

# Medium Term Plan – SCIENCE – Year 2 Autumn 1 & 2 **ANIMALS INCLUDING HUMANS**

## **Overarching Enquiry Question: How do animals change and survive?**

Length of unit - 9 Sessions

|                       | Disciplinary and Substantive Knowledge                                                                                                                                                                                                                                                                                                                                                                          | Suggested Vocabulary                                                                                                                                                                                | Learning Sequence                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| Pre-learning          | <ul style="list-style-type: none"><li>There are five types of vertebrates (mammals, fish, reptiles, amphibians, birds)</li><li>Vertebrates are animals that have a backbone.</li><li>Some animals are suitable to be kept as pets, but others are not.</li><li>Some animals give birth to live young, but others lay eggs.</li></ul>                                                                            | Offspring                                                                                                                                                                                           | Identify and match animals to their offspring and look for similarities and differences in families.<br><br><b>Learning</b><br>Animals have offspring which grow into adults.<br>Offspring have different names, for example: Goat/Kid, Swan/Cygnets, Frog/Tadpole<br><br><b>Activities</b><br>WS: Identify a variety of animals and match to its offspring.<br>SE: Look for patterns, similarities and differences in families. |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Learning in this unit | <u>To know that</u> <ul style="list-style-type: none"><li>Animals including humans have offspring which grow into adults. (L1, L2)</li><li>Animals including humans have basic needs for survival. (L3, L4)</li><li>Exercise, eating the right amounts of different types of food and hygiene is important for humans. (L5, L6, L7, L8, L9)</li></ul><br><u>Working Scientifically</u><br><u>To know how to</u> |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                       |                                                                                                                                                                                                                                                                                                                                | <u>Asking Questions (L3)</u><br>Ask simple questions, understanding that they can be answered in different ways.                                                                                    | Lifecycle                                                                                                                                                                                                                                                                                                                                                                                                                        | Research and draw the lifecycles of different animals.<br><br><b>Learning</b><br>A life cycle is the journey of a living thing from beginning to end.<br>All animals have a life cycle.<br>Frog – frogspawn, tadpole, froglet, frog. Chicken – Egg, hatchling, chick, hen/rooster<br><br><b>Activities</b><br>WS: Communicate findings using correct scientific language and illustrations.<br>SE: Research the lifecycles of different animals. |
|                       |                                                                                                                                                                                                                                                                                                                               | <u>Making Predictions (L8)</u><br>Begin to make predictions based on observations.                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                       |                                                                                                                                                                                                                                                                                                                              | <u>Setting up tests (L5)</u><br>Perform simple tests in pairs or small groups.                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                       |                                                                                                                                                                                                                                                                                                                              | <u>Observing and Measuring (L1)</u><br>Use a wider range of simple equipment and techniques to observe.<br>Consider multiple characteristics and features when identifying and classifying objects. |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                       |                                                                                                                                                                                                                                                                                                                              | <u>Recording Data (L6, L7)</u><br>Gather and record data in a simple table.                                                                                                                         | Survive                                                                                                                                                                                                                                                                                                                                                                                                                          | Ask simple questions about what animals need to survive and research to answer these questions.<br><br><b>Learning</b><br>Animals need water, food and air to survive.<br><br><b>Activities</b><br>WS: Ask simple questions relevant to the topic.<br>SE: Research facts about different animals to answer questions.                                                                                                                            |
|                       |                                                                                                                                                                                                                                                                                                                              | <u>Interpreting and Communicating Results (L2, L4)</u><br>Use results of investigations to answer enquiry questions.                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                       |                                                                                                                                                                                                                                                                                                                              | <u>Evaluating (L9)</u><br>Suggest simple improvements to their enquiries.                                                                                                                           | Survive                                                                                                                                                                                                                                                                                                                                                                                                                          | Identify how to care for different animals by observing their features.<br><br><b>Learning</b><br>Animals need water, food and air to survive – these things are different with every animal.<br><br><b>Activities</b><br>WS: Explain how you can look after different animals based on what they eat and where they live.<br>SE: Identify foods that animals eat by looking carefully at the animals' features.                                 |
|                       |                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                     | Pulse Exercise                                                                                                                                                                                                                                                                                                                                                                                                                   | Set up a comparative test to identify which activity raises my pulse rate the most.                                                                                                                                                                                                                                                                                                                                                              |

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><u>Scientific Enquiry</u></p> <table><tr><td></td><td><u>Comparative/Fair Testing (L5)</u><br/>Changing one variable to see its effect on another, whilst keeping all others the same.</td></tr><tr><td></td><td><u>Research (L2, L3)</u><br/>Using secondary sources of information to answer scientific questions.</td></tr><tr><td></td><td><u>Observation over time (L9)</u><br/>Observing changes that occur over a period of time ranging from minutes to months.</td></tr><tr><td></td><td><u>Pattern-seeking (L1, L8)</u><br/>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.</td></tr><tr><td></td><td><u>Identifying, grouping and classifying (L4, L6, L7)</u><br/>Making observations to name, sort and organise items.</td></tr></table> |  | <u>Comparative/Fair Testing (L5)</u><br>Changing one variable to see its effect on another, whilst keeping all others the same. |  | <u>Research (L2, L3)</u><br>Using secondary sources of information to answer scientific questions. |  | <u>Observation over time (L9)</u><br>Observing changes that occur over a period of time ranging from minutes to months. |  | <u>Pattern-seeking (L1, L8)</u><br>Identifying patterns and looking for relationships in enquiries where variables are difficult to control. |  | <u>Identifying, grouping and classifying (L4, L6, L7)</u><br>Making observations to name, sort and organise items. | <p><b>Learning</b><br/><i>Humans need exercise to stay healthy.</i><br/><i>Exercise makes your pulse faster.</i><br/><i>Different activities make your pulse reach different rates.</i></p> <p><b>Activities</b><br/><i>WS: Plan and carry out simple tests to explore pulse rates.</i><br/><i>SE: Set up a comparative test to explore pulse rates.</i></p> <p><b>Fruit and vegetables</b><br/>Carbohydrates<br/>Proteins<br/>Dairy<br/>Fats and Sugars</p> <p><b>Learning</b><br/><i>Food can be grouped into 5 main groups using the Eatwell Plate – fruit and vegetables, carbohydrates, proteins, dairy and fats/sugars.</i></p> <p><b>Activities</b><br/><i>WS: Sort foods into their food groups and record results.</i><br/><i>SE: Identify and classify foods based on their food group.</i></p> <p><b>Balanced Diet</b></p> <p>Identify and classify foods in different food groups and show my knowledge of balanced diets.</p> <p><b>Learning</b><br/><i>Humans need to eat the right balance of the 5 food groups to stay healthy.</i><br/><i>The Eatwell Plate shows you how much of each food a human should eat for a balanced diet.</i></p> <p><b>Activities</b><br/><i>WS: Use drawings and art to represent my knowledge of a balanced diet.</i><br/><i>SE: Identify and classify foods in different food groups</i></p> <p><b>Hygiene Microbe</b></p> <p>Predict how germs spread and look for patterns in my observations.</p> <p><b>Learning</b><br/><i>Humans need to have good personal hygiene</i><br/><i>Microbes spread easily which is how germs can spread</i><br/><i>It is important to wash our hands regularly to stop germs from spreading.</i></p> <p><b>Activities</b><br/><i>WS: Make simple predictions from what I have observed.</i><br/><i>SE: Look for patterns in how germs spread</i></p> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Comparative/Fair Testing (L5)</u><br>Changing one variable to see its effect on another, whilst keeping all others the same.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                   |                                                                                                                                 |                                                                                   |                                                                                                    |                                                                                   |                                                                                                                         |                                                                                   |                                                                                                                                              |                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Research (L2, L3)</u><br>Using secondary sources of information to answer scientific questions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                   |                                                                                                                                 |                                                                                   |                                                                                                    |                                                                                   |                                                                                                                         |                                                                                   |                                                                                                                                              |                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Observation over time (L9)</u><br>Observing changes that occur over a period of time ranging from minutes to months.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |                                                                                                                                 |                                                                                   |                                                                                                    |                                                                                   |                                                                                                                         |                                                                                   |                                                                                                                                              |                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Pattern-seeking (L1, L8)</u><br>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                                                                                                                 |                                                                                   |                                                                                                    |                                                                                   |                                                                                                                         |                                                                                   |                                                                                                                                              |                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p><b>Book/ Science Capital</b></p> <p>Flip Flap Zoo<br/>Health Care Assistant – video or visitor</p> <p><b>Resources</b></p> <ul style="list-style-type: none"><li>• Post it notes</li><li>• Flip flap zoo book (optional)</li><li>• Pulse metre/data logger (optional)</li><li>• Sample of foods from each food group e.g. Breads, cheese, lentil, fruit and vegetables, sweets or orange juice</li><li>• Glogerm gel (optional)</li><li>• Washing up bowls, Pepper, Washing up liquid, Skewer/cocktail sticks</li><li>• Bread, Zip lock bags</li></ul> | <p><b>Germ Microbe</b></p> <p>Set up and evaluate a test to observe how bacteria grows over time.</p> <p><b>Learning</b><br/><i>Viruses, bacteria and fungi are types of microbe (germ). Germs can make us ill.</i></p> <p><b>Activities</b><br/><i>WS: Evaluate a comparative test to see how germs spread.</i><br/><i>SE: Observe what happens to germs over time.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                   |                                                                                                                                 |                                                                                   |                                                                                                    |                                                                                   |                                                                                                                         |                                                                                   |                                                                                                                                              |                                                                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Overarching Enquiry Question: Why do living things live in different places?

Length of unit - 6 Sessions

|                       | Disciplinary and Substantive Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Suggested Vocabulary  | Learning Sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Pre-learning          | <ul style="list-style-type: none"><li>• The names of some common plants and types of trees.</li><li>• Some animals are suitable to be kept as pets, but others are not.</li><li>• All animals need water, air and food to survive</li><li>• Animals can be grouped into vertebrates and invertebrates</li><li>• Animals can be grouped into carnivores, herbivores and omnivores</li><li>• Animals, including humans, have offspring which grow into adults.</li></ul>                                                                                                                                                                                                                                                                                          | Living thing<br>Alive | Compare and group things into living and non-living.<br><br><b>Learning</b><br>The world is made up of things that are living and not living (non-living).<br>A living thing is something that is alive and needs food, water and air.<br>A thing that is not living does not need food, water and air because it is not alive.<br><br><b>Activities</b><br>WS: Ask questions about where the object came from.<br>SE: Identify and classify objects that are alive, dead and never been alive. |
| Learning in this unit | <u>To know that</u> <ul style="list-style-type: none"><li>• There are differences between things that are living, dead and things that have never been alive. (L1, L2)</li><li>• Most living things live in habitats to which they are suited and describe how different habitats provide for basic needs of different kinds of animals and plants and how they depend on each other. (L3, L4, L5)</li><li>• There are a variety of plants and animals in their habitat, including microhabitats, to identify and name. (L5)</li><li>• Animals obtain their food from plants and other animals, using the idea of a simple food chain, and there are different sources of food.</li><li>• (L6)</li></ul> <u>Working Scientifically</u><br><u>To know how to</u> |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                       | <div><div></div><div>Asking Questions (L1, L2)<br/>Ask simple questions, understanding that they can be answered in different ways.</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Dead<br>Never alive   | Ask questions about objects to identify whether they are alive, dead or never been alive.<br><br><b>Learning</b><br>A living thing is something that is currently alive and needs food, air and water to stay alive.<br>Something that is dead was once living but is no longer alive.<br>A non-living thing is something that has never been alive.                                                                                                                                            |
|                       | <div><div></div><div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|                       | <div><div></div><div>Recording Data (L5)<br/>Gather and record data in a simple table.</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                       | <div><div></div><div>Interpreting and Communicating Results (L3, L4, L6)<br/>Use results of investigations to answer enquiry questions.</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                       | <div><div></div><div></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Habitat               | Use observations to draw a conclusion about which habitat an animal lives in.<br><br><b>Learning</b><br>A habitat is where a group of plants and animals live.<br>A habitat provides the things an animal or plant needs to survive. Most living things live in habitats to which they are suited.<br><br><b>Activities</b><br>WS: Draw basic conclusions about where animals live using scientific knowledge, observations and comparisons.<br>SE: Research different animal habitats.         |

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|                                                                                   | <p><u>Scientific Enquiry</u><br/><u>To know how to</u></p> <table><tr><td></td><td></td></tr><tr><td></td><td><u>Research (L3, L4, L6)</u><br/>Using secondary sources of information to answer scientific questions.</td></tr><tr><td></td><td></td></tr><tr><td></td><td><u>Pattern-seeking (L5)</u><br/>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.</td></tr><tr><td></td><td><u>Identifying, grouping and classifying (L1, L2)</u><br/>Making observations to name, sort and organise items.</td></tr></table> |                                                                                                                                                                                                                                                                                                                                                                                             |  |  | <u>Research (L3, L4, L6)</u><br>Using secondary sources of information to answer scientific questions. |  |  |  | <u>Pattern-seeking (L5)</u><br>Identifying patterns and looking for relationships in enquiries where variables are difficult to control. |  | <u>Identifying, grouping and classifying (L1, L2)</u><br>Making observations to name, sort and organise items. | <p><b>Habitat</b></p> <p>Research an animal and use labels to show how they are suited to their habitat.</p> <p><b>Learning</b><br/><i>Animals are suited to specific habitats in different ways: for example, lions are a sandy colour to help them camouflage [savannah]; hedgehogs hibernate to escape the cold weather [woodland]; zebras have strong teeth to eat a lot of grass [grasslands]</i></p> <p><b>Activities</b><br/>WS: Record my observations using labelled drawings<br/>SE: Research facts about my animal using observations and secondary resources.</p> |
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|  | <u>Research (L3, L4, L6)</u><br>Using secondary sources of information to answer scientific questions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                   |                                                                                                        |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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|  | <u>Pattern-seeking (L5)</u><br>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                   |                                                                                                        |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|  | <u>Identifying, grouping and classifying (L1, L2)</u><br>Making observations to name, sort and organise items.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                   |                                                                                                        |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Microhabitat</b></p> <p>Identify patterns of where to find living things in microhabitats and record my findings</p> <p><b>Learning</b><br/><i>A microhabitat is a very small part of a habitat. Our school woodland area is a microhabitat where many living things live.</i></p> <p><b>Activities</b><br/>WS: Record my findings from the woodland area using tables and pictograms.<br/>SE: Look for patterns in my data as to where different minibeasts live.</p> |  |                                                                                   |                                                                                                        |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Book/ Science Capital</b></p>                                               | <p>Mummy, Can I have a Penguin?</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                                                                                   |                                                                                                        |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Resources</b></p>                                                           | <ul style="list-style-type: none"><li>• Post it notes</li><li>• Doll and puppet.</li><li>• Sorting hoops.</li><li>• Large leaves, water, grass (Astro turf) table lamp.</li><li>• Sand, mini cactus, rocks, lamp</li><li>• Frozen grass/mud or fake snow, ice. OR PICTURES printed from slides</li><li>• Plastic animals or pictures of animals from slides.</li><li>• Soil, grasses, shrubs, sand, lamp. Leaves, sticks, rocks, trees, gravel. Flocking grass/Astro turf, grasses, water, lamp.</li><li>• Mini beast equipment e.g., pooter, umbrella, sieve, petri dishes, viewing tanks, nets, magnifying glasses.</li></ul>                                                                                                                                                                                                                                                                                                                                                                       | <p><b>Food chain</b></p> <p>Research what different animals eat to create a food chain.</p> <p><b>Learning</b><br/><i>A food chain shows how each living thing gets its food. Some animals eat plants and some animals eat other animals. Each link in the chain is food for the next link.</i></p> <p><b>Activities</b><br/>WS: Communicate my findings as a food chain.<br/>SE: Use books, pictures and videos to find out what animals eat.</p>                           |  |                                                                                   |                                                                                                        |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Overarching Enquiry Question: Which materials would you choose?

Length of unit - 6 Sessions

|                                                                                                                                                                    | Disciplinary and Substantive Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                  | Suggested Vocabulary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Learning Sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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| Pre-learning                                                                                                                                                       | <ul style="list-style-type: none"><li>• Objects are things that you can touch or see.</li><li>• Objects are made from materials.</li><li>• Some materials that objects are made from (e.g., glass, wood, plastic)</li><li>• Some words to describe materials (e.g., bendy, soft, rough absorbent)</li><li>• Materials which are natural, and which are man-made</li></ul>                                                                                               | Materials<br>Properties<br>Wood<br>Plastic<br>Metal<br>Glass<br>Paper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Identify, compare and group materials by their properties.<br><br><b>Learning</b><br>Some common materials are wood, plastic, metal, rock, paper and glass.<br>Different materials have different properties (children to give their own properties based on prior learning from Year 1)<br><br><b>Activities</b><br>WS: Identify a variety of materials by looking at objects closely.<br>SE: Compare and group materials together depending on their properties.                                                                |
| Learning in this unit                                                                                                                                              | <u>Specific Knowledge</u> <ul style="list-style-type: none"><li>• To identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper, cardboard for uses. (L1, L2, L3, L4, L5, L6)</li><li>• Find out how the shape of solid objects made from materials can be changed by squashing, bending, twisting and stretching. (L3, L4, L5)</li></ul> <u>Working Scientifically</u><br><u>To know how to</u> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                    |  <div>Making Predictions (L5)<br/>Begin to make predictions based on observations.</div>                                                                                                                                                                                                                                                                                              | Brick<br>Rock<br>Cardboard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Identify the materials in objects around me and record as a labelled diagram.<br><br><b>Learning</b><br>Brick, rock and cardboard are also examples of materials.<br>Objects can be made of a combination of different materials.<br>Materials are carefully chosen based on their properties (children to give their own properties based on prior learning from Year 1)<br><br><b>Activities</b><br>WS: Record my findings using labelled diagrams.<br>SE: Find objects in the surroundings and identify what they are made of. |
|                                                                                                                                                                    |  <div>Setting up tests (L4)<br/>Perform simple tests in pairs or small groups.</div>                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                    |  <div>Observing and Measuring (L1)<br/>Use a wider range of simple equipment and techniques to observe.<br/>Consider multiple characteristics and features when identifying and classifying objects.</div>                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                                                                    |  <div>Interpreting and Communicating Results (L2, L3)<br/>Use results of investigations to answer enquiry questions.</div>                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  <div>Evaluating (L6)<br/>Suggest simple improvements to their enquiries.</div> | Suitable<br>Squash<br>Bend<br>Twist<br>Stretch<br>Push<br>Pull<br>Squeeze<br>Malleable                                                                                                                                                                                                                                                                                                                                                                                  | Decide if materials are malleable and explain what malleable materials are used for.<br><br><b>Learning</b><br>Some materials can be pushed, pulled, stretched, squeezed, twisted, rolled and bent – this is called being malleable.<br>Some items need malleable materials and others don't - – for example, metal is waterproof, but is not suitable for a raincoat as it's not malleable.<br><br><b>Activities</b><br>WS: Draw a basic conclusion using scientific language to consider if materials are malleable.<br>SE: Classify materials as malleable or non-malleable. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |                                                                                                |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|                                                                                   | <p><u>Scientific Enquiry</u></p> <table><tr><td></td><td><u>Comparative/Fair Testing (L4)</u><br/>Changing one variable to see its effect on another, whilst keeping all others the same.</td></tr><tr><td></td><td><u>Research (L6)</u><br/>Using secondary sources of information to answer scientific questions.</td></tr><tr><td></td><td></td></tr><tr><td></td><td><u>Pattern-seeking (L5)</u><br/>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.</td></tr><tr><td></td><td><u>Identifying, grouping and classifying (L1, L2, L3)</u><br/>Making observations to name, sort and organise items.</td></tr></table>                                                                                                                                 |  | <u>Comparative/Fair Testing (L4)</u><br>Changing one variable to see its effect on another, whilst keeping all others the same.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | <u>Research (L6)</u><br>Using secondary sources of information to answer scientific questions. |  |  |  | <u>Pattern-seeking (L5)</u><br>Identifying patterns and looking for relationships in enquiries where variables are difficult to control. |  | <u>Identifying, grouping and classifying (L1, L2, L3)</u><br>Making observations to name, sort and organise items. | <p><b>Waterproof</b><br/><b>Suitable</b></p> | <p>Compare the suitability of materials in clothes.</p> <p><b>Learning</b><br/><i>Different materials are suitable for different purposes.</i><br/><i>Clothes need to be malleable, waterproof and strong.</i></p> <p><b>Activities</b><br/><i>WS: Carry out a simple comparative test to see which materials are waterproof.</i><br/><i>SE: Compare the suitability of materials using a comparative test.</i></p> |
|  | <u>Comparative/Fair Testing (L4)</u><br>Changing one variable to see its effect on another, whilst keeping all others the same.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |                                                                                                |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|  | <u>Research (L6)</u><br>Using secondary sources of information to answer scientific questions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |                                                                                                |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |
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|  | <u>Pattern-seeking (L5)</u><br>Identifying patterns and looking for relationships in enquiries where variables are difficult to control.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |                                                                                                |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|  | <u>Identifying, grouping and classifying (L1, L2, L3)</u><br>Making observations to name, sort and organise items.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                   |                                                                                                |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>Book/ Science Capital</b></p>                                               | <p>The Three Little Pigs<br/>John Dunlop</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>Protection</b></p>                                                          | <p>Predict which material is best for protection and spot patterns in the results.</p> <p><b>Learning</b><br/><i>Different materials are suitable for different purposes.</i><br/><i>Some materials are softer.</i><br/><i>Softer materials provide better protection.</i></p> <p><b>Activities</b><br/><i>WS: Predict which material will best protect Humpty Dumpty.</i><br/><i>SE: See patterns between the materials used to protect the egg</i></p>                                                                                                                                                                                                        |                                                                                   |                                                                                                |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>Resources</b></p>                                                           | <ul style="list-style-type: none"><li>• Post it notes</li><li>• Range of materials and a bag (e.g., spoon, coin, fabric cap, woolly hat, paper, acorn, stone, peg)</li><li>• Range of resources from each category. E.g.<br/>Metal- aluminium foil, nuts, bolts, screws, coins, wire, paper clips, metal bottle tops, keys etc.<br/>Wood- wooden lolly sticks, skewers, cocktail sticks, pegs, twigs, tree bark, wooden spoons, small pieces of wood.<br/>Plastic- Plastic bags, cling film, bubble wrap, plastic cutlery, plastic packaging, lego or duplo, CDs, sequins, bottle tops.<br/>Paper- writing paper, sugar paper, crepe paper, newspaper, tissue paper, tracing paper, sticky notes.<br/>Fabric- wood, fur, leather, suede, voile, netting, denim and cotton.</li><li>• Plasticine</li><li>• Dice</li><li>• Three little pigs’ book (optional)</li><li>• Lollypop sticks, pasta, marshmallows, Lego or Polydron, cardboard, wooden bricks, paper cups, balsa wood etc.</li><li>• Materials- newspaper, cotton wool, polystyrene, sponge, water, tissue, fabric, bubble wrap. Zip lock bag</li><li>• Eggs.</li><li>• Reflective equipment to share if you have it.</li><li>• Ramp/strong card, Selection of balls</li></ul> | <p><b>Natural</b><br/><b>Damage</b></p>                                           | <p>Identify where different materials come from and how some materials are less harmful to planet Earth.</p> <p><b>Learning</b><br/><i>Some materials can be found naturally or they are grown, and these can cause less harm to planet Earth.</i><br/><i>Some materials may cause harm to the planet when they are made, or if they are not recycled.</i><br/><i>Scientists design and invent new materials that cause little or no harm to Earth.</i></p> <p><b>Activities</b><br/><i>WS: Evaluate the suitability of materials based on what might be the most environmentally friendly</i><br/><i>SE: Identify where different materials come from.</i></p> |                                                                                   |                                                                                                |                                                                                   |  |                                                                                   |                                                                                                                                          |                                                                                   |                                                                                                                    |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Overarching Enquiry Question: What should I do to grow a healthy plant?

Length of unit - 6 Sessions

|                       | Disciplinary and Substantive Knowledge                                                                                                                                                                                                                                                                                                                                                                                         | Suggested Vocabulary                                                                                                                                                                                | Learning Sequence                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Pre-learning          | <ul style="list-style-type: none"><li>Plants can grow.</li><li>The names of some common garden plants and the names of some common wild plants (e.g., daisy, dandelion, nettle).</li><li>Deciduous trees lose their leaves in the autumn every year.</li><li>Evergreen trees have green leaves all year round.</li><li>The parts of a plant including petals, fruits, roots, bulbs, seeds, stem, trunks and branches</li></ul> | Plant<br>Seed<br>Bulb                                                                                                                                                                               | Observe and compare plants, seeds and bulbs.<br><br><b>Learning</b><br>Different things grow from different seeds.<br>A bulb stores food while the plant is resting.<br>Bulbs can grow every year, seeds only grow once.<br><br><b>Activities</b><br>WS: Make careful observations of seeds and bulbs.<br>SE: Spot patterns in different plants, seeds and bulbs |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Learning in this unit | <u>To know that</u><br><br><ul style="list-style-type: none"><li>Seeds and bulbs grow into mature plants and observe this happening. (L1, L2, L3)</li><li>Plants need water, light and a suitable temperature to grow and stay healthy. (L4, L5, L6)</li></ul><br><u>Working Scientifically</u><br><u>To know how to</u>                                                                                                       |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                                                                             | <u>Making Predictions (L5)</u><br>Begin to make predictions based on observations.                                                                                                                  | Life cycle<br>Shoot<br>Bud<br>Wilt                                                                                                                                                                                                                                                                                                                               | Observe and explain how plants grow over time.<br><br><b>Learning</b><br>Plants go through a life cycle.<br>A life cycle is the journey of a living thing from beginning to end.<br>A plants life cycle is: seeds, shoots, buds, flowers, wilts.<br>Sunflowers grow seeds to make new sunflowers.<br><br><b>Activities</b><br>WS: Make observations on how plants grow and offer explanations.<br>SE: Observe how plants grow over time.                                                                                      |
|                       |                                                                                                                                                                                                                                                                                                                                             | <u>Setting up tests (L4)</u><br>Perform simple tests in pairs or small groups.                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                                                                             | <u>Observing and Measuring (L2)</u><br>Use a wider range of simple equipment and techniques to observe.<br>Consider multiple characteristics and features when identifying and classifying objects. |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                                                                             | <u>Recording Data (L1, L3)</u><br>Gather and record data in a simple table.                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                       |                                                                                                                                                                                                                                                                                                                                             | <u>Evaluating (L6)</u><br>Suggest simple improvements to their enquiries.                                                                                                                           | Water<br>Light<br>Temperature<br>Healthy                                                                                                                                                                                                                                                                                                                         | Observe and explain the differences between a healthy and unhealthy plant.<br><br>Plants need water, light, and the correct temperature to grow.<br>Healthy plants grow strong and upright. The leaves are firm and flowers fruit and root systems are well formed.<br>An unhealthy plant can be dry, dull, brown or yellow in colour and unable to stand upright.<br><br><b>Activities</b><br>WS: Carry out a comparative test to observe seed germination.<br>SE: Carry out a comparative test to observe seed germination. |

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                   |                                                                                                |                                                                                   |                                                                                                                             |                                                                                   |  |                                                                                   |                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|                                                                                   | <p><u>Scientific Enquiry</u><br/><u>To know how to</u></p> <table><tr><td></td><td><u>Comparative/Fair Testing (L4)</u><br/>Changing one variable to see its effect on another, whilst keeping all others the same.</td></tr><tr><td></td><td><u>Research (L6)</u><br/>Using secondary sources of information to answer scientific questions.</td></tr><tr><td></td><td><u>Observation over time (L2, L5)</u><br/>Observing changes that occur over a period of time ranging from minutes to months.</td></tr><tr><td></td><td></td></tr><tr><td></td><td><u>Identifying, grouping and classifying (L1, L3)</u><br/>Making observations to name, sort and organise items.</td></tr></table> |  | <u>Comparative/Fair Testing (L4)</u><br>Changing one variable to see its effect on another, whilst keeping all others the same.                                                                                                                                                                                                                                                                                               |  | <u>Research (L6)</u><br>Using secondary sources of information to answer scientific questions. |  | <u>Observation over time (L2, L5)</u><br>Observing changes that occur over a period of time ranging from minutes to months. |  |  |  | <u>Identifying, grouping and classifying (L1, L3)</u><br>Making observations to name, sort and organise items. | Germination | <p>Observe and explain how a seed germinates.</p> <p><b>Learning</b><br/><i>When seeds grow, this is called germination.</i><br/><i>Different seeds can germinate in different places.</i><br/><i>The conditions need to be right for a seed to germinate.</i><br/><i>Plants need water, light, and the correct temperature to grow.</i></p> <p><b>Activities</b><br/>WS: Carry out simple tests to see which seeds germinate first.<br/>SE: Carry out a comparative test to see which seeds germinate first.</p> |
|  | <u>Comparative/Fair Testing (L4)</u><br>Changing one variable to see its effect on another, whilst keeping all others the same.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                   |                                                                                                |                                                                                   |                                                                                                                             |                                                                                   |  |                                                                                   |                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  | <u>Research (L6)</u><br>Using secondary sources of information to answer scientific questions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                   |                                                                                                |                                                                                   |                                                                                                                             |                                                                                   |  |                                                                                   |                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|  | <u>Observation over time (L2, L5)</u><br>Observing changes that occur over a period of time ranging from minutes to months.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                   |                                                                                                |                                                                                   |                                                                                                                             |                                                                                   |  |                                                                                   |                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|  | <u>Identifying, grouping and classifying (L1, L3)</u><br>Making observations to name, sort and organise items.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                   |                                                                                                |                                                                                   |                                                                                                                             |                                                                                   |  |                                                                                   |                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Book/ Science Capital</b>                                                      | Sam plants a Sunflower<br>Carl Linnaeus<br>George Washington Carver<br>Alexander Von Humboldt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Water<br>Light<br>Temperature                                                     | <p>Make basic predictions and observe how plants grow over time.</p> <p><b>Learning</b><br/><i>Plants need water, light and the correct temperature to grow.</i><br/><i>The growth of plants over time can be observed and recorded in different ways.</i></p> <p><b>Activities</b><br/>WS: Make basic predictions on which seeds will/won't germinate and explain my reasons.<br/>SE: Observe how plants grow over time.</p> |                                                                                   |                                                                                                |                                                                                   |                                                                                                                             |                                                                                   |  |                                                                                   |                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Resources</b>                                                                  | <ul style="list-style-type: none"><li>• Post it notes</li><li>• Dice</li><li>• Different seeds- acorns, conkers, sunflower, poppy, coriander, runner beans, kidney or mung beans, cress, sesame, coffee, brown rice, or coconut.</li><li>• Magnifying glasses</li><li>• Collection pots</li><li>• Plastic plant pots or cardboard planters.</li><li>• Soil, water, cocktail sticks (2 per group)</li><li>• Plastic cups, materials such as cotton wool, tissue, soil, toilet paper, stones and sand, cress seeds.</li><li>• Bulbs e.g., tulip, daffodil, hyacinth.</li><li>• Magnifying glasses.</li></ul> <p>Seeds (Cress), planting pots/cups, Soil, water, thermometers, (airtight container if investigating no air)</p>                                                                                                                                                                                                                                                                                                                                                                                     | Botanist                                                                          | <p>Recap key concepts about plants and evaluate my learning.</p> <p><b>Learning</b><br/><i>Plants need water, light and the correct temperature to be healthy.</i><br/><i>If a plant does not have water, light or the correct temperature, it will not be healthy.</i></p> <p><b>Activities</b><br/>WS: Apply my learning and evaluate my progress<br/>SE: Explore what you have learned from your experiments</p>           |                                                                                   |                                                                                                |                                                                                   |                                                                                                                             |                                                                                   |  |                                                                                   |                                                                                                                |             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |