



Knowledge and Skills Mind Map (Science) - Year 6 Summer 1

Knowledge - 
Skill - 

Light

Note for Teachers: Progression Summary from Light topic in Year 3 (Autumn)

- **Year 3:** Children recognise basic ideas—light is needed to see, identify light sources, and shadows form when light is blocked.
- **Year 6:** Children explain **how light behaves**, including that it travels in straight lines and reflects off objects into the eye.
- **Progression:** Moves from simple description (*what happens*) to scientific explanation and application (*why it happens and how it can be used, e.g. shadows and periscopes*).

1. Can I recognise that light appears to travel in straight lines?

- **Previous Learning (Year 3 (Autumn)):** recognised light sources
- **Vocab:** light, straight lines, source, observation
- Know that light travels from a light source in straight lines.
- Know that light allows us to see objects when it reaches our eyes.
- Know that we cannot usually see light travelling, but we can observe its effects, (e.g. light beams, shadows, reflections).
- Know, as scientists, observations can be used to make predictions about how light will behave.
- **(note for teachers – suggested task:** use torches and card with small holes to show that light travels in straight lines. Children to align the holes so the light passes through, then predict what will happen if the holes are moved out of line.)
- **Using test results to make predictions to set up further comparative and fair tests**

2. Can I explain that we see objects because they reflect light into our eyes?

- **Previous Learning (last lesson):** recognised light sources and that light travels in straight lines
- **Vocab:** reflect, source, observation, object
- Know that we see objects when light reflects off them and enters our eyes.
- Know that some objects are light sources (they emit light), while others reflect light.
- Know that without light entering the eye, objects cannot be seen.
- Know that evidence from observations helps explain how light behaves when it reflects.
- **(note for teachers – suggested task:** use a torch and different objects (e.g. mirror, book, dark surface) and ask children to observe how light reflects differently, then explain which objects reflect light best and why we can see them.)
- **Identifying scientific evidence that has been used to support or refute ideas or arguments**

3. Can I explain how light travels from a source to our eyes?

- **Previous Learning (last lesson):** explained that we see objects because they reflect light into our eyes
- **Vocab:** source, reflect path
- Know that light travels from a light source in straight lines.
- Know that light can travel directly from a source to our eyes or reflect off objects before entering our eyes.
- Know that we see things because light travels from a source to an object and then into our eyes.
- Know that diagrams can be used to show the path of light clearly.
- **(note for teachers – suggested task:** Children draw and label diagrams showing how light travels from a torch to an object and then to the eye, using arrows to show direction, and explain each stage of the journey.)
- **Recording data and results of increasing complexity using scientific diagrams and labels**

5. Can I use my understanding of light travelling in straight lines to explain how devices such as mirrors or periscopes work?

- **Previous Learning (last lesson):** investigated how shadows form and change
- **Vocab:** periscope
- Know that light reflects off mirrors and changes direction.
- Know that mirrors can be used to direct light to allow us to see objects from different positions.
- Know that devices such as periscopes use mirrors to reflect light into the eye.
- Know that diagrams and models can be used to show the path of light clearly.
- **(note for teachers – suggested task:** children design and create a simple periscope using mirrors, then draw and label the path of light using arrows, explaining how reflection allows them to see objects that are not directly in front of them. Predict how changing mirror angles would affect what they can see.)
- **Using test results to make predictions to set up further comparative and fair tests**

4. Can I investigate shadows and explain why they have the same shape as the objects that cast them?

- **Previous Learning (last lesson):** explained how light travels from a source to our eyes
- **Vocab:** investigation, predict, shadow, opaque, block
- Know that shadows are formed when an opaque object blocks light.
- Know that light travels in straight lines, which causes shadows to have the same shape as the object casting them.
- Know that the size and position of a shadow can change depending on the position of the light source.
- Know that results from investigations can be used to make predictions about how shadows will change.
- **(note for teachers – suggested task:** investigate how changing the distance between a light source and an object affects the shadow size. Children first predict what will happen, then test, record results, and use findings to make further predictions about shadow changes in new situations.)
- **Using test results to make predictions to set up further comparative and fair tests**
- **Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary**