

Medium Term Plan

Year 6- Light

- 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); differential colour effects in absorption and diffuse reflection. (KS3)

What pupils need to know or do to be secure

Key learning

Light appears to travel in straight lines, and we see objects when light from them goes into our eyes. The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen. Objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.

Key vocabulary

As for Year 3 - Light, plus straight lines, light rays

Possible evidence

- Can describe, with diagrams or models as appropriate, how light travels in straight lines either from sources or reflected from other objects into our eyes
- Can describe, with diagrams or models as appropriate, how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape

Common misconceptions

Some children may think:

- we see objects because light travels from our eyes to the object.

Apply knowledge

Activities

Possible evidence

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| <ul style="list-style-type: none">• Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in card.• Explore the uses of the behaviour of light, reflection and shadows, such as in periscope design, rear view mirrors and shadow puppets. | <ul style="list-style-type: none">• Can explain how evidence from enquiries shows that light travels in straight lines• Can predict and explain, with diagrams or models as appropriate, how the path of light rays can be directed by reflection to be seen, e.g. the reflection in car rear view mirrors or in a periscope• Can predict and explain, with diagrams or models as appropriate, how the shape of shadows can be varied |
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