify and classify:

Transparent/ opaque/ translucent
 Materials which are reflective/ those which are not.

Testing:

Follow direction of teacher to answer which sunglasses are best?
 Self directed test into transparent/ opaque/ translucent objects.

Predicting:

Use values for sun in playground to predict where the next shadow will be and how long it will be.

Recording:

How it fits in with the rest of the curriculum:

Y1: Name the seasons and know about the weather in each season.

Y5: Describe the movement of the Earth... relative to the sun.

Describe the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Y6: Light travels in straight lines.

Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then our eyes.

Explain that light travels in straight lines to explain why shadows have the same shape as objects which cast them.

Know how simple optical instruments work: periscope, telescope, binoculars, mirrors, magnifying glasses.

Cross curricular links:

Art: shadows and light; collage- opaque/ transparent/ translucent.

Maths: measurement

DT: transparent/ opaque knowledge in making eg. Lighthouses.

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	<p>Results in tables, diagrams, bar chart. Identify changes related to shadow direction/ size. <u>Concluding:</u> With support, use straightforward evidence to support a conclusion.</p>	
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