**Ely St. John’s Primary**

**Science- Year 3**

**Light**

 Our Science Journey Year 3 Key Science Vocabulary

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| light dark opaque visibletranslucent reflect mirror scattertransparent roughconcave convex UV light beamshadow scattervisible spectrum retinaUV rating sourceilluminate  |

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| **EYFS** | **Y1** | **Y2** | **Y3** | **Y4** | **Y5** | **Y6** |
| Being updated 2020-2021  | Animals - HumansPlants(trees)/Seasonal Changes | Living things and their habitatsAnimals including humans | Rocks and Soils | Electricity Sound | ForcesEarth and Space | Living things and their habitats Light  |
|  | AnimalsMaterials | Uses of everyday materialsPlants | Light Plants | States of matterDigestion and Teeth | Properties of Materials | Evolution and inheritance Electricity |
|  | PlantsScience skills | The EnvironmentScientists and Inventors | Animals including humansForces and Motion | Living things and their habitats | Living things and their habitats Animals, including humans       | Animals including humans  |

**Science-Year 3**

**Light**

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| **Key Knowledge** | * I know that we need light in order to see things and that dark is the absence of light
* I know that light is reflected from surfaces
* I know that light from the sun can be dangerous and that there are ways to protect their eyes
* I know that shadows are formed when the light from a light source is blocked by an opaque object
* I know that patterns in the way that the size of shadows change
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| **Key Vocabulary** | * light - illuminate - smooth - rough - beam - visible spectrum
* source - visible - mirror - concave - UV light - retina
* opaque - translucent - transparent - shadow - distance - block
* dark - reflect - scatter - convex - reverse - UV rating
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| **Key Skills** | * work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.
* setting up simple practical enquiries, comparative and fair tests
* gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
* recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
* using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
* using straightforward scientific evidence to answer questions or to support their findings.
* making systematic and careful observations and, where appropriate, taking accurate measurements using standard units
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| **Lines of Enquiry** | 1. Observing over time
2. Pattern seeking
3. Identifying and classifying
4. Research (secondary sources)
5. Fair testing
6. Problem solving
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| **Main Unit Line of Enquiry** | Identifying and Classifying  |
| **By the end of this unit…****Include key skills and key knowledge** | ...all children should be able to: 1. Identify light sources.
2. Know that light travels in a straight line.
3. Identify reflective surfaces.
4. Know how to protect their eyes from the sun.
5. Understand that a shadow is formed when a solid object blocks light.

Draw on their observations and ideas to offer answers to questions.1. Use some scientific forms of language when communicating simple scientific ideas.
2. Correctly use equipment provided to make observations and measurements.
3. Say what happened in their experiment or investigation.
4. With support make predictions.
 | **...most children will be able to:** 1. Understand that dark is the absence of light.
2. Set up an investigation and make predictions.
3. Understand how surfaces reflect light.
4. Understand how the sun can damage parts of the eye.
5. Identify opaque, translucent and transparent objects.
6. Make predictions.
7. Know how shadows change size.
8. Respond to ideas given to them to answer questions or suggest solutions to problems.
9. Use scientific language to explain their findings.
10. Say what happened in their experiment or investigation.
 | **...some children will be able to:** 1. Explain the properties of materials that reflect light well.
2. Understand why shadows change size.
3. Set up reliable and accurate investigations.
4. Make and explain predictions.
5. Make and record accurate observations.
6. Use scientific language to explain their findings.
7. Be able to ask and answer questions based on their learning using scientific language.
8. Respond to ideas given to them to answer questions or suggest solutions to problems.

Describe what they have found out in experiments or investigations, linking cause and effect. |

**Science-Year 3 - Light**

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|  | **Session 1** |  **Session 2** |  **Session 3** |  **Session 4** |  **Session 5** |
| **LO and SC** | To recognise we need light to see things and that dark is the absence of light.

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| I can identify a range of light sources.I can use scientific vocabulary to describe observations.  |

 | To investigate which surfaces reflect light.

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| I can identify reflective materials.I can draw on my observations and ideas to offer answers to a question. |

I can say what happened in my investigation.  | To use a mirror to reflect light and explain how mirrors work.

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| I can explain why mirrors are good reflectors.I can use equipment provided to make observations. |

 | To know that light from the sun can be dangerous and that there are ways we can protect our eyes.

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| I can explain about UV light and its dangers.I can use scientific vocabulary to describe my ideas and observations. I can answer a question or suggest solutions to a problem. |

 | To investigate which materials block light to form shadows.

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| I can explain how light travels. I can sort different materials according to whether they are opaque, transparent or translucent. I can correctly use equipment provided to make observations.I can say what happened in in my investigation. |

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| **Key Knowledge** | I know that we need light in order to see things and that dark is the absence of light  | I know that light is reflected from surfaces  | I know that light is reflected from surfaces  | I know that light from the sun can be dangerous and that there are ways to protect their eyes. | I know that shadows are formed when the light from a light source is blocked by an opaque object  |
| **Key Vocab** |

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| light, source, dark, reflect, see, illuminate, visible |

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| light, source, dark, reflect, see, illuminate, visible |

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| reflect, mirror, light, smooth, shiny, rays, rough, scatter, reverse, beam |

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| light, sun, beneficial, dangerous, glare, bright, damage, UV light, UV rating, visible spectrum, pupil, retina, protect, direct, sunglasses, hat, brim |

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| light, energy, beam, ray, travel, straight, opaque, translucent, transparent, block, shadow  |

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| **Key Skills**  | * gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
 | * using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
* using straightforward scientific evidence to answer questions or to support their findings
 | * using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
 | * using straightforward scientific evidence to answer questions or to support their findings.
 | * using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
* using straightforward scientific evidence to answer questions or to support their findings
 |
| **Lines of Enquiry** | 3. Identifying and classifying | 2. Pattern seeking3. Identifying and classifying4.Research | 2. Pattern seeking3. Identifying and classifying | 6. Problem solving | 2. Pattern seeking3. Identifying and classifying |
| **Session Notes****+ Resources** | Light mind map-unaided in books. What do the children already know? Use questions from the first slide to guide thoughts. Add to it over time using purple pen.Follow the power point.Sort objects into light sources/not light sources (include moon, mirror, window and address misconceptions about these objects)Feely bags- what’s in the bag? Dark in bag so can’t see, children try to identify objects. Revisit letting light into the bag to see what objects actually are!Add holes to box- can the children see what is inside? Why? Repeat. Finally shine torch into one of the holes- now can we see what is inside? Why?**Resources-**- Objects-Bags-Lesson 1 power point-Sheet to draw/write items in the bag | Watch the video. Children make notes in their books using the questions from the powerpoint. Work through the powerpoint. Tell the children they are going to design a school bag. Give children time to look at different materials and make predictions, add these to their sheet. Next children complete the experiment and continue adding to sheet.**Resources-**-Materials (reflective and non reflective)-Torches-Lesson 2 powerpoint-Sheet to record outcomes of experiment | Work through the power point. Complete the sheet-mirror game. Focus on mirror messages and mirror game only. **Resources-**-mirrors-torches-lesson 3 power point-mirror game sheetSend a letter out about children completing the black paper experiment at home.  | Work through the power point.In books children write statements under the correct heading-heroes/villains. Chat about UV light and ask children to set up the experiment with black paper at home and then next week bring in the paper to see how it has changed. Work through the powerpoint-ask children what they can do to protect their eyes?Next model completing poster to advertise the dangers of the sun.**Resources-**-Activity Sheet Sun Safety Advert -powerpoint-lesson 4-black card to send home with children | Introduce the word, light. Show children the demonstration on the powerpoint. As the children-What happens if you move one of the pieces of card so the holes don't line up? Give children time to chat. Show the children what will happen by moving the pieces of card. Next introduce the words, opaque, translucent and transparent. What do the children know about these words, can they give any examples? Look around the classroom, have some examples to hand. Children then work in pairs/groups to complete choosing materials sheet.**Resources-**-lesson 5-powerpoint-torches-card-different opaque, translucent and transparent materials-choosing materials sheet |

**Science- Year 3 - Light**

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|  | **Session 6** |  **Session 7** |  **Session 8** |  **Session 9** |  **Session 10** |
| **L.O.** | To find patterns when investigating how shadows change size.

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| I can explain how a shadow is formed. I can plan and set up an investigation.I can describe what I have found out. |

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| **Key Knowledge** | I know that patterns in the way that the size of shadows change. |  |  |  |  |
| **Key Vocab** |

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| shadow, light, source, observe, pattern, opaque, size, distance, change |

 |  |  |  |  |
| **Key Skills** | * setting up simple practical enquiries, comparative and fair tests
* using straightforward scientific evidence to answer questions or to support their findings
 |  |  |  |  |
| **Lines of Enquiry** | 2. Pattern seeking3. Identifying and classifying4. Research |  |  |  |  |
| **Session Notes****+ Resources** | Look at shadows and reflections-as a class discuss the characters ideas. Talk about the differences between shadows and reflections. Next watch the video about how light changes.Children then work in groups to complete experiment. They only add to the sheet-results and patterns. (do not complete comic strip)**Resources-**-lesson 6-powerpoint-torches-white card-different objects-tape measure/metre rulers-sheet-results and patterns |  |  |  |  |