Science Project Overview Year 3 Light

Subject Knowledge (PoS) **Substantive knowledge.** • We need light in order to see things. • Dark is the absence of light. • Light is reflected from surfaces. • Light from the sun can be dangerous. • Ways people can protect their eyes include wearing sunglasses. • Shadows are formed when the light from a light source is blocked by an opaque object. • When an object is closer to the light source it appears bigger. • When an object is further from the light source its shadow appears smaller. • Shadows outdoors move and this is dependent on the position of the sun in the sky.	**Working Scientifically** (PoS+Overview) **Disciplinary knowledge** During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: . • asking relevant questions • setting up simple practical enquiries and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units • gathering, recording data • recording findings using simple scientific language and tables • reporting on findings from enquiries • using results to draw simple conclusions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.	**Working Scientifically Methods** Using different types of scientific enquiry to answer their own questions, including: • observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out fair tests
Previous learning: • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)	**Preparing for:** • Recognise that light appears to travel in straight lines. (Y6 - Light) • 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. (Y6 - Light) • 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. (Y6 - Light) • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. (Y6 - Light)	**Bespoke to our school:** We provide lots of hands on practical opportunities for the children and teach tier 2 and 3 vocabulary as many of our children come into school with a limited vocabulary.

Vocabulary:
Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous ,reflective surface

Misconceptions:

- we can still see even where there is an absence of any light
- our eyes 'get used to' the dark
- the moon and reflective surfaces are light sources
- a transparent object is a light source
- shadows contain details of the object, such as facial features on their own shadow
- shadows result from objects giving off darkness.

English Links:
Lighthouse Keeper's Lunch- Ronda Armitage
The Owl Who Was Afraid of the Dark -Jill Tomlinson
Can't you sleep , little bear?
Explanation texts – linked to results of what happens in light experiments.

Maths links:
Measurement: Use the appropriate units of length (m/cm/mm), mass (kg/g) and volume/capacity (l/ml) to measure, compare, add and subtract – when calculating size of shadows , distances between light source , object and shadow.
Statistics : Use bar charts, pictograms and tables to present and interpret data- to plot results from investigations
Use information in scaled bar charts, pictograms and tables to solve one-step and two-step questions- to look at results from investigations and discuss/write conclusions.

Explorify links:
Exploding lights
Shadow shapes
Sources of light
Lightproof your secret den
What if we didn't have mirrors?

Possible careers/jobs:
Architect (designs buildings) ,Astronomer (studies space), Astrophysicist (studies the physics of space and objects in space), Optician (a doctor specialising in vision and eye health)