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| **Year 3: Light and Shadow (Light) UPDATED November 2023** | |
| **Links made with other subjects** | Structures DT – greenhouses (transparent etc) |
| **The BIG Question** | What is ‘light’ and ‘dark’? |
| **The BIG Outcome** | Children to write a short explanation or draw a diagram explaining how we see using light, including sources of light and what we mean by ‘dark’. Children to also discuss how shadows are formed and how we can protect our eyes. |
| **Science objectives**  (link to NC) | * 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 a solid object * find patterns in the way that the size of shadows change |
| **Prior knowledge**  What prior knowledge is needed for children to be successful in this unit? | *Children already know:*  EYFS – Understanding the world: Children know about similarities and differences in relation to places, objects, materials and living things. They can talk about the features of their own immediate environment and how environments might vary from one another. They can make observations of animals and plants and explain  why some things occur. They can talk about changes.  Yr 1: **Senses** (Y1 - Animals, including humans) |
| **Future learning**  Consider the conceptual knowledge within a subject that pupils need for future learning not just the recall of facts but the importance of concepts | This unit gives prior knowledge to:  Yr 6: **Light and Sight (Light)** |
| **Science strands** | Related Enquiry Questions   |  | | --- | | **Classifying** | | Based on the children’s own criteria:  - classify light sources (leading to man-made/natural).   * classify materials (leading to reflective/non-reflective, transparent/translucent/opaque). | | **Observing over time** | | Not relevant (NB: Do not look at how shadows in the playground change throughout the day as this is covered in Year 5). | | **Pattern Seeking** | | Investigate what happens when conditions are changed e.g. more/less light/water, change in temperature, nutrients (Baby Bio vs other brands). | | **Comparative testing** | | - test materials for reflectiveness.  - test materials for transparency.  - investigate shadows (size of shadows, shape of shadows) | | **Researching** | | Not relevant | |
| **Vocabulary/ Glossary** | Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous |
| **Knowledge**  (see italics for knowledge to remember) | *The knowledge that children will learn and remember:*   1. *We see objects because our eyes can sense light.* 2. *Dark is the absence of light.* 3. *We cannot see anything in complete darkness.* 4. *Some objects, for example, the sun, light bulbs and candles are sources of light.* 5. *Objects are easier to see if there is more light.* 6. *Some surfaces reflect light.* 7. *Objects are easier to see when there is less light if they are reflective.* 8. *The light from the sun can damage our eyes and therefore we should not look directly at the sun. We can protect our eyes by wearing sunglasses or sunhats in bright light.* 9. *Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light.* 10. *The size of the shadow depends on the position of the source, object and surface.* |
| **SEND expectations** | 1. *We see objects because our eyes can sense light.* 2. *Dark is the absence of light.* 3. *We cannot see anything in complete darkness.* 4. *Some objects, for example, the sun, light bulbs and candles are sources of light.* 5. *Objects are easier to see if there is more light.* 6. *Some surfaces reflect light.* 7. *The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light.* 8. *Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light.* |
| **Common Misconceptions** | Some children may think:  - we can still see even where there is an absence of any light  - our eyes ‘get used to’ the dark  - the moon and reflective surfaces are light sources  - a transparent object is a light source  - shadows contain details of the object, such as facial features on their own shadow  - shadows result from objects giving off darkness |