

**Year 2**

**Science**

Block	Key NC Science Objectives	Key Science Activities
<p><b>Autumn 1 – Animal Life Cycles</b>  <b>Healthy Animals</b></p> <p>Hatch eggs and study the life cycle of chickens. Build understanding that exercise makes the heart work harder and that it is an essential part of a healthy lifestyle. Find out about healthy lunch box foods before designing and sharing your own snack.</p>	<p><b>Animals, including humans (2AH)</b></p> <p>i) notice that animals, including humans, have offspring which grow into adults</p> <p>ii) find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>iii) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p><b>Working Scientifically (KS1 WS)</b></p> <p>i) asking simple questions and recognising that they can be answered in different ways</p> <p>ii) observing closely, using simple equipment</p> <p>iii) performing simple tests</p> <p>iv) identifying and classifying</p> <p>v) using their observations and ideas to suggest answers to questions</p> <p>vi) gathering and recording data to help in answering questions</p>	<ul style="list-style-type: none"> <li>• Observe what happens when chicks hatch. <b>(Exploring over time)</b></li> <li>• Plan questions for visitors thinking carefully about what information they want to gather and how to phrase the question accordingly.</li> <li>• Interact and observe the visitors, recording their answers to questions and gathering information <b>(Exploring)</b></li> <li>• Discuss and draw up a list of essential items for basic survival <b>(Problem solving)</b></li> <li>• Explore the idea of warming up muscles by investigating what happens when cold elastic bands are stretched without being warmed up.</li> <li>• Warm up and then carousel around different physical activities, counting rate of heartbeat <b>(Exploring, Observing over time)</b>.</li> <li>• Design a balanced lunch box on paper to serve as a reminder of how much of each food group is required for a balance lunch. By drawing on previous knowledge of healthy food, select healthy sandwiches to pack in the picnic. Record the healthy picnic in photographs and talk about their learning with their guests <b>(Problem solving)</b>.</li> </ul>

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<p>Autumn 2 - Animal Life Cycles Habitats</p> <p>How can we work out what's alive and what's not? Collect specimens and sort them into categories. Investigate habitats and food chains. Design and make a bug hotel made up of different microhabitats to encourage a variety of creatures you can investigate!</p>	<p><b>Living things and their habitats (2LvH)</b></p> <p>i) explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>ii) identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p><b>Working Scientifically (KS1 WS)</b></p> <p>i) asking simple questions and recognising that they can be answered in different ways</p> <p>ii) observing closely, using simple equipment</p> <p>iii) performing simple tests</p> <p>iv) identifying and classifying</p> <p>v) using their observations and ideas to suggest answers to questions</p> <p>vi) gathering and recording data to help in answering questions</p>	<ul style="list-style-type: none"><li>• Explore outside, and through observation, the differences between things that are living, dead, and things that have never been alive.</li><li>• Find specimens and explain how they know they are alive or otherwise. <b>(Exploring, Sorting, classifying and identifying, problem solving)</b></li><li>• Photograph or draw the micro-habitats in the school grounds, adding five adjectives to describe them (damp/wet/dry, dark/light). <b>(Exploring over time)</b></li><li>• Create shoebox dioramas for plastic animal toys or laminated images of living things.</li><li>• Annotate the dioramas with researched information. <b>(Researching and analysing secondary sources).</b></li><li>• Role play the interdependence of a food chain and consider what part each plays in its survival.</li><li>• Explore the school grounds, looking for examples of food chains (living things eating leaves, for example). <b>(Exploring)</b></li><li>• In groups, design a layer of the bug hotel, incorporate specific micro-habitats agreed for that group by the class. Build a bug hotel according to the group designs. <b>(Problem Solving)</b></li></ul>
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<p><b>Spring 1 – Uses of Everyday Materials</b></p> <p><b>Materials Matter</b></p> <p>Explore the useful properties of materials with a range of investigations involving absorbency and flexibility. Discover which type of kitchen towel or cloth is most effective at mopping up spills; consider why building materials must be absorbent and which ones fit the bill; create artwork by exploring the textures of materials and learn all about wax and how to re-mould it.</p>	<p><b>Uses of everyday materials (2UEM)</b></p> <p>i) identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>ii) find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p> <p><b>Working Scientifically (KS1 WS)</b></p> <p>i) asking simple questions and recognising that they can be answered in different ways</p> <p>ii) observing closely, using simple equipment</p> <p>iii) performing simple tests</p> <p>iv) identifying and classifying</p> <p>v) using their observations and ideas to suggest answers to questions</p> <p>vi) gathering and recording data to help in answering questions</p>	<ul style="list-style-type: none"><li>• Consider the questions: are all makes of paper as good as each other? or are some better than others?</li><li>• Investigate which papers are the most absorbent by laying thin strips of equal length of different materials (including a waterproof strip) in a shallow tray and pouring coloured water onto the edge of the strips (<b>Pattern seeking, problem solving</b>)</li><li>• Devise an investigation to test a variety of materials (plastics, metals, different types of wood and bricks) for their absorbent property (<b>Observing over time, problem solving</b>).</li><li>• Investigate the absorbency of fabrics by stretching them over a jar to make them taut and using a dropper to drop water onto the cloth. Observe and measure the number of drops and the time they stay on the cloth before being absorbed (<b>Pattern seeking, problem solving</b>).</li><li>• Explore the texture and various properties (absorbency, flexibility) by using them to print with paint onto squares of cloth or card. (<b>Exploring</b>).</li><li>• Make a batik wax resist piece of art by applying molten wax to a piece of cotton and dying it. Chop up old wax crayons and heat in moulds in the microwave/oven. Make new wax crayons in a different shape (<b>Exploring</b>).</li></ul>
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<p><b>Spring 2 – Uses of everyday Materials</b> <b>Squash, bend, twist, stretch</b></p> <p>In this block, explore a range of materials through investigations and explorations.</p> <p>Work on ways to test materials for elasticity and flexibility and find out which paper is the strongest. Work in small groups to design and make a paper bridge to hold a toy car.</p>	<p><b>Uses of everyday materials (2UEM)</b></p> <p>i) identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>ii) find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p> <p><b>Working Scientifically (KS1 WS)</b></p> <p>i) asking simple questions and recognising that they can be answered in different ways</p> <p>ii) observing closely, using simple equipment</p> <p>iii) performing simple tests</p> <p>iv) identifying and classifying</p> <p>v) using their observations and ideas to suggest answers to questions</p> <p>vi) gathering and recording data to help in answering questions</p>	<ul style="list-style-type: none"><li>• Explore the properties of a variety of balls in the playground. Discuss and design an investigation to test which ball is the bounciest (<b>Exploring, pattern seeking</b>).</li><li>• Talk about how to test fabric's elasticity properties, make predictions and devise an investigation based on attaching weights to the ends of strips of fabric (<b>Exploring, pattern seeking, problem solving</b>).</li><li>• Devise an investigation to test how much they will bend by hanging weights from string onto the end of each strip of material (<b>Exploring over time, pattern seeking, problem solving</b>).</li><li>• Sort objects in the classroom according to these criteria: flexible, rigid, hard, soft, stretchy, stiff (<b>Sorting, classifying and identifying</b>).</li><li>• Be challenged to find the strong paper to wrap a present. Collect sheets of different types of paper and make them the same size. Make a hole in each sheet and hang a weight from it, adding weights until the paper tears. Record the results (<b>Fair testing, problem solving</b>).</li><li>• Work in small groups to design and make a paper bridge to hold a toy car, selecting the paper they think will work best (<b>Problem solving</b>).</li></ul>
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<p><b>Summer 1 – Plants Farms and Foods</b></p> <p><i>In this block, look carefully at different plants and their seeds. Make a dandelion seed each and together form a whole plant. Sculpt a burr out of clay and a hydroponic plant out of junk materials.</i></p> <p><i>Learn about what plants need to survive by plant a hydroponic plant and cress seeds. Watch them grow and journal their growth!</i></p>	<p>Plants (2P)</p> <ul style="list-style-type: none"><li>i) observe and describe how seeds and bulbs grow into mature plants.</li><li>ii) find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li></ul> <p>Working scientifically (KS1 WS)</p> <ul style="list-style-type: none"><li>i) asking simple questions and recognising that they can be answered in different ways</li><li>ii) observing closely, using simple equipment.</li><li>iii) performing simple tests.</li><li>iv) identifying and classifying</li><li>v) using their observations and ideas to suggest answers to questions</li></ul>	<ul style="list-style-type: none"><li>• Make a seed helicopter and try it out in the playground. Collect dandelion plants and look carefully at their seeds, using a magnifying glass. Make a dandelion seed each and form together to make a dandelion plant (<b>Exploring, researching and analysing secondary sources</b>)</li><li>• Make a large burr out of clay and display in the classroom, with facts about how they are dispersed. (<b>Exploring, researching and analysing secondary sources</b>)</li><li>• Discuss hydroponics and the concept of growing bulbs in water. Set up and plant a bulb in a glass (<b>Exploring over time</b>).</li><li>• Place one egg shell with cress in a cupboard and talk about what might happen to the cress and its growth (<b>Exploring over time, pattern seeking</b>).</li><li>• Start a record of the cress growth and predict how long it will take for the cress to grow long enough to eat. (<b>Problem solving</b>)</li><li>• In teams, make the hydroponic plant out of craft and junk materials. Can you talk about each part of the plant model, including its name and function? (<b>Exploring, pattern seeking</b>)</li></ul>
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<p><b>Summer 2 – Habitats Gardens and Allotments</b></p> <p><i>Become allotment owners and gardeners by designing and setting up an area for growing edible plants. Learn how they grow and what they need to survive.</i></p> <p><i>Make a food chain game and understand how the sun's energy travels through the chain. Interpret this transfer of energy in a food chain through a dance, using masks and torches!</i></p>	<p>Plants (2P)</p> <ul style="list-style-type: none"><li>i) identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</li><li>ii) identify and name a variety of plants and animals in their habitats, including microhabitats.</li><li>iii) describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</li></ul> <p>Working scientifically (KS1 WS)</p> <ul style="list-style-type: none"><li>i) asking simple questions and recognising that they can be answered in different ways</li><li>ii) observing closely, using simple equipment.</li><li>iii) performing simple tests.</li><li>iv) identifying and classifying</li><li>v) using their observations and ideas to suggest answers to questions</li></ul>	<ul style="list-style-type: none"><li>• Take large tubs or tyres into the selected area of the playground and fill with compost to make a playground allotment. Plant edible plants (lettuces etc).</li><li>• Make bird scaring sculptures with found and recycled materials. <b>(Exploring, problem solving, researching and analysing secondary sources)</b></li><li>• Weed and tend to the allotment, understanding why the weeds need to be pulled out. Identify the weeds. Make flap pictures of the micro-habitat they have made and the mini-beast they hope it will attract. <b>(Exploring, pattern seeking).</b></li><li>• Visit a farm or have a farmer visit the school. Understand the jobs a farmer has to do and why. Play farms with the small world play and set up a role-play farm in the classroom <b>(Exploring, researching and analysing secondary sources).</b></li><li>• Make a food chain game using cups with photographs attached. Challenge another class to complete the food chains <b>(Exploring, researching and analysing secondary sources).</b></li><li>• Look more closely at what happens in a food chain. Understand that the sun's energy travels through a food chain and then back into the ground. Interpret the transfer of energy in a food chain through a dance, using masks and torches <b>(Researching and analysing secondary sources).</b></li></ul>
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**Hamilton Science: Types of Investigations**

‘Working Scientifically’ is the continuous area of study in the National Curriculum for Science in England. This aims to ensure that children have greater exposure to a range of enquiry types and that they recognize when the various forms of enquiry are taking place. This is to enable them to decide for themselves which type to use in order to tackle the question they are investigating. The following types of enquiry are included in Hamilton Science planning.

**Exploring:**

Discovering what happens through play and exploration, e.g. What happens when you add water to fabric?

**Observing over time:**

Often linked to exploring but with a time variable included, e.g. Using a thermometer to observe temperature changes of water.

**Sorting, classifying and identifying:**

Putting things into groups based on their characteristics, e.g. In how many ways can you sort these materials?

**Fair test:**

Used when we can control all the variables except the one we are changing, e.g. Which ‘towel’ material will absorb the most water?

**Pattern seeking:**

Used when there are too many variables to control and so a true fair test is not possible, e.g. Do some people have stronger muscles because they use them more?

**Problem solving:**

Using the science we know to solve a problem, e.g. Using what you have learned about how sounds are made and the loudness of sounds made by different materials, design an effective bird scarer that uses wind chimes or similar.

**Researching and analysing secondary sources**

Using secondary sources to help answer scientific questions that cannot be answered through practical investigations, e.g. Which materials are biodegradable?