

Y6 Science – Light

NC Targets to be covered:

- use their knowledge of the way light travels to describe how shadows are formed
- discuss how objects are seen using scientific vocabulary e.g. light source and reflection
- demonstrate that light travels in straight lines to explain how objects are seen
- use examples to show that light appears to travel in straight lines.

Learning Ladders:

I can use examples to show that light appears to travel in straight lines.

I can demonstrate that light travels in straight lines to explain how objects are seen

I can discuss how objects are seen using scientific vocabulary e.g. light source and reflection

I can use my knowledge of the way light travels to describe how shadows are formed

Working Scientifically

- I can use appropriate scientific language to explain, evaluate and communicate my methods and findings.
- I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- I can report and present my findings in oral and written forms such as displays and other presentations (e.g. explaining and concluding my findings, and explaining the degree of trust in my results).

Week	Order of Study – Main plots and Subplots
1	<u>LI- I can use examples to show that light appears to travel in straight lines.</u> Comparative testing enquiry- How does light travel? Stick in and complete the first two sections of the KWL grid, and then stick in knowledge organiser. Class discussion: What is light? What sources of light can you think of? Which of these are natural and which are man-made? How could we test how light travels? If chn are unsure, give them the equipment list as a hint. What might they do? Show beginning of video if needed. Children to write up aim, prediction and the variables they will keep the same/change. Conduct investigation in groups (see video link) position cards in various ways e.g. straight line, zig zag and curve to see if the light hits the target. Chn to write up their equipment list and method. Discuss the results; were their predictions correct. Watch second video which reviews understanding of opaque, translucent and transparent and introduces reflection and refraction. How does this link to our investigation e.g. we used opaque card so the light only passed through the holes and light was not reflected off the surface as the card wasn't shiny. Use their results and notes from the video to write their conclusion. Draw a diagram and stick in photo evidence of the investigation. Teacher mark. Resources needed: https://www.youtube.com/watch?v=fm_GAlrBuQ , torches, square card, blu tac, https://www.youtube.com/watch?v=fm_GAlrBuQ Key terminology – light source, wave, ray, opaque, transparent, translucent, reflection, refraction
2	<u>LI- I can discuss how objects are seen using scientific vocabulary.</u> Discussion: how do chn think we see objects? Watch 'Operation Ouch' video (link below) with lights off. Ask chn to look at their partners eyes as you turn the lights back on. What happens? <i>Pupil shrinks</i>. Why? Can they link this to what they have learnt from the video? Look at ppt slides about parts of the eye and either label diagram provided or draw and label their own diagram. Then match the definitions to the names of each part. Discuss how we see colour due to reflection/absorption and ensure chn understand that light travels from the light source to the object and then to the eye. Look at spot the mistakes slide on ppt. Why are these diagrams wrong? Chn to draw their own diagram to show how light is absorbed, reflected or refracted in order for us to see. Learning Journey. Resources needed: https://www.youtube.com/watch?v=oLIF8cm7l70 (from around 22mins-25mins) or https://www.bbc.co.uk/iplayer/episode/m000m1y0/operation-ouch-ouchtastic-4-eyes (up to around 4mins), ppt slides, labelling worksheets Key terminology- pupil, lens, iris, cornea, retina, optic nerve, sclera, blind spot, tear duct, eye lid, eyelash, reflect, absorb, visible spectrum, light source
3	<u>LI- I can demonstrate that light travels in straight lines to explain how objects are seen.</u> Children to use the template to create their own periscope. How do they think a periscope works? How does it enable us to see when light only travels in straight lines? Show chn ppt slides of angle of incidence. Explain that the angle the light ray hits the surface of the mirror (angle of incidence) is equal to the angle it is reflected at (angle of reflection). A periscope needs light to travel in a 90° angle for us to see

	it and therefore the light must hit it at 45° as $45^{\circ} + 45^{\circ} = 90^{\circ}$. Chn stick in photo of their periscope and copy the diagram, writing their own explanation of how a periscope works. <u>Self assessment.</u> Resources needed: card periscope template, scissors, rulers, mirrors cut to size, glue, ppt slides Key Vocabulary – incident ray, reflected ray, angle of incidence, angle of reflection, periscope, reflection, light source
4	LI- I can use my knowledge of the way light travels to describe how shadows are formed. <i>How does the angle that a light ray hits an object affect the length of its shadow?</i> Review what chn know of shadows from previous science topics. Introduce investigation: shining a torch at different angles onto a glue stick. What do they think will happen to the shadow as the angle changes? Chn to write up their prediction, draw a diagram and a simple method. Draw a results table and then work in groups to test their prediction. Chn to discuss their results as a class. How does this relate to what they know of shadows outside. Can they link it to their Yr5 Space topic? Review understanding of how Sun appears to move through the sky over the day and causes shadows to lengthen or shorten. Chn to write up their conclusions. <u>Peer assessment.</u> Resources needed: ppt slides, torches, glue sticks, rulers Key Vocabulary – light source, opaque, shadow
Assessment time – Complete the final column of their KWL grid.	