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| Light –  **Theatre Lighting Technicians**  [6 sessions] | **Content**  i. recognise that light appears to travel in straight lines  ii. 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  iii. 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  iv. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them  **Working scientifically**  i. planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary  ii. taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate  iii. recording results using scientific diagrams and labels, tables, scatter graphs, bar and line graphs  iv. using test results to make predictions to set up further comparative and fair tests  v. 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  vi. identifying scientific evidence that has been used to support or refute ideas or arguments |
| By the end of this block you will have achieved the following **National Curriculum Science outcomes** |
| Session 1:  **Shadow Puppet Effects: angles, shape & definition**Investigate the effects of light angle on the shape and definition of a shadow and create diagrams to include in your portfolio. | Children will**:**   * Plan & carry out an investigation into shadow size & shape, and the angle of the light source (Yr5&6) * Create diagrams that show how shadows change when the angle of the light source changes (Yr5&6) * Be able to explain why shadows may have ‘shades’ in them and suggest further investigations (Yr6) |
| Session 2:  **Shadow Puppet Effects: colour & texture**  Continue your shadow investigations, exploring texture and colour. Create the next section for your portfolio, outlining instructions for shadow puppet effects. | Children will   * Investigate and explain through instructions how colour and texture are created in shadows (Yr5&6) * Modify a shadow ‘puppet’ to create specified colour and texture effects (Yr5&6) * Suggest a further investigation into the impact of coloured lights in combination with coloured acetate shadows (Yr6) |
| Session 3:  **Lighting Effects: colour**  Explore the way that we see colour as humans and investigate the impact of coloured lighting on coloured props or costumes. Have a go at splitting white light in an array of ways to create a colourful ‘rainbow’. | Children will:   * Explain how the colour we see is the result of specific ‘parts’ of light being reflected (Yr5&6) * Split white light into a rainbow spectrum using bubbles and water (Yr5&6) * Investigate the effect of coloured light on the colour of objects (Yr5&6) |
| Session 4:  **Lighting Effects: reflecting light**  Explore the world of lighting effects and decide how you want to light your show. Use mirrors to create reflections and direct beams where they need to be. | Children will:   * Investigate the effectiveness of various reflective surfaces (Yr5&6) * Draw and note angles of incidence and reflection (Yr5&6) * Know that the angle of incidence is equal to the angle of reflection when predicting beam journeys and drawing scientific diagrams (Yr6) |
| Session 5:  **Lighting Effects: illusions with mirrors**  Explore the world of concave and convex mirrors and show off your understanding of the way light beams reflect. | Children will:   * Investigate convex, concave and plane mirrors, noting the effects (Yr5&6) * Identify (Yr5) or create (Yr6) diagrams to show the effect of convex, concave and plane mirrors (Yr5&6) * Know that when light is slowed down it bends (Yr6) |

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| Session 6:  **Theatrical Interviews**  Can you bring togetheryour knowledge of light and lighting effects to take part in a theatrical interview? Four challenges await you. | Children will:   * Complete a series of challenges that apply their knowledge and understanding of the nature of light (Yr5&6) * Demonstrate a ‘working scientifically’ approach to problem solving (Yr5&6) * Review information on light, offering opinion and ideas as well as asking scientific questions (Yr5&6) |

**Resources**

**Session 1**

**Provided:** Lighting advisor job description and portfolio guidelines, material forms PowerPoint, and circular ‘puppet’ outlines.

**You will need:** Pre-made theatres (optional), and torches.

**Session 2**

**Provided:** Puppet images, scenario & effects cards, ‘match the materials’, guidance, and Post it™ resources.

**You will need:** Puppets, range of coloured & textured materials (see list), and torches and shape puppets from Session 1.

**Session 3**

**Provided:** Investigation guidance, splitting light methods, sample mixing colours, animal eye views, and spinner instructions.

**You will need:** Coloured paper/fabric, torches, and coloured acetates.

**Session 4**

**Provided:** Set challenges and reflection diagrams.

**You will need:** Mirrors & torches, and irregular reflective items and large pieces of paper.

**Session 5**

**Provided:** Ray diagrams and lens diagrams.

**You will need:** Metal spoons, concave, convex and plane mirrors, and magnifying glasses.

**Session 6**

**Provided:** Interview challenges and quiz sheets

**You will need:** Interview challenge equipment (see resource).