

**End of Unit Goals**

**Pupils will be able to:**

- Know a range of light sources (natural and man-made). Sun is a light source.
- Know that the light coming from a light source can be brighter or dimmer.
- Know that light reflects off some materials and goes through others.
- Know that opaque materials block light and so form a shadow behind them.
- The sun moves across the sky. Know how to stay safe in the sun and the dark.

**Prior Knowledge**

Numbers from 0 to 10 (and beyond). Looks closely at similarities, differences, patterns and change in nature. Talks about why things happen and how things work. Explores the natural world around them by making observations. Explores shadows & rainbows. Learns about the Earth, Sun, Moon, planets and stars. (EYFS)

**Skill Objectives**

Explaining Science			Data, Tables & Graphs		
I use science words during an activity	I use & remember science words during an activity	I use & remember science words over a short time	I measure numbers on a number track (non-standard)	I measure numbers on a number track	I measure labelled standard units on a number line
I describe what is happening using words & actions	I describe what is happening using science	I use science to describe & recall what I have seen	I use a simple table recording in pictures & words	I use a simple table recording in words & numbers	I use a simple table recording in words & numbers (inc. tally)
I match appropriate pictures & words to label diagrams	I add science word labels to diagrams	I add science labels & information (help) to diagrams	I represent groups using resources, marks & numbers	I add to block charts by counting up	I use scale on a block chart (coordinate) to add correct blocks

**Enquiry Types**



**Key Vocabulary**

Light, dark, sun, day-length, brightness (intensity), source, eye, material, reflected, reflection, reflective, shiny, dull, transparent, opaque, blocked, shadow, sun, sky, suncream (block), polaroid, table of results, record, tally, pictogram, block-chart, axis, coordinate.

**Important Scientists**



**Thomas Edison** (1847-1931) American inventor and businessman. Invented the incandescent electric light bulb in 1878 and motion picture camera (phonograph). However, he did not invent the light bulb (Warren de la Rue, Britain 1840).



**Joseph Swan** (1828-1914) English scientist who worked on the incandescent light bulb and was the first to develop and use it to illuminate homes in 1881. Swan was born in Sunderland and lived in Gateshead.

**Common Misconceptions**

Light comes out of our eyes so we can see. Shiny surfaces give off light. The moon is a light source. The sun/light is there to help us see. Darkness is a 'thing' like light. Opaque materials give out colour or darkness. When you turn on a light, light fills the room. When you turn off a light; darkness fills the room. A rainbow is made by the rain. I can touch a rainbow. There is no sun at night. The sun is always in the same place in the sky.

Big Picture Model



Session	Knowledge Objective	Skill Objective	Enquiry Opportunities	Extension Opportunities	SEN
1	<p>2 week unit on Seasonal Change from Spring to Summer.</p> <p><b>What are seasons?</b></p> <ul style="list-style-type: none"> <li>I can name and order the 4 seasons.</li> <li>I can find signs of Summer in my local surroundings.</li> </ul>		<p><b>Starter</b> Play the four seasons song.</p> <p><b>Main</b> Re-cap Autumn, Winter and Spring. How was the weather in these seasons different to now?</p> <p>Look at the information about Summer.</p> <p><b>Activity</b> Children to go on a seasonal walk to spot signs of summer. Record these on clipboards.</p> <p>Come back to class and discuss the signs of summer. Record as a spider diagram in books.</p> <p><b>Plenary</b> Can the Summer be dangerous? Why?</p>	<p>How can we stay safe in the Summer?</p>	<p>T to record for SEND children on one large piece of paper (stick on the Science display board).</p>

Grindon Infant Science Medium Term Planning - Year 1 Light and Shadows

<p>2</p>	<p><b>How can we stay safe in the sun and in the dark?</b></p> <ul style="list-style-type: none"> <li>• I know the dangers of strong sunlight (eyes, skin).</li> <li>• I know how to protect myself from the sun (sunglasses, sun cream).</li> <li>• I know the dangers in the dark (visibility).</li> <li>• I know how to protect myself in the dark (reflective clothing, lights).</li> </ul>		<p><b>Starter</b> Re-cap signs of Summer.</p> <p><b>Main</b> Follow the powerpoint to discuss dangers of being out in the sun at day time and being outside at night time.</p> <p><b>Activity</b> Children to create a poster to explain how to keep safe during the day and how to keep safe at night time.</p> <p><b>Plenary</b> Does the sun give us light? What else gives us light?</p>	<p>Does the sun give us light? What else gives us light?</p>	<p>T to scribe for SEND children to create one poster as a whole group.</p>
<p>3</p>	<p><b>Where does light come from?</b></p> <ul style="list-style-type: none"> <li>• I know that light can come from a natural source, like the sun and stars.</li> <li>• I know that light can come from man-made objects like bulbs, flames, torches, etc.</li> <li>• I know that light always comes from a light source (not from the eyes).</li> </ul>		<p><b>Starter</b> Complete a KWL grid as a whole class for the topic 'Light and Shadows'.</p> <p><b>Main</b> Observe the classroom to find sources of light and record these as pictures/words on IWB as a whole class. Discuss whether these light sources are man-made or natural.</p> <p>Where is the brightest/darkest place in the classroom? Why?</p> <p>Our eyes don't make any light for themselves. Show the path of light from source to eyes using string (direct &amp; reflected).</p> <p>Go outside and explore the light the sun makes.</p>	<p>Can you change brightness with hand/ body? How?</p>	<p>Children to work in mixed ability partners to find the sources of light in the classroom.</p> <p>T to support the children with using torches to make shadows.</p>

			<p>At night time, we can still see. What helps us to see at night?</p> <p><b>Activity</b> Children to investigate light and making shadows using torches.</p> <p><b>Plenary</b> Can you change the brightness of a light using your hand?</p>		
4	<p><b>Is all light the same?</b></p> <ul style="list-style-type: none"> <li>• I know that the brightness of a light can change.</li> <li>• I can change the brightness of reflected light by moving the torch closer or further away from a surface.</li> </ul>		<p><b>Starter</b> Look at a torch which is not very bright (use old batteries). How could we make this torch brighter? (Add more batteries). Demonstrate. How does this make the light brighter?</p> <p><b>Main</b> Move the torch close to an piece of paper. Discuss the brightness of this. Measure how many cubes (in length) the torch is away from the paper.</p> <p>Move the torch further away from the piece of paper. Again, discuss the brightness. Measure how many cubes it long the torch is away from the paper.</p> <p><b>Activity</b> Children to explore making a brighter/dimmer light depending on how far away they move the torch. Take photographs of children's findings for books.</p>	How do you think a shadow is made?	T to support SEND children to record their stem sentence (record for them on speech bubble).

			<p>What have the children found out?</p> <p>Can children complete the stem sentence by writing it into their books?          (The closer the torch is to an object, the _____ the light is. The further away the torch is to an object, the _____ the light is).</p> <p><b>Plenary</b>          How do you think a shadow is made?</p>		
5	<p><b>What is a shadow?</b></p> <ul style="list-style-type: none"> <li>• I know that opaque materials don't let light through/form a shadow.</li> <li>• I can begin to describe how a shadow is formed.</li> <li>• I know how to change the shape and size of my shadow.</li> </ul>		<p><b>Morning activity</b>          Children to go outside and stand in a sunny spot. Partner to draw around their shadows on the ground.</p> <p><b>Main</b>          How is a shadow made? Follow the ppt.</p> <p><b>Activity</b>          Can our shadows be changed? Go outside and stand in the same spot as the morning. Draw the child's shadow again using a different coloured piece of chalk. How has the shadow changed? Discuss. Take photographs for books.</p> <p>Children to experiment, back in class, changing the size and the shape of a shadow using torches.</p> <p><b>Plenary</b>          What have you learnt about how a shadow can be changed?</p>	<p>Create shadow puppets.</p>	<p>Children to work in mixed ability groups. T to support SEND children with reasoning.</p>

6	<p><b>What happens to the sun during the day? What happens to the sun at night?</b></p> <ul style="list-style-type: none"> <li>• I know that the sun moves across the sky during the day (east to West).</li> <li>• I am beginning to know that our planet spins.</li> <li>• I am beginning to know that the sun is still there at night; we just can't see it (link to planet spin).</li> </ul>		<p><b>Starter</b> Watch the video clip of our planet spinning, linked to day and night.</p> <p>Show children a globe. Put a marker on England. Shine the torch on England (the torch is the sun). What time of day is this? Spin the globe so the torch is not shining on England. What time of the day is this? Has the sun moved, or planet Earth? Explain how this links with day and night time.</p> <p><b>Activity</b> Children to experiment with the torch and globe in small groups.</p> <p><b>Plenary</b> Complete the KWL grid that we made in Lesson 1 (the 'what we've learnt' section).</p>	How does the moon look bright?	Children to be with mixed groups. T to support reasoning and understanding .
<p><b>Useful Texts, Website &amp; Resources</b>  <a href="https://www.youtube.com/watch?v=SJeifQw9sk">https://www.youtube.com/watch?v=SJeifQw9sk</a>  <a href="http://www.bbc.com/bitesize/science/ks2/light-shadows">Light and shadows – KS2 Science curriculum - BBC Bitesize</a>  <a href="https://www.youtube.com/watch?v=kPBZJEhmUpQ">https://www.youtube.com/watch?v=kPBZJEhmUpQ</a></p>					