Year 6 – Light (biology, chemistry, physics)

NC objectives

- recognise that light appears to travel in straight lines
- 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
- 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
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Prior learning

- Recognise that they need light in order to see things and that dark is the absence of light. (Y3 - Light)
- Notice that light is reflected from surfaces. (Y3 - Light)
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)
- Recognise that shadows are formed when the light from a light source is blocked by an opaque object. (Y3 - Light)
- Find patterns in the way that the size of shadows change. (Y3 - Light)
- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)

Future Learning

• The similarities and differences between light waves and waves in matter. (KS3)
• Light waves travelling through a vacuum; speed of light. (KS3)
• The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. (KS3)
• 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. (KS3)
• Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras. (KS3)
• Colours and the different frequencies of light, white light and prisms (qualitative only);

Key vocabulary

Y3 vocabulary (Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous), straight lines, light rays

Common misconceptions

Some children may think:
• we see objects because light travels from our eyes to the object.

Areas of enquiry	Hook suggestions
• Observation over time – how does my shadow change over the day? • Comparative and fair testing – which material is most reflective? • Identifying and classifying - can you identify all the structures of an eyeball? • Pattern seeking - 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? • Researching using secondary sources – why do some people need to wear glasses in order to see clearly?	<u>Books</u> Blackout by John Rocco <u>Scenarios</u> ***Scenario –*** Fiona has noticed that it's getting darker outside when she walks home from school. She wants to find out which materials might be good to add to her jacket to help her to be seen by cars. *(Comparative and fair testing)* ***Scenario -*** Paul has a very high fence in his garden. There's a football game on the other side of the fence and he'd like to watch. *Periscope challenge. (Comparative and fair testing & Research)*