

# Year: 3 Term: Autumn Unit: Science - LIGHT Enquiry Question: Why is light important in our world?

Knowledge	See Knowledge Organiser						
Vocabulary	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, torch, dangerous, energy, data loggers, lux, UV light, white light, SPF, prism, rays ( <b>Prior learning vocabulary:</b> reflection, darkness, light, shadows)						
Hook? Visit?	School Sundial on front of the building						
Links to any prior units or upcoming units?	<b>Prior Learning Units:</b> Materials (Year 2) <b>Future Learning Units:</b> Light (Year 6) Light travels in straight lines, how light travels to the eyes and it is used to see, shadows and light in straight lines						
National Curriculum	<b>Pupils should be taught to:</b> <ul style="list-style-type: none"> <li>Recognise that they need light in order to see things and that dark is the absence of light</li> <li>Notice that light is reflected from surfaces</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>Recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>Find patterns in the way that the size of shadows change</li> </ul>						
	<b>Enquiry Question (Resources)</b>	<b>Objective (NC)</b>	<b>Ideas for Input (Teaching)</b>	<b>Activities</b>	<b>Vocabulary</b>	<b>Investigative Opportunities</b>	<b>Assessment</b>
<b>Lesson/Week/Enquiry 1</b>	<b>What helps us see?</b>  <i>To explore what light is and where it comes from. (torches, postits)</i>	Recognise that they need light in order to see things and that dark is the absence of light	*What is light? What is dark? Children's words and definitions - think, pair, share Light is energy alongside sound, heat electrical etc *Name different sources *Discuss light sources(including misconceptions ie the moon, mirror). *Natural/artificial (made) light *Dark room - true darkness v bedroom darkness *So why do we need light? Eye damage *Investigate with torches - postits *What is dark? *What do we know about the dark now? Plenary - discussion if moon is a light source	*TPSH - What is light? What is dark? *Sources of light - natural, artificial/made *Palms on eyes for true darkness, visit to cave to experience true darkness *"hy do we need light? *Investigate with torches - postits for wall display	Light, source, dark, absence of light, dangerous, energy	*Sharing of torches - postits for recording what they notice about light. *Size of pupil with daylight not torches *True darkness v their concept of darkness	Can I identify a range of light sources? Can I explain that dark is caused by absence of light? Do I know I need light to see?
<b>Knowledge</b>	*Darkness is absence of light *We need light to see anything *Where light is absent it is dark. *Where there is true darkness there is no light						

	Enquiry Question (Resources)	Objective (NC)	Input (Teaching)	Activities	Vocabulary	Investigative Opportunities	Assessment
2	<p><b>How can light be dangerous and how can we stay safe?</b></p> <p><i>(torches, globes, pictures of light sources to sort, suncream, hat, sunglasses, long sleeved top, parasol, beads)</i></p>	<p>Notice that light is reflected from surfaces</p>	<p>*Think, Pair, Share - Difference discussion between day and night. What light sources are used? Natural/Artificial (made) discussion *Sunlight takes 8 minutes and 20 seconds to get from sun to earth travelling very quickly. *How and why does day turn into night and vice versa? *Discuss moon as exception *List of good/bad things about the sun *UV light damage and how to prevent *SPF on suncream *Jump slides 19-24 *The sun - hero or villain (sun safety28.9.21 ppt slide4) *Make a poster to explain how to stay safe in the sun. (sun safety28.9.21 ppt slide 12)</p>	<p>*Spaced Retrieval *TPSH - Difference between day and night *light source revision - natural/artificial/made *shine torch on globe *good/bad things about sun *rainbow and uv light from white light - prism and torches *Poster to stay safe in the sun</p>	<p>Light, sunlight, dangerous, white light, UV light, SPF, prism</p>	<p>*Beads that are UV light sensitive - test with and without suncream) *Splitting white light to make a rainbow and UV light</p>	<p>Can I tell you why light is dangerous? Can I tell you the good effects the sun has? Can I tell you how to be sure I stay safe in the sun?</p>
<b>Knowledge</b>	<p>*Day and night occur because of earth turning, sun shining on different parts of the world *Ultraviolet rays come from a rainbow when white light is split by a prism *Good/bad facts about the sun.- cancer, sunburn, SPF rating, Vitamin D, bones, mental health, UVA/UVB rays are dangerous, suntan, water bottle, cover up *Know ways to look after ourselves in the sun - hat, suncream, sunglasses, parasol, shade, stay out of sun</p>						
3	<p><b>What are shadows and why are they formed?</b></p>	<p>Recognise that shadows are formed when the light from a light source is blocked by a solid object</p>	<p>*Think, pair, share - what do we know about light so far? *Shadow hand puppets - explore and try out new ones *Light travels in straight lines and can't bend. *Shadows made by blocking the light - identify the shadow, light source and items causing the shadow *Introduce opaque, transparent, translucent *Identify if shadows are made with translucent, transparent, opaque *Look for item that are above and record in books</p>	<p>*Spaced retrieval *TPSH - what do we know about light so far? *Light ray photos to comment on *Hand puppet suggestions to try out *Activity sheets 3a, 3c, 3d</p>	<p>Shadows, light, source, opaque, transparent, translucent, rays, torch, energy, white light, rays</p>	<p>*Make own Shadow hand puppets and test out *Search for items that are opaque, translucent, transparent and sort accordingly</p>	<p>Can I explain translucent, transparent, opaque? Can I find items that fit in each category?</p>

<b>Knowledge</b>	<ul style="list-style-type: none"> <li>*Light travels in straight lines</li> <li>*Light can't bend but can be reflected</li> <li>*Shadows are made by blocking light - opaque items</li> <li>*Transparent, translucent, opaque - identify items</li> </ul>						
<b>4</b>	<b>How do shadows behave? How and why do shadows change size?</b>	Find patterns in the way that the size of shadows change	<b>Slide4.pdf</b> <ul style="list-style-type: none"> <li>*Think, pair, share from last week - what can we remember?</li> <li>*Door quiz re transparent, translucent, opaque - use of vocabulary focus</li> <li>*Object and light source - will it make a shadow? Where will it be? How do you know?</li> <li>*Shadows will always be on the opposite side of the object.</li> </ul> <b>Slide 5.pdf</b> <ul style="list-style-type: none"> <li>*Think, pair, share - 3 facts about shadows</li> <li>*What do you know about the shape, size,</li> </ul>	<ul style="list-style-type: none"> <li>*Spaced retrieval</li> <li>*Activity sheets 4a, 4b, 4c Challenge cards 4D</li> </ul>	Shadow, opaque, transparent, translucent, pale, block, light source, object, opposite, detail, position	<ul style="list-style-type: none"> <li>*What would happen if you had two light sources opposite the object?</li> <li>*How does the position of the light source matter to the object?</li> </ul>	<ul style="list-style-type: none"> <li>*Can I explain a shadow is made because the light is being blocked?</li> <li>*Can I identify where the shadow will be based on the position of the light source?</li> <li>*Can I find patterns in the way the size of the shadows change?</li> </ul>
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>*Shadows are caused by an object blocking the light rays.</li> <li>*Light travels in straight lines</li> <li>*Shadows have no detail.</li> <li>*Shadows are always on the opposite side of the object</li> <li>*The closer the object to the light source, the bigger the shadow.</li> <li>*The closer the object to the background, the smaller the shadow</li> </ul>						
	<b>Enquiry Question (Resources)</b>	<b>Objective (NC)</b>	<b>Input (Teaching)</b>	<b>Activities</b>	<b>Vocabulary</b>	<b>Investigative Opportunities</b>	<b>Assessment</b>
<b>5</b>	<b>How is light reflected from surfaces?</b>	Notice that light is reflected from surfaces Recognise that they need light in order to see things and that dark is the absence of light	<b>Slide6.pdf</b> <ul style="list-style-type: none"> <li>*Think, pair, share - How does life play a part in everyday?</li> <li>* If an object does not give out its own light then how do we see them?</li> <li>*Reflection of light off object into the eye</li> <li>*Some reflect more light than others - STOP AT SLIDE 7!! investigation of paper types using data logger (lux meter app on ipad) to measure lux</li> <li>*Slide 8 onwards</li> </ul>	<ul style="list-style-type: none"> <li>*Spaced retrieval</li> <li>*Find and sort items that reflect light from around the room</li> <li>*</li> </ul>	Smooth, rough, bumpy, matt, shiny, reflect, reflective, straight,	<ul style="list-style-type: none"> <li>*Investigate which surfaces reflect more light than others</li> </ul>	<ul style="list-style-type: none"> <li>*Do I know light travels in a straight line?</li> <li>*Do I know we can only see objects because light is reflected off them?</li> <li>*Do we understand that all objects reflects some light?</li> </ul>

			*Discussion cards - who do you agree with and why?					
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>*Light reflects off objects</li> <li>*We can only see objects because light reflects off them.</li> <li>*Some surfaces reflect more light than others - shiny reflect more, bumpy or dull reflect less</li> </ul>							
<b>6</b>	How do we use reflection to keep ourselves safe in real life?	<p>Notice that light is reflected from surfaces</p> <p>Recognise that they need light in order to see things and that dark is the absence of light</p>	<p><b>Side7pdf</b></p> <ul style="list-style-type: none"> <li>*Think, pair, share - How do we use reflectors in life?</li> <li>*Using reflectors for safety - mirrors, cats eyes, emergency vehicle stickers,</li> <li>*Using for art or decoration - mirrors, disco ball kaleidoscope, sculptures</li> <li>*What other uses are there? - microscope, moon, calm water, glowing of stars, polished surfaces, telescopes, luminous items</li> </ul>	<ul style="list-style-type: none"> <li>*Spaced retrieval</li> <li>*Uses of reflectors in everyday life</li> </ul>		<ul style="list-style-type: none"> <li>*reflect, reflectors, reflective, smooth, shiny,</li> </ul>	<p><b>*End of Unit quiz</b></p>	<ul style="list-style-type: none"> <li>*Can I describe what a highly reflective surface is and give an example?</li> <li>*Can I give examples of how reflectors are used in life?</li> </ul>
<b>Knowledge</b>	<ul style="list-style-type: none"> <li>*Smooth and shiny make the best reflectors</li> <li>*Examples of reflection in art</li> <li>*Examples of reflection in life for safety</li> <li>*Examples of items that use mirrors to reflect light</li> </ul>							