Upper School - Science
Light

Spring Term 1 2027

Prior knowledge	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
Future knowledge	KS3 curriculum: Light waves
Key Vocabulary	Light, dark (absence of light), reflect, shadow, opaque, mirror, reflective surface, periscope, light rays.

Learning Sequence

Question/ Key Activity

Light in straight lines – draw annotated diagrams to show how light travels.

Substantive Knowledge:

- Recognise that light appears to travel in straight lines

Disciplinary Knowledge:



Ask relevant questions and use different types of scientific enquiries to answer them, with teacher support.

Question/ Key Activity

Investigation – which materials reflect the best?

Substantive Knowledge:

- 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 light sources to objects and then to our eyes

Disciplinary Knowledge:



Ask relevant questions and use different types of scientific enquiry to answer them with increased independence.



Decide on the method and equipment to use to carry out an enquiry, with increased independence.

	 Use observations, ideas and straightforward scientific evidence to support and explain findings with increased independence.  Take measurements, using a range of scientific equipment, with increasing accuracy and precision, recognising independently when repeat readings are appropriate.  Gather, record, classify and present data/results of increasing complexity using a variety of ways with increased independence.  Use results to evaluate the success of an enquiry, suggest improvements and raise further questions, with increased independence.
Question/ Key Activity Our eyes – label parts of the eye and describe their function	
Substantive Knowledge: • 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 light sources to objects and then to our eyes • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes	**Disciplinary Knowledge:**  Ask relevant questions and use different types of scientific enquiries to answer them, with teacher support.
Question/ Key Activity Shadows – How do shadows change through the day?	
Substantive Knowledge: ○ Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cats them ○ 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	**Disciplinary Knowledge:**  Ask relevant questions and use different types of scientific enquiry to answer them with increased independence.  Decide on the method and equipment to use to carry out an enquiry, with increased independence.  Use observations, ideas and straightforward scientific evidence to support and explain findings with increased independence.  Take measurements, using a range of scientific equipment, with increasing accuracy and precision, recognising independently when repeat readings are appropriate.

	 Gather, record, classify and present data/results of increasing complexity using a variety of ways with increased independence.  Use results to evaluate the success of an enquiry, suggest improvements and raise further questions, with increased independence.

Question/ Key Activity

Investigation

Substantive Knowledge:	Disciplinary Knowledge:
This depends on the question the children are investigating, so could be any of the below. • 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 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 cats them • 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	 Ask relevant questions and use different types of scientific enquiry to answer them with increased independence.  Decide on the method and equipment to use to carry out an enquiry, with increased independence.  Use observations, ideas and straightforward scientific evidence to support and explain findings with increased independence.  Take measurements, using a range of scientific equipment, with increasing accuracy and precision, recognising independently when repeat readings are appropriate.  Gather, record, classify and present data/results of increasing complexity using a variety of ways with increased independence.  Use results to evaluate the success of an enquiry, suggest improvements and raise further questions, with increased independence.

Question/ Key Activity

Scientist study – Thomas Edison (lightbulb inventor), Thomas Young (wave theory of light)

Substantive Knowledge:	Disciplinary Knowledge:
• Thomas Edison was the lightbulb inventor. • Thomas young was a huge part in the wave theory of light.	 Ask relevant questions and use different types of scientific enquiry to answer them with increased independence.