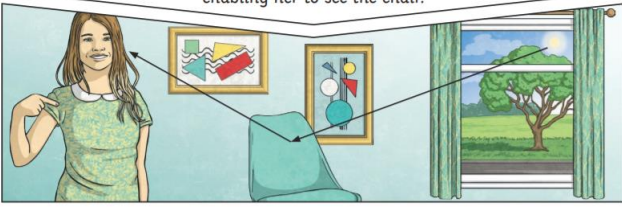


# Year 6: Light

## Kindness Enjoyment Achievement



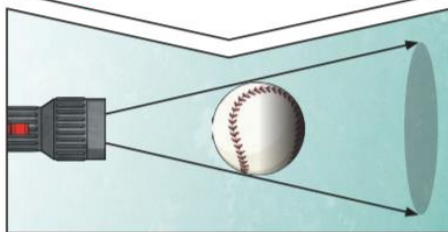
<p><b>Key Concepts:</b>          Light travels in straight lines. Record this as an arrow from the source.          Revisit difference between opaque, translucent and transparent objects.          Objects are seen because they give out or reflect light into the eye. Some surfaces reflect light and others absorb light.          How we see things:</p> <div data-bbox="114 901 734 965" style="border: 1px solid black; padding: 5px;"> <p>Light from the sun travels in a straight line and hits the chair. The light ray is then reflected off the chair and travels in a straight line to the girl's eye, enabling her to see the chair.</p> </div>  <p>Explain that shadows have the same shape as the objects that cast them because light travels in straight lines and some rays are blocked by opaque objects.</p>	<p><b>Types of Enquiry: THESE ARE POSSIBLE ENQUIRIES YOU COULD UNDERTAKE:</b></p> <p><u>Sorting and classifying:</u>          Identify all the colours of light that make white light when mixed together? What colours do you get if you mix different colours of light together?</p> <p><u>Fair/ comparative test:</u>          What is the most common eye colour in our class?          What is the effect on the shadow if we move the light source a) closer to the object b) so it rotates over the object (like the sun...)</p> <p><u>Use of secondary sources:</u>          Why do some people need to wear glasses to see clearly?</p> <p><u>Change over time:</u>          How do shadows change over the day?</p> <p><u>Pattern seeking:</u>          Is there a pattern to how bright it is in school over the day? And if there is a pattern, is it the same in every classroom?</p>	<p><b>Vocabulary:</b>          Light ray          Light source          Emitted          Dark/ darkness          Reflect/ reflection          Scatter          Absorb          Periscope/ Telescope/ Binoculars          Concave/ convex/ plane          Shadow          Transparent/ opaque/ translucent          Rainbow</p>
	<p><b>Working scientifically skills:</b></p> <p><u>Questioning:</u>          Independently ask scientific</p>	<p><b>How it fits in with the rest of the curriculum:</b>          Y3: Recognise they need light to be able to see things and that dark is the absence of light.</p>

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A **shadow** is always the same shape as the object that casts it. This is because when an **opaque** object is in the path of **light** travelling from a **light source**, it will block the **light** rays that hit it, while the rest of the **light** can continue travelling.



Explain how simple optical instruments work: e.g. periscope, telescope, binoculars, mirror, magnifying glass.

The children do NOT need to be taught about refraction, angle of incidence/ reflection, photo sensitive material in retina or cameras, white light and prisms as this is taught in KS3.

questions and choose a type of enquiry to carry out. Justify their choice.

### Observing:

Measure length of shadows when light source is in different orientations

Select measuring equipment to give the most precise results

### Identify and classify:

May need to group materials: translucent, opaque & transparent, if need recap from Y3.

### Testing:

Carry out fair tests, deciding what resources they need and what observations or measures to make over time and for how long.

Independently recognise and control variables.

### Recording:

Decide how to record and present evidence.

### Concluding:

Explain their findings using their subject knowledge

Notice that light is reflected from surfaces; will have used a light meter to measure which surfaces reflect most light.

Recognise that light from the sun can be dangerous and there are ways to protect your eyes (by not looking at the sun or wearing sunglasses with UVB protection).

Recognise that shadows are formed when the light from a light source is blocked by a solid object.

Sort objects into groups: opaque, translucent, transparent.

Find patterns in the way the shadows change: distance of the object from the light source and the elevation of the light source affect the length of a shadow.

Will have measured shadows in the playground over the day.

Y5: Earth in space: revisit length of shadows on the playground at different times of the year.

KS3: The similarities between light waves and waves in matter;

Light waves travel through a vacuum; speed of light.

Transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface.

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		<p>Use of ray model to explain use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.</p>
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