

Jeavons Wood Primary School – Science Knowledge Organiser

Topic: Light

Year: 3

Strand: Physics

Big Question: What can light do?

What should I already know?

Some things produce light, such as lamps or candles.

What will I know by the end of the unit?

What is a light source?	<p>*A light source is something that emits light by burning, electricity or chemical reactions.</p> <p>*Burning light sources include the Sun, flames from a fire and stars. *We must never look directly at the Sun as the light produced is very bright and can be harmful to our eyes. This is why we wear sunglasses.</p> <p>*Electric lights include lamps, car headlights and street light.</p> <p>*Lights that are caused by chemical reactions are much less common. This happens when different chemicals react and light is a product of that reaction. Examples can include glow sticks and fire flies.</p>
Why do we need light?	<p>*We need light so that we are able to see in the dark.</p> <p>*This is because the dark is the absence of light. The Sun and stars always give us light but we can only see the stars when it is dark. At night time we cannot see the Sun's light as the Earth turns and our part of the Earth is not lit up by the Sun at night.</p> <p>*When we are driving, we need car headlights or street lights to help us.</p> <p>*If we are walking or out in the dark, we would need torches to help us see. You should not look directly into the torch as this is dangerous</p>
What are not sources of light?	<p>*The Moon is not a source of light even though we can see it in the dark.</p> <p>*This is because the Sun's light reflects on the surface of the Moon making it appear as though the Moon emits light.</p> <p>*Shiny things are not light sources - they appear to be sources of light as they are bright.</p>
How does light travel?	<p>*Light travels in straight lines.</p> <p>*When light is blocked by an opaque object, a dark shadow is formed.</p>

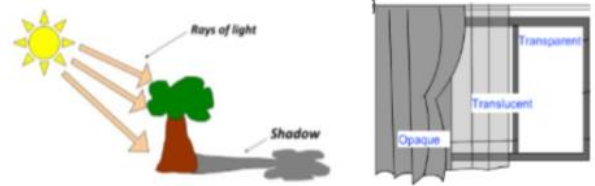
Where will my learning go next?

In Year 6 pupils will be taught to:

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.

Diagrams

How are shadows formed?



*When light is blocked by an opaque object, a dark shadow is formed. An opaque material blocks light so we can't see through it and shine a light through it.

*When light is shone onto a transparent object, the light travels through it, we can see through it and it makes a very faint shadow.

*When light is shone onto a translucent object, some of the light travels through it, we can see bright light sources through it and it makes a fairly dark shadow.

*The size of a shadow changes as the light source moves. The further away the light source the smaller the shadow. The closer the source of the light, the bigger the shadow.



Vocabulary

angle	the direction from which you look at something
bright	a colour that is strong and noticeable, and not dark
dark/darkness	the absence of light
dim	light that is not bright
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for machines
emit/emitting	to emit a sound or light means to produce it
light	a brightness that lets you see things.
mirror	a flat piece of glass which reflects light, so that when you look at it you can see yourself reflected in it
reflects	light sent back from the shiny and smooth surface and does not pass through it
shadow	a dark shape on a surface that is made when something stands between a light and the surface
source	where something comes from
surface	the flat top part of it or the outside of it
torches	a small, portable electric light which is powered by batteries
translucent	if a material is translucent, some light can pass through it
transparent	If an object or substance is transparent, you can see through it

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Big Question: What can light do?

Question 1: How does light travel?	Start of unit:	End of unit:
In a straight line		
In a curvy line		
Light is everywhere		
Light does not travel		

Question 6: Shadows are formed when...	Start of unit:	End of unit:
light is let through an object		
light reflects off an object		
it is dark		
light cannot travel through an object		

Question 2: Dark means	Start of unit:	End of unit:
when there is a little bit of light so you can see		
the absence of light		
you have to eat carrots so you can see		

Question 7: Mirrors work by	Start of unit:	End of unit:
letting light through that hits them		
absorbing light that hits them		
reflecting light that hits them		

Question 3: When light bounces off a surface, it is..	Start of unit:	End of unit:
absorbed		
dissolved		
reflected		
bounced		

Question 8: The size of a shadow becomes smaller...	Start of unit:	End of unit:
when the object is close to the light source		
when the object is far from the light source		
the distance between the light source and the object stays the same		

Question 4: Sources of light include...(tick three)	Start of unit:	End of unit:
the sun		
the moon		
street lights		
torches		

Question 9: How do we see an object?	Start of unit:	End of unit:
Light reflects off the object and enters our eyes		
Light travels from our eyes and reflects off the object		
Light reflects off our eyes and enters the object		

Question 5: Looking directly at the Sun is...	Start of unit:	End of unit:
safe		
dangerous		
ok if there are clouds		
ok if the sun is rising or setting		

Question 10: Match the words to their description:	Start of unit:	End of unit:
translucent	you cannot see through it and a dark shadow is formed	
transparent	you can see a little light through it and a fairly dark shadow is formed	
opaque	you can see through it completely and a faint shadow is formed	