

Key Learning:

Light travels from a light source in straight lines.

We see things because light hits an object and is then reflected from the object's surface to our eyes.

We cannot see anything without light.

When there is an object in front of a light source it will block some of the light and cause a shadow to be formed behind it. As light travels in straight lines the shadow will be the same shape as the object blocking the light.

White light is made up of many different colours of light and these can be seen if we split the light using water or a glass prism. We see this in a rainbow. This is called refraction of light to make a spectrum.

Light can be reflected off any surface and is easiest to reflect off shiny surfaces. You can bounce light easily off mirrors, which is how periscopes work.

Vocabulary:

light

dark (absence of light)

reflect

shadow

opaque

translucent

transparent

mirror

reflective surface

light sources

periscope

waves

bend

refract

Make a periscope

Take two pieces of card and wrap them in shiny foil. You will need to smooth it really carefully to create a mirror surface. (You can use two small mirrors if you have them too.) Holding one mirror in each hand, can you use them to see around a corner? What do you have to do with each mirror? What about seeing over a wall? Can you work out how it works?

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Making rainbows

Pour some water into a shallow baking pan or plastic tub. Angle a mirror into the pan, resting on the edge, and shine a bright torch (light from a phone camera works well) onto the mirror under the water. Hold a piece of white paper horizontally above the pan. What can you see? What is happening?

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Making shadow pictures

What pictures can you create by arranging objects in front of a blank wall or piece of paper. Shine a light behind the objects and see the shadow picture you have created. Can you create a city scape? How about a T-Rex from kitchen tools? What happens if you move objects further from the light source?

As if by magic!

When light travels from one material to another it bends. This is refraction. Draw a small arrow pointing left or right on a piece of paper. Fill a large, transparent glass with water. Hold the arrow behind the glass of water. What happens? Try this out with letters of the alphabet. Does it work with them all?

<https://explorify.wellcome.ac.uk/en/activities/whats-going-on/back-to-front>

