Science

Year 6 – Spring 1-Light

National Curriculum / End Point statement				
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* • ***Working Scientifically*** • *planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary* • *taking measurements, using a range of scientific equipment, with increasing accuracy and precision* • *recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs* • *using test results to make predictions to set up further comparative and fair tests* • *using simple models to describe scientific ideas* • *reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations* • *identifying scientific evidence that has been used to support or refute ideas or arguments.*				
Lesson 1	***Lesson 2***	***Lesson 3***	***Lesson 4***	***Lesson 5 (TAPS)***
Reactivate learning: Year 3 light, year 4 electricity *WALT identify how light travels*	*WALT describe the effect of water on light*	*WALT explain how we see objects*	*WALT explain how light helps us to see objects*	*WALT explain why shadows have the same shape as the object that cast them* *Investigating shadows*
In Focus - https://explorify.uk/en/activities/odd-one-out/shine-a-light	In Focus - https://explorify.uk/en/activities/whats-going-on/back-to-front	In Focus - https://explorify.uk/en/activities/have-you-ever/been-somewhere-where-you-couldnt-see-anything-when-you-woke-up-in-the-night	In Focus - https://explorify.uk/en/activities/have-you-ever/had-an-eye-test	In Focus - https://explorify.uk/en/activities/what-if/there-were-two-suns
Success Criteria				
I know that light travels in straight lines *I know that light cannot travel around corners* *I can describe how light travels through air*	*I can explain how light travels in different contexts* *I know that light can travel through water*	*I can explain how light travels into the eye* *I know that light helps us to see* *I can explain why we cannot see when it is dark.*	*I know that darkness is the absence of light* *I know that light reflects off objects and travels into our eyes*	*I know shadows are always the same shape as the object casting them* *I can make accurate measurements*

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	I know what happens to a beam of light when it travels through water I know that light cannot travel through all objects			
Suggested Outcome				
Children could make a periscope and explains how it works. They could create a maze using mirrors and try to hit a target.	Children could investigate how a beam of light travels through water using a picture in a plastic wallet and placed into a jar of water.	Children could draw a simple scientific diagram to explain how light travels into the eye.	Children could use diagrams to explain how we can see objects in low light. Children can explain how we can see the Moon at night.	Children investigate shadows cast and how the shape is always the same as the object casting the shadow. The size of the shadow can change but the shape will never change. See TAPS sheet for guidance.

Vocabulary	NC links
Travel, Reflect, Refraction, Straight lines, Light source, Shadows	Science – properties of materials, electricity

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

Possible Evidence	Common Misconceptions
• 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 • 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	Some children may think: • we see objects because light travels from our eyes to the object • the Moon is a source of light

Notable Scientists

CPD opportunity

https://www.reachoutcpd.com/courses/upper-primary/light/

Useful Links

Science

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- https://www.bbc.co.uk/bitesize/topics/z3nnb9q

Light

Early learning goal	• Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.
Year 1	• 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)
Year 2	
Year 3	• 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.
Year 4	
Year 5	• 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)
Year 6	• 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.