**Year 6 Science Curriculum – Spring 1**

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| **Theme: Light** | | | | | | | | | |
| **Curriculum objectives** | | | **Vocabulary** | | | | | | **Links across the curriculum** |
| Recognise that light appears to travel in straight lines.  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.  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. | | | **Block** | Stop; not allow to pass through. | **Travel** | | Move from one place to another. | | ICT:   * Using technology to present findings * Secondary research   English:   * Oracy for presentation and debate | |
| **Light ray** | A way of showing light travelling from one place to another. | **Reflection** | | An image of an object seen in a mirror or other reflective surface. | |
| **Conclude/conclusion** | Drawing together of evidence to find patterns and answers. | **Dark/darkness** | | The absence of light. | |
| **Light** | Is produced by a light source and makes things visible. | **Opaque** | | The property of blocking light by absorbing or reflecting all of the light that falls on it. | |
| **Transparent** | The property of allowing almost all light that falls on it to pass through, enabling a clear view of what lies behind it. | **Translucent** | | The property of blocking or scattering some light so that not all of it passes through and there is no clear view of what lies behind it. | |
| **Tier 3 vocabulary** [SNAP23\_Y6\_M3\_light\_ms.docx (live.com)](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fstatic.collins.rhapsode.com%2FSnap_Science%2FTeaching_Science%2FYear_6%2FSNAP23_Y6_M3_light_ms.docx&wdOrigin=BROWSELINK) | | | | | |
| **Prior knowledge:** *What specifically have pupils learned that is relevant to this unit that they are building upon?* | | | | | | **Future knowledge:** *What specifically will pupils learn in the future that is relevant to this unit?* | | | |
| Children have previously learnt:  ● that light comes from light sources and we need it to see (Year 3 Physics – Light).  ● how a shadow is formed and can be changed (Year 3 Physics – Light).  ● that shiny surfaces are more reflective than dull ones (Year 3 Physics – Light).  ● that light from the sun can be dangerous and how to protect themselves (Year 3 Physics – Light). | | | | | | This prepares children for later learning:  ● light waves and the speed of light (KS3 Physics – Light waves).  ● explanations for images in mirrors, pinhole camera, refraction, lenses focusing light, how the eye works (KS3 Physics – Light waves).  ● colours, different frequencies of light and prisms splitting white light (KS3 Physics – Light waves). | | | |
| **Lesson Sequence** | | **Key Knowledge** | | | | **Key Skills** | | | |
| How does light travel? | | * We need light to see, and opaque and transparent materials. * We can see a light source because some of the light from the source travels to and enters our eyes. * Light travels in straight lines. | | | | Working scientifically:  ● Identifying scientific evidence that has been used to support or refute ideas or arguments. | | | |
| What can we change about a shadow? | | * The shape of the shadow can only be changed if the shape of the object is changed or if the object is rotated, as demonstrated by turning the pencil. * The size of the shadow can be changed by moving the light source or object to change the distance between the light source and object or light source and screen. * Opaque materials create the darkest shadows. | | | | Working scientifically:  ● Identifying scientific evidence that has been used to support or refute ideas or arguments. | | | |
| What might affect the size of a shadow? | | * Plan a fair test to identify the effect of changing variables on the size of a shadow. * Carry out their fair test and collect data to test their prediction. | | | | Working scientifically:  ● Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.  Scientific enquiry type:  ● Comparative and fair tests. | | | |
| What affects the size of a shadow? | | * Changing the distance between the object and the screen will produce a straight line graph with shadow size increasing as distance increases. * Changing the distance between the object and torch will produce a curved graph, eventually levelling off, with shadow size decreasing as distance increases. | | | | Working scientifically:  ● Recording data and results of increasing complexity using [scientific diagrams and labels, classification keys, tables, scatter graphs, bar] and line graphs.  ● Reporting and presenting findings from enquiries, including [conclusions,] causal relationships [and explanations of and degree of trust in results,] in oral and written forms [such as displays and other presentations].  Scientific enquiry type:  ● Comparative and fair tests. | | | |
| How is light reflected? | | * Increasing or decreasing the angle at which light hits the mirror changes the angle at which the light ray is reflected in the same way. * The angle at which light hits the mirror is the same as the angle at which it is reflected. | | | | Working scientifically:  ● Reporting and presenting findings from enquiries, including conclusions, [causal relationships and explanations of and degree of trust in results,] in oral and written forms [such as displays and other presentations].  Scientific enquiry type:  ● Comparative [and fair] tests. | | | |
| How do we see objects? | | * Use a physical model to explain how we see objects. * Communicate understanding of light using labelled diagrams. | | | | Working scientifically:   * Recording [data and results of increasing complexity] using scientific diagrams and labels, [classification keys, tables, scatter graphs, bar and line graphs]. | | | |
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| **Themes and links** | | | | | | | | | |
| **Themes (types of enquiry)** | **Where these are covered:** | | | | | | | **Links across the science curriculum** | |
| **Observation over time** |  | | | | | | | |  |  | | --- | --- | | **EYFS** |  | | **1** | Seasons | | **2** | Growing | | **3** |  | | **4** | Electricity | | **5** | Materials | | **6** | Classification of living things | | |
| **Research** |  | | | | | | |
| **Pattern seeking** |  | | | | | | |
| **Comparative and fair testing** | * Lesson 3 * Lesson 4 * Lesson 5 | | | | | | |
| **Identifying, classifying and grouping** |  | | | | | | |  | |