

**THE WINTERTON FEDERATION MEDIUM TERM PLAN SCIENCE Autumn 1 YEAR 3**

Mirror Mirror	Learning Objective	Activity – Switched On Science	STEM Activities	Success Criteria
<b>Session 1</b>	<p>To describe the reflections when light is reflected from surfaces.</p> <p>To record observations and make sense of them.</p>	<p>Teach children the ‘Light Sources’ song: <a href="http://www.youtube.com/watch?v=Mztpcdc6YWI">www.youtube.com/watch?v=Mztpcdc6YWI</a></p> <p>Spot any sources of light in the classroom. Show the film ‘Mirror, mirror’. Discuss together and make a note of any scientific language used.</p> <p>Have collection of shiny and dull surfaces:- mirrors, polished metals, perspex, paper, painted surfaces and polished wood. Find out which ones they can see themselves in and which ones reflect a torch light. Challenge them to record and make sense of their results – the idea that shiny surfaces reflect light better than dull surfaces. Use ‘Shiny or dull?’ (Activity resource book, page 23).</p> <p>Challenge -put the materials that have been tested into an order of reflectivity. Give another material and ask where that would go in the list. Demonstrate it: Show the some different mirrors (e.g. make-up mirrors, shaving mirrors etc.) and spoons. Describe what they see and to note any differences. Discuss the fact that some reflections look the same size as the object being reflected while others look bigger or smaller. Use ‘Reflections’ Activity resource p24. Discuss findings.</p>	<ul style="list-style-type: none"> <li>recognise that they need light in order to see things and that dark is the absence of light</li> </ul> <p>Switch lights off and use blankets/blindfolds to investigate what happens when there is an absence of light.</p> <p>Identify sources of light.</p> <p>Play what’s in the bag (as you can’t see you will need to use other senses).</p>	<p>I can name some sources of light and sort materials into those which are good and bad reflectors of light.</p> <p>I can describe what a reflection in a mirror looks like.</p>
<b>Session 2</b>	<p>To describe the reflections when light is reflected from surfaces.</p> <p>To record observations and make sense of them.</p>	<p>Look at an object in the room. Ask- “Why do we see the object when it is not a light source?” Challenge - draw a diagram of ideas. Ideally they will draw a straight line from a light source travelling to the object, hitting it, bouncing off and travelling to their eyes. If not, discuss ideas and misconceptions.</p> <p>Darken the room. Ask pair or group of children to place a torch on a table. Predict</p>	<ul style="list-style-type: none"> <li>notice that light is reflected from surfaces</li> </ul> <p>Create a comparative test to investigate how light reacts on a variety of surfaces (reflective and non-reflective).</p> <p>Write backwards messages for</p>	<p>I can name some sources of light and sort materials into those which are good and bad reflectors of light.</p> <p>I can describe what a reflection in a mirror looks like.</p> <p>I can build a mirror maze.</p>

		<p>where the torch will shine when they switch it on. Switch it on and ask them to think about how accurate their prediction was. Ask them to place a ball nearby and to move a mirror so the torch light hits the ball. Then ask them to try and get the torch light to bounce off the mirror so that it hits different objects in the room.</p> <p>Class demonstration: Build a mirror maze demonstrate the torch version.</p> <p>Building a mirror maze: Get together a box, some scissors, some mirrors, hold a laser pen and some modelling clay to hold the mirrors. Make a small hole in one side of the box to allow the laser light to pass through. Draw a small window on the side of the box – not on the side opposite to where the laser light will enter. Put some obstacles in the box. Show the children how to shine the laser light pen through the small hole and use the mirrors to ensure the light hits the window drawn on the inside of the box. Take appropriate safety precautions and do not shine the laser light into other people’s eyes. Do this demonstration in a darkened room to produce even more effective results.</p>	<p>friends to read using mirrors.</p> <p>Try and walk on lines using mirrors.</p>	
<p><b>Session 3</b></p>	<p><b>To describe how shadows are formed.</b></p> <p><b>To design and carry out a fair test.</b></p>	<p>Put out a collection of objects made from opaque, translucent and transparent materials. Challenge - predict which materials will make the darkest shadows. Hold each material up to the light shining from a window. Sort the materials into those that let no light through (opaque), some light through (translucent) and all of the light through (transparent). Record findings in a table containing those three groups. Finally, consider whether or not the discoveries matched predictions. Use ‘How dark are the shadows?’ (Activity resource book, page 26). Now hold each</p>	<ul style="list-style-type: none"> <li>recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> </ul> <p>Use torches to investigate shadow – create own shadow puppets and put on a performance.</p>	<p>I can draw a diagram that explains how shadows are formed.</p> <p>I can sort materials into those that are opaque, translucent and transparent.</p>

		<p>object between a torchlight and a screen. Record how dark the shadow is (very dark/semi-dark/no shadow). Ask - "Do opaque, translucent or transparent materials make the darkest shadows?"</p> <p>Talk about their two results tables and look for patterns. Children create a shadow puppet play for another group of children.</p>		
<b>Session 4</b>	<p>To describe how shadows are formed.</p> <p>To design and carry out a fair test.</p>	<p>Show video from session 1 again. Think – What makes shadows bigger?</p> <p>Use the shadowgraph made in the previous lesson to explore what makes the shadows bigger or smaller. Look for any patterns in what they see. Use diagrams and write about what they find out. Explore what changes the shape of the shadow and to write about this. Challenge the children to plan, carry out and report on a fair test. a) Investigate what happens when the distance between an object (such as a teddy) and the screen is kept the same and the light source is gradually moved further away. Identify what is kept the same (the screen, the teddy and the brightness of the light source), what is changed (the distance between the object and the light source), and what they see changing (the size of the shadow). Systematically change the distance between the light source and the object, and to measure the shadow.</p>	<ul style="list-style-type: none"> <li>find patterns in the way that the size of shadows change.</li> </ul> <p>Create a fair test and look at patterns on a shadow when an object is closer or further from the light.</p>	<p><b>I can investigate what makes shadows smaller or bigger.</b></p> <p><b>I can plan and carry out an investigation</b></p>
<b>Session 5</b>	<p>To research and gather some key facts about how mirrors have been made over the centuries</p> <p>To make a simple mirror and create a</p>	<p>Do you think mirrors have always been made of glass?</p> <p>Provide resources and information so the children can research and create a timeline of mirrors.</p> <p>Produce a map of the world showing where mirrors were first used and the dates.</p> <p>Research two of the key landmarks in the history of mirrors in detail. Then make a list of</p>	<ul style="list-style-type: none"> <li>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> </ul> <p>Create shapes using different colours of card and stick in windows. Observe how the colour is effected over time.</p>	<p>I can make a timeline of important ways of making mirrors.</p> <p>I can name at least ten different uses of mirrors.</p> <p>I can decide on the best way to show my results.</p>

	list of the key uses	the key facts about these and put them on a timeline. Produce a flowchart of how mirrors are made today. Find out about when and how mirrors were first used by astronomers to make telescopes and which discoveries this led to.	<p>Look at pupils in the mirror and see how they change in size after eyes have been closed for a while.</p> <p>Design some safety clothing to use in the sun (goggles/hat).</p>	
<b>Session 6</b>	<p>To research and gather some key facts about how mirrors have been made over the centuries</p> <p>To make a simple mirror and create a list of the key uses</p>	<p>Today we are going to make a simple mirror out of everyday materials. Get a piece of aluminium foil. Glue it to a piece of stiff card – take care not to crease it. Add a piece of clear plastic or clingfilm and a frame to go on top. More references to this activity at <a href="http://www.wikihow.com/Make-a-Mirror">www.wikihow.com/Make-a-Mirror</a></p> <p>If time make a kaleidoscope. Instructions for this can be found at: <a href="http://www.ehow.co.uk/how_5375080_makekaleidoscope-out-pringles-can.html">www.ehow.co.uk/how_5375080_makekaleidoscope-out-pringles-can.html</a></p>		<b>I can make a mirror</b>