

Subject: Science Year: Year 3 - Light

NC/PoS:

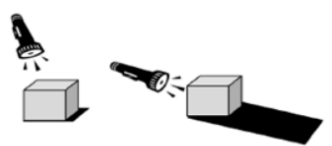
- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change

Prior Learning (what pupils already know and can do)

- Know that glass is transparent. Know that the movement of Earth in space gives us day and night. Know that in the UK (United Kingdom), the day length is longest in the summer and shortest in the winter. Know that light sources give out light and the sun is a light source. Know that light is essential for seeing things. Know that sources of light show up best at night-time

End Goals (what pupils MUST know and remember)

- Know that light is a form of energy
- Know that the eyes take in light so we can see
- Know that you cannot see anything when there is no light
- Know light sources give out light
- Know natural light sources are sun, stars, candle flame, fire
- Know artificial light sources are light bulbs, florescent lighting, computer screens
- Know some objects seem bright but are reflecting light from elsewhere, for example the Moon, mirrors, and shiny objects
- Know that light from the Sun is very strong and can damage your eyes
- Know the eyes can be protected by wearing dark glasses
- Know to never look directly at the sun
- Know that light can pass through materials that are transparent like glass
- Know that some light passes through materials that are translucent like frosted glass
- Know that light cannot pass through opaque materials
- Know that when light is blocked by an opaque object, a shadow is formed
- Know that the size of the shadow changes depending on the position of the light source
- Know that the closer the light source to the object the larger the shadow will be



Key Vocabulary: opaque, translucent, transparent, natural sources, artificial light, reflected, absorb, reflective, dangerous, ultraviolet light, radiation, sunburn, protection, blocked, opaque, light rays, overhead, midday

Session 1: Recap: properties of materials –opaque, translucent, transparent

Children learn that we need light to see

Know that light is a form of energy

Know that the eyes take in light so we can see

Know that you cannot see anything when there is no light

Suggested activities:

<https://www.youtube.com/watch?v=QsrCnthWGEs> what is light

Use of a black out tent

Vocabulary: **opaque, translucent, transparent**

Session 2: Recap: what can you see in the absence of light

Know light sources give out light

Know natural light sources are sun, stars, candle flame, fire

Know artificial light sources are light bulbs, florescent lighting, computer screens

Suggested activities:

<https://www.youtube.com/watch?v=01SAxjPZbRM> examples of natural and artificial sources

What sources of light are there in school?

Sort a selection of objects into natural or artificial

Vocabulary: **natural sources, artificial light**

Session 3: Recap: give three examples each of natural and artificial light sources

Know some objects seem bright but are reflecting light from elsewhere, for example the Moon, mirrors, and shiny objects

Suggested activities:

Give a selection of different materials and children explore which ones are more reflective using torches

N.B. black objects absorb the most light so are not very reflective

Vocabulary: **reflected, absorb, reflective**

Session 4: which materials/objects are good reflectors of light?

Children learn the dangers of the sun

Know that light from the Sun is very strong and can damage your eyes

Know the eyes can be protected by wearing dark glasses

Know to never look directly at the sun

Ultraviolet light - is a form of **radiation** which is not visible to the human eye.

Sunburn - ultraviolet rays can burn our skin cells, the skin gets red and feels warm.

Vocabulary: **dangerous, ultraviolet light, radiation, sunburn, protection**

Session 5: Recap: how is the sun dangerous? What can you do to protect your eyes?

Children learn how shadows are formed

Know that light can pass through materials that are transparent like glass

Know that some light passes through materials that are translucent

Know that light cannot pass through opaque materials

Know that when light is blocked by an opaque object, a shadow is formed

Suggested activities:

<https://www.youtube.com/watch?v=3Mv4qa5c0q8> what are shadows

children go outside and make shadows, blocking the light with their opaque bodies

Use torches to create shadows within the classroom

Create shadow puppets

Vocabulary: blocked, opaque, light rays

Session 6: Recap: how are shadows formed?

Children are learning to look for patterns in the size of shadows

Know that the size of the shadow changes depending on the position of the light source

Know that the closer the light source to the object the larger the shadow will be

Know the more directly overhead the light source is, the shorter the shadow (midday)

Suggested activities:

<https://www.youtube.com/watch?v=bepLxu65OdM> size of shadows

children explore shadows using objects and torches

Vocabulary: overhead, midday

Link to career scientist:

https://pstt.org.uk/application/files/3616/3525/6983/Laser_Physicist_-_Professor_Colin_Webb.pdf

Scientists who have helped develop understanding in this field: Sir Isaac Newton – light was made up of tiny particles