

Year 6 – Light – Light Up Your World

What it looked like last year (Year 3)

- 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 size of shadows change.

What it looks like next year

- The similarities and differences between light waves & waves in matter.
- Light waves traveling through a vacuum; speed of light.
- The transmission of light through materials: absorption, diffuse, scattering and specular reflection at a surface.
- Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focussing 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 & prisms; differential colour effects in absorption and diffuse reflection.

Vocabulary (definitions)

refraction - the bending of a ray when it passes at an angle from one medium into another in which its speed is different.

spectrum - a condition that is not limited to a specific set of values but can vary, without steps, across a continuum.

periscope - an instrument people use to look at things from a hidden position.

transparent - a material that lets light pass through it.

translucent - material that lets only some light through.

opaque – a material that does not let light pass through it.

dispersion – when all the colors inside white light become separated by a prism.

light rays	shiny	light source
matt	surface	shadow
reflect	ultra violet	ray
beam	inverted	

Sequence of Learning

1. Consolidate the key ideas from Year 3 about the behaviour of light, including light sources and shadows.
2. Describe how a mirror reflects an image of an object.
3. Investigate how light travels.
4. Understand how a pinhole camera works.
5. Plan a fair test to investigate how different variables affect the size of a shadow.

Cultural Capital

- To be able to recognise that light appears to travel in straight lines
- To 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.

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- To 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.
- To use the idea that light travels in straight lines to explain why shadows have the same shape as the object that casts them.
- The real life knowledge that links is: noticing patterns, carrying out simple comparative and fair tests and exploring.
- The jobs it can be used in are: Ophthalmologist, Lighting Designer, Lighting Technician, Lighting Director, Photography.

Principles of Teaching Science.

Exploring – when we look at how things work in the world

Questioning – when we question what will happen

Understanding – when we use scientific language to explain

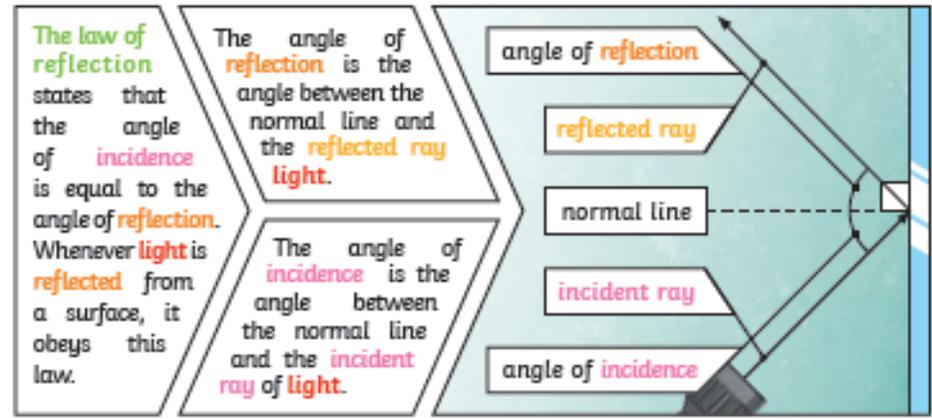
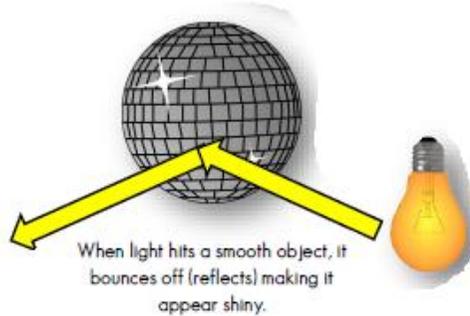
Investigating – when we can explore and are hands on

Predicting – when we use our previous knowledge to say what we think will happen.

Opaque: This is the name given to objects which light *cannot* travel through. They block light and create shadows

Translucent: This is the name given to objects which *some light can* travel through.

Transparent: This is the name given to objects which light *can* travel through.



Rainbows are formed when the sun shines through water particles (transparent) and when white light passes through, it 'bends' and splits into the range of colours which make white light

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