


Science Skills Progression Map

|  | By the end of Early Years: | Year 1 Humans Seasonal Changes Everyday Materials Plants Animals | Year 2 The Environment Everyday Materials Living Things and Their Habitats Animals inc. Humans Plants Super Scientists & Innovative Inventors | Year 3 Rocks Light Forces & Magnets Animals incl. Humans Plants Super Scientists & Innovative Inventors | Year 4 Living Things and Their Habitats Electricity States of Matter Animals inc. Humans Sound Super Scientists & Innovative Inventors | Year 5 Earth and Space Properties and Changes of Materials Forces Living Things and Their Habitats Super Scientists & Innovative Inventors Animals inc. Humans | Year 6 Electricity Living Things and Their Habitats Animals Inc. Humans Evolution and Inheritance Super Scientists & Innovative Light |
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| <p>Working Scientifically –</p> <p>By the end of each phase, pupils will be taught to use the following practical scientific methods, processes and skills:</p> | <p>Explore the natural world around them</p> <p>Describe what they see, hear and feel whilst outside</p> <p>Hands on exploration</p> | <p>Begin to ask simple questions and recognise that they can be answered in different ways</p> <p>Begin to use simple equipment and measurement to observe closely</p> <p>Begin to perform simple tests</p> <p>Begin to identify and classify</p> <p>Begin to use observations and ideas to suggest answers to questions</p> <p>Begin to gather and record data to help in answering questions</p> <p>Begin to explore surrounding world</p> <p><i>Begin to raise own questions</i></p> <p><i>Begin to notice patterns and relationships</i></p> <p><i>Begin to use secondary sources to find answers</i></p> | <p>Ask simple questions and recognise that they can be answered in different ways</p> <p>Use simple equipment and measurement to observe closely</p> <p>Perform simple tests</p> <p>Identify and classify</p> <p>Use observations and ideas to suggest answers to questions</p> <p>Gather and record data to help in answering questions</p> <p>Explore surrounding world</p> <p><i>Raise own questions</i></p> <p><i>Notice patterns and relationships</i></p> <p><i>Use secondary sources to find answers</i></p> | <p>Ask some relevant questions</p> <p>Begin to use different types of scientific enquiries to answer questions</p> <p>Begin to set-up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Begin to gather, record, classify and present data in a variety of ways to help in answer questions</p> <p>Begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Begin to report on findings from</p> | <p>Ask relevant questions</p> <p>Use different types of scientific enquiries to answer questions</p> <p>Set-up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gather, record, classify and present data in a variety of ways to help in answer questions</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Report on findings from enquiries,</p> | <p>Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Begin to use test results to make predictions to set up further comparative and fair tests</p> <p>Begin to report and present findings from enquiries, including conclusions, causal relationships and</p> | <p>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>Use test results to make predictions to set up further comparative and fair tests</p> <p>Report and present findings from enquiries, including conclusions, causal relationships and</p> |

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| | | <p><i>Begin to use scientific language and read and spell age-appropriate scientific vocabulary</i></p> | <p><i>Use scientific language and read and spell age-appropriate scientific vocabulary</i></p> | <p>enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Begin to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Begin to identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>Begin to use straightforward scientific evidence to answer questions or to support their findings</p> <p><i>Begin to look for naturally occurring patterns and relationships</i></p> <p><i>Identify some new questions arising from data</i></p> <p><i>Begin to use relevant scientific language to discuss their ideas</i></p> <p><i>Begin to communicate findings in ways that are appropriate for different audiences</i></p> <p><i>Begin to recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations</i></p> | <p>including oral and written explanations, displays or presentations of results and conclusions</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>Use straightforward scientific evidence to answer questions or to support their findings</p> <p><i>Look for naturally occurring patterns and relationships</i></p> <p><i>Identify new questions arising from data</i></p> <p><i>use relevant scientific language to discuss their ideas</i></p> <p><i>Communicate findings in ways that are appropriate for different audiences</i></p> <p><i>Recognise when and how secondary sources might help to answer questions that cannot be answered through practical investigations</i></p> | <p>explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Begin to identify scientific evidence that has been used to support or refute ideas or arguments</p> <p><i>Begin to recognise that scientific ideas change and develop over time</i></p> <p><i>Begin to separate opinion from fact</i></p> <p><i>Decide how to record data from a choice of familiar approaches</i></p> <p><i>Begin to look for different causal relationships</i></p> <p><i>Begin to use results to identify when further tests and observations might be needed</i></p> <p><i>Begin to use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas</i></p> <p><i>Read, spell and pronounce scientific vocabulary correctly.</i></p> | <p>explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments</p> <p><i>Recognise that scientific ideas change and develop over time</i></p> <p><i>Begin to separate opinion from fact</i></p> <p><i>Decide how to record data from a choice of familiar approaches</i></p> <p><i>Look for different causal relationships</i></p> <p><i>Use results to identify when further tests and observations might be needed</i></p> <p><i>Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas</i></p> <p><i>Read, spell and pronounce scientific vocabulary correctly.</i></p> |
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| <p>Plants (Years, 1, 2 & 3)</p> | <p>The Natural World:</p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants;</p> <p>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class</p> <p>Plant seeds and care for growing plants</p> <p>Understand key features of life cycle of a plant</p> | <p>Identify and name a variety of common, wild and garden plants in local area (inc. Deciduous and evergreen trees)</p> <p>Identify and describe the basic structure of a variety of common, flowering plants, including trees</p> | <p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Learn and describe how plants need water, light and a suitable temperature to grow and stay healthy</p> | <p>Identify and describe functions of different parts of flowering plants inc. roots, stem, trunk, leaves and flowers</p> <p>Explore the requirements of plants for life and growth (inc. Air, light, water, nutrients from soil and room to grow) and know how they vary from plant to plant.</p> <p>Investigate the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle of flowering plants, inc. Pollination, seed formation and seed dispersal</p> | | | |
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| <p>Living Things and Their Habitats (Years 2, 4, 5 & 6)</p> | <p>Explore the natural world around them, making observations and drawing pictures of animals and plants;</p> <p>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class</p> <p>Know about similarities and differences between different living things</p> | | <p>Explore and compare the differences between things that are living, dead and things that have never been alive</p> <p>Identify that most living things live in habitats to which they are suited</p> <p>Describe how different habitats provide for the basic needs of different kinds of animals and plants and how they depend on each other</p> <p>Identify and name a variety of plants and animals in their habitats, inc. Microhabitats</p> <p>Describe how animals obtain food from plants and other animals, using the idea of a simple food chain and identify and name different sources of food</p> | | <p>Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p> | <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the life process of reproduction in some plants and animals</p> | <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, inc. microorganisms, plants and animals</p> <p>Give reasons for classifying plants and animals, based on specific characteristics</p> |
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| <p>Animals including Humans</p> <p>(Years, 1, 2, 3, 4, 5 & 6)</p> | <p>Explore the natural world around them, making observations and drawing pictures of animals and plants;</p> <p>Understand some important processes and changes in the natural world around them</p> <p>Understand key features of a life cycle of an animal</p> | <p>Identify and name a variety of common animals, inc. fish, amphibians, reptiles, birds and mammals.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>I can describe and compare the structure of a variety of common animals inc. Fish, amphibians, reptiles, birds, mammals inc. Pets.</p> <p>Identify, name, draw and label parts of the human body</p> <p>Associate parts of the body with each sense</p> <p>Use senses to compare different textures, sounds and smells</p> | <p>Know that animals, inc. Humans, have offspring which grow into adults</p> <p>Learn and describe the basic needs of animals inc. Humans for survival inc. water, food and air</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene</p> | <p>Identify animals inc. humans, need the right types and amounts of nutrition</p> <p>Know that animals inc. humans cannot make their own food and get the nutrition from what they eat</p> <p>Identify that human and some animals have skeletons and muscles for support, protection and movement</p> | <p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p> | <p>Describe the changes as humans develop to old age</p> | <p>Identify and name the main parts of the human circulatory system</p> <p>Describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way a body functions</p> <p>Describe the way in which nutrients and water are transported within animals, inc. humans</p> |
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| <p>Seasonal Changes (Year 1)</p> | <p>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p> <p>Understand the effect of changing seasons on the natural world around them</p> | <p>Observe changes across the autumn & winter seasons / spring & summer seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies</p> | | | | | |
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| <p>Evolution and Inheritance (Year 6)</p> | | | | | | | <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in</p> |
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| | | | | | | | different ways and that adaptation may lead to evolution |
| Materials (Years 1, 2 & 5) | <p>Know about similarities and differences between different materials</p> <p>Explore collections of materials with similar/different properties</p> <p>Notice changes of materials</p> | <p>Distinguish between and object and the material from which it is made</p> <p>Identify and name a variety of everyday materials inc. Wood, plastic, glass, metal, water & rock</p> <p>Describe physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials, based on physical properties</p> | <p>Identify and compare the suitability of a variety of everyday materials, inc. Wood, metal, plastic, glass, brick, rock, paper and cardboard, for particular uses</p> <p>Find out how the shapes of solid objects made from some materials can change by squashing, bending, twisting and stretching</p> | | | <p>Compare and group together everyday materials on the basis of their properties, inc. their hardness, solubility, transparency, conductivity (Electrical and thermal) and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution</p> <p>Describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated inc.</p> | |

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| | | | | | | <p>through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Explain that some changes result in the formation of new materials and that this kind of change is not usually reversible, inc. changes associated with burning and the action of acid on bicarbonate of soda</p> | |
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| States of Matter (Year 4) | Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | | | | <p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>Observe that some materials change state when they are heated or cooled</p> <p>Explain what happens materials are heated or cooled</p> <p>Measure or research the temperature at which materials change state in degrees Celsius (C)</p> <p>Identify the part played by evaporation and condensation in the water cycle</p> <p>Associate the rate of evaporation with temperature</p> | | |
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| Rocks (Year 3) | | | | <p>Compare and group together different kinds of rocks, based on appearance and simple physical properties</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Recognise that soils are made from rocks and organic matter</p> | | | |
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| <p>Light (Year 3 & Year 6)</p> | | | | <p>Recognise that light is needed in order to see things</p> <p>Recognise that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect eyes</p> <p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>Find patterns in the way that the size of shadows change</p> | | | <p>Recognise that light appears to travel in straight lines</p> <p>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> |
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| <p>Forces and Magnets (Year 3 & 5)</p> | <p>Explore and talk about different forces they can feel</p> | | | <p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between 2 objects but magnetic forces can act as a distance</p> <p>Observe magnets attract or repel each other</p> <p>Observe magnets attract some materials and not others</p> <p>Compare and group a variety of everyday materials on basis of whether they are attracted to a magnet</p> <p>Identify some magnetic materials</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing</p> | | <p>Explain that unsupported objects fall towards the earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction that act between moving surfaces</p> <p>Recognise that some mechanisms, inc. Levers, pullets and gears, allow a smaller force to have a greater effect</p> | |
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| <p>Electricity (Year 4 & 6)</p> | | | | | <p>Identify common appliances that run on electricity</p> <p>Construct a simple series circuit</p> <p>Identify and name basic parts of a circuit inc. cells, wires, bulbs, switches and buzzers</p> <p>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>Recognise that a switch opens and closes a circuit</p> <p>Associate switches with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators</p> <p>Associate metals with being good conductors</p> | | <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Compare and give reasons for variations in how components function, inc. Brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>Use recognised symbols when representing a simple circuit in a diagram</p> |
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| Sound (Year 4) | | | | | <p>Identify how sounds are made</p> <p>Associate some sounds being made by vibrating</p> <p>Recognise that vibrations from sounds travel through a medium to the ear</p> <p>Find patterns between the pitch of a sound and features of the object that produced it</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>Recognise that sounds get fainter as the distance from the sound source increases</p> | | |
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**Earth and Space
(Year 5)**

Describe and explain the movement of the Earth and other planets, relative to the Sun in the solar system

Describe the movement of the Moon relative to the Earth

Describe the Sun, Earth and Moon relative the Earth

Use the idea of the Earth's rotation to explain day and night and apparent movement of the Sun across the sky