Science

Year 3 - Spring 1-Light

National Curriculum / End Point statement
Light • 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 a solid object • find patterns in the way that the size of shadows change. **Working Scientifically** • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.

Week 1	Week 2	Week 3	Week 4	Week 5 (TAPS)	Week 6
Reactivate learning (KS1 Materials): What can you tell me about shiny surfaces/objects? WALT recognise that we need light to see	WALT explain what reflection is	WALT recognise that light can be dangerous	WALT describe how shadows are formed	WALT gather data to answer a question	WALT draw a conclusion based on what is observed
In Focus - https://explorify.uk/en/activities/zoom-in-zoom-out/curly-coil/classroom	In Focus – https://explorify.uk/en/activities/what-if/we-didnt-have-mirrors	In Focus - https://explorify.uk/en/activities/odd-one-out/in-the-shade	In Focus - https://explorify.uk/en/activities/have-you-ever/had-to-move-position-because-of-a-shadow	In Focus - https://explorify.uk/en/activities/odd-one-out/in-the-shadows	In Focus - https://explorify.uk/en/activities/whats-going-on/shadow-shapes

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Success Criteria					
I can tell you about the properties of a shiny surface I can tell you what dark is I can name a number of different sources of light. I know that we need light in order to see things.	I can tell you what 'reflected' means I can explain how light leaves a light source and reflects off of a surface I can predict how a beam of light may behave when reflecting off different surfaces	I can describe the changes that the Sun causes throughout the day. (temp/brightness) I know that the light from the Sun can be damaging I can tell you how you can protect your skin and eyes from the Sun	I can tell you how a shadow is formed I know that you will only see the outline of the shadow	I can explain how I sorted the materials I know that darkness is the absence of light	I know how a shadow is made I can make a systematic and careful observation I can explain what I have found out
Sort sources of light	I know why light reflects I can draw a diagram to show you how light reflects of objects I can explain what 'reflected' means	Sun safety poster Sugar paper in the window with a collage on it (London skyline?) ***Observe changes over time.***	Children could draw an object and show the source of light and where a shadow would be cast.	Children can make observations and decide how to record them to answer the question, e.g. independently records best to worst shadow. Children can use the light meter on the school iPads to measure the level of light.	An investigation linked to the topic e.g. Outline of London landmark (10 cm) to cast a shadow, can we make the shadow larger or smaller.? Measure shadow size.

Vocabulary	NC links
Light, Dark, Reflected, Shadow, Transparent , Opaque, Direction, Light travels, Translucent, Shortest, Longest, Highest, Object, Material, Light source, Sun, Night , Day	Science – properties of materials, electricity

Key Learning

We see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness. Some objects, for example, the Sun, light bulbs and candles are sources of light.
Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective.
The light from the Sun can damage our eyes and therefore we should not look directly at the Sun. We can protect our eyes by wearing sunglasses or sunhats in bright light.
Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. The size of the shadow depends on the position of the light source, the object and the surface.

Possible Evidence	Common Misconceptions
• Children can describe how we see objects in light and can describe dark as the absence of light. • Children can state that it is dangerous to view the Sun directly and state precautions used to view the Sun safely e.g. wear sunglasses or use a pin hole cameras • Children can define transparent, translucent and opaque	Some children may think: • We can still see even when there is an absence of any light • Our eyes 'get used to' the dark • The Moon and other reflective surfaces are a source of light • A transparent object is a light source

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• *Children can describe how shadows are formed*	• *Shadows contain details of the object such as facial features on their own shadow* • *Shadows result from objects giving off darkness*

Notable Scientists
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CPD opportunity
https://www.reachoutcpd.com/courses/upper-primary/light/
Useful Links
• *https://www.bbc.co.uk/bitesize/topics/zbssgk7* • *https://app.discoveryeducation.co.uk/learn/channels/channel/9c75eb03-92e5-43c2-bd8c-fb987fb13dc9?embed=false&embed_origin=false*

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)