

### Subject Specific-Skills: Age-related Expectations in Science

| Year Group         | Understanding the World  |                                     |                             | Expressive Arts and Design    |
|--------------------|--|-------------------------------------|-----------------------------|-------------------------------|
| <b>Early Years</b> | People and communities   | The World                           | Technology                  | Exploring Media and Materials |
|                    | Biology  | Chemistry                           | Physics                     |                               |
| <b>1</b>           | Plants<br>Animals (including Humans)   | Everyday Materials                  | Seasonal Changes            |                               |
| <b>2</b>           | Living Things in their habitats<br>Plants<br>Animals, including Humans                     | Uses of Everyday Materials          |                             |                               |
| <b>3</b>           | Plants<br>Animals, including Humans  | Rocks                               | Light<br>Forces and Magnets |                               |
| <b>4</b>           | Living Things and their Habitats<br>Animals, including Humans                              | States of Matter                    | Sound<br>Electricity        |                               |
| <b>5</b>           | Living Things and their Habitats<br>Animals, including Humans                              | Reversible and Irreversible Changes | Earth and Space<br>Forces   |                               |
| <b>6</b>           | Living Things and their Habitats<br>Animals, including Humans<br>Evolution and Inheritance |                                     | Light<br>Electricity        |                               |

## Early Years

| Working Scientifically   | Understanding the World  |   |   | Expressive Arts and Design   |
|--|--|---|---|--|
| <p>I can:</p> <ul style="list-style-type: none"> <li>• Ask simple questions</li> <li>• Use simple equipment to make observations</li> <li>• Carry out simple tests</li> <li>• Identify and classify things</li> <li>• Suggest what I have found out</li> </ul> | <p><b>People and communities</b></p> <p>In Nursery I can:</p> <ul style="list-style-type: none"> <li>• Show interest in the lives of people who are familiar to them.</li> <li>• Show interest in different occupations and ways of life.</li> <li>• Know some of the things that make them unique, and can talk about some of the similarities and differences in relation to friends or family.</li> </ul> <p>In Reception I can:</p> <p><b>Early Learning Goal</b></p> <p><b>Children talk about past and present events in their own lives and in the lives of family members. They know about similarities and differences between themselves and others, and among families, communities and traditions.</b></p> | <p><b>The World</b></p> <p>In Nursery I can:</p> <ul style="list-style-type: none"> <li>• Comment and asks questions about aspects of their familiar world such as the place where they live or the natural world.</li> <li>• Can talk about some of the things they have observed such as plants, animals, natural and found objects.</li> <li>• Talk about why things happen and how things work.</li> <li>• Develop an understanding of growth, decay and changes over time.</li> <li>• Show care and concern for living things and the environment.</li> </ul> <p>In Reception I can:</p> <ul style="list-style-type: none"> <li>• Look closely at similarities, differences, patterns and change.</li> </ul> <p><b>Early Learning Goal</b></p> <p><b>Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</b></p> | <p><b>Technology</b></p> <p>In Nursery I can:</p> <ul style="list-style-type: none"> <li>• Know how to operate simple equipment, e.g. turns on torches and uses remote control.</li> <li>• Show an interest in technological toys with knobs or pulleys, or real objects such as cameras or mobile phones.</li> <li>• Show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.</li> </ul> | <p><b>Exploring and using media and materials</b></p> <p>In Nursery I can:</p> <ul style="list-style-type: none"> <li>• Explore and learn how sounds can be changed.</li> <li>• Explore colour and how colours can be changed.</li> <li>• Begin to be interested in and describe the texture of things</li> <li>• Use various construction materials.</li> <li>• Join construction pieces together to build and balance.</li> <li>• Realise tools can be used for a purpose.</li> </ul> <p>In Reception I can:</p> <ul style="list-style-type: none"> <li>• Explore the different sounds of instruments.</li> <li>• Explore what happens when they mix colours.</li> <li>• Experiment to create different textures.</li> <li>• Manipulate materials to achieve a planned effect.</li> <li>• Construct with a purpose in mind, using a variety of resources.</li> <li>• Use simple tools and techniques competently and appropriately.</li> <li>• Select appropriate resources and adapts work where necessary.</li> <li>• Select tools and techniques needed to shape, assemble and join materials they are using.</li> </ul> <p><b>Early Learning Goal</b></p> <p><b>Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</b></p> |

Year 1

| Working Scientifically   | Biology   | Chemistry   | Physics  |
|--|---|---|--|
| <p>I can:</p> <ul style="list-style-type: none"> <li>• Ask simple scientific questions</li> <li>• Use simple equipment to make observations</li> <li>• Carry out simple tests</li> <li>• Identify and classify things</li> <li>• Suggest what I have found out</li> <li>• Use simple data to answer questions</li> </ul>   | <p><b>Plants</b></p>  | <p><b>Everyday Materials</b></p>  | <p><b>Seasonal Changes</b></p>   |
|  | <p>I can:</p> <ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees, e.g. <i>five examples of each from the school's locality</i> Name the petals, stem, leaf and root of a plant.</li> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees, and name parts, e.g. <i>leaves, flowers, roots, stem/trunk.</i></li> </ul> | <p>I can:</p> <ul style="list-style-type: none"> <li>• identify and name a variety of everyday materials, e.g. a variety of objects/items made of wood, plastic, glass, metal, water, and rock</li> <li>• use simple language to describe the physical properties of a variety of everyday materials, e.g. <i>soft/hard, rough/smooth, shiny/dull</i></li> <li>• use the physical properties of a variety of everyday materials to compare and group them</li> <li>• identify a variety of common materials and objects made from them e.g. glass beaker and material called glass, paper exercise book and paper as a material (taking lots of different forms)</li> </ul> | <p>I can:</p> <ul style="list-style-type: none"> <li>• observe and describe changes across four seasons, including changes to trees</li> <li>• observe and describe the weather and how it varies</li> <li>• observe and describe how day length changes at different times of the year</li> </ul> |
|  | <p><b>Animals (including humans)</b></p>  |   |  |
| <p>I can:</p> <ul style="list-style-type: none"> <li>• Identify and name a variety of common animals that they have encountered first-hand, e.g. pets or animals they have learned about in their locality, cat, hedgehog, frog, bumblebee, butterfly, blackbird, goldfish.</li> <li>• Compare first-hand a variety of animals noticing similarities and differences, e.g. a garden snail and a worm.</li> <li>• group animals familiar to them (including those listed above) according to what they eat, using words such as omnivore, herbivore and carnivore</li> <li>• Describe and compare the structure of a variety of common animals that they have encountered, e.g. fin, scales, claw, feather, beak, paws, tail.</li> <li>• name and locate simple parts of the human body, including those related to the senses, e.g. parts of the face, arm, shoulder, leg, knee, wrist, hand, finger, ankle, toe, foot. Link parts of the body to each sense.</li> </ul> |   |   |  |

Year 2

| Working Scientifically  | Biology  | Chemistry   |
|---|--|---|
| <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Ask simple scientific questions</li> <li>• Use simple equipment to make observations</li> <li>• Carry out simple tests</li> <li>• Identify and classify things</li> <li>• Explain what I have found out</li> <li>• Use simple data to answer questions</li> </ul>  | <p><b>Living things in their Habitats</b></p>  | <p><b>Uses of everyday Materials</b></p>  |
|   | <p>To be able to:</p> <ul style="list-style-type: none"> <li>• make decisions, giving reasons, about whether things are alive, dead, or have never been alive</li> <li>• describe the survival needs of animals, including humans</li> <li>• recognise that animals and plants usually live in habitats that are suited to them</li> <li>• describe how animals and plants depend on each other (links to food chains and feeding relationships)</li> <li>• identify and name through first-hand experience, a variety of plants and animals in their habitats, including micro-habitats e.g. <i>under log, on stony path, under bushes</i></li> <li>• <i>describe how animals get their food from other animals and/or from plants</i></li> <li>• <i>identify and name different sources of food (link to carnivores, herbivores and omnivores Y1)</i></li> <li>• <i>use simple food chains to describe feeding relationships, i.e. who eats who</i></li> </ul> | <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Identify and compare the properties of a variety of everyday materials, to assess their suitability for particular purposes</li> <li>• Suggest why a material might or might not be used for a specific job.</li> <li>• discover (through investigation) how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul> |
|   | <p><b>Plants</b></p>   |   |
|   | <ul style="list-style-type: none"> <li>• Describe how plants and seeds grow into plants.</li> <li>• recognise that water, light and a suitable temperature are needed for survival and growth</li> </ul>   |   |
| <p><b>Animals (including humans)</b></p> <ul style="list-style-type: none"> <li>• describe the main changes as young animals, including humans, grow into adults</li> <li>• describe the basic needs of animals they have found, including humans, for survival i.e. water, food and air.</li> <li>• describe the importance for humans to exercise, have a balanced diet and use good hygiene</li> </ul> |  |   |

Year 3

| Working Scientifically   | Biology  | Chemistry  | Physics  |
|--|--|--|--|
| <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Ask relevant scientific questions.</li> <li>• Use observations and knowledge to answer scientific questions.</li> <li>• Set up a simple enquiry to explore a scientific question.</li> <li>• Set up a test to compare two things.</li> <li>• Set up a fair test and explain why it is fair.</li> <li>• Make careful and accurate observations, including the use of standard units.</li> <li>• Use equipment to make measurements.</li> <li>• Gather, record, classify and present data in different ways to answer scientific questions.</li> <li>• Use diagrams, keys bar charts and tables, using scientific language.</li> <li>• Use findings to report in different ways, including oral and written explanations.</li> <li>• Draw conclusions and suggest improvements.</li> <li>• Make a prediction with a reason.</li> <li>• Identify differences, similarities and changes related to an enquiry.</li> </ul> | <p><b>Plants</b></p> <p>To be able to:</p> <ul style="list-style-type: none"> <li>• name and locate the main parts of plants e.g. roots, stem/trunk, leaves and flowers and describe their functions</li> <li>• Describe the basic requirements of plants for life and growth, i.e. air, light, water, nutrients from soil, and room to grow</li> <li>• Give relevant examples of different types of plants with contrasting requirements, e.g. desert cactus, pond marigold, sunflower</li> <li>• Explore and describe how water is transported within plants.</li> <li>• Name simple parts of a flower and describe their function, i.e. <i>stigma</i>, <i>style</i>, <i>carpel</i>, <i>ovary</i>, <i>pollen</i></li> <li>• Describe the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</li> </ul> | <p><b>Rocks</b></p> <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Compare and group rocks in different ways according to their properties, based on first-hand observation</li> <li>• Describe how fossils are formed</li> <li>• Explain, in simple terms, that soils are made when rocks are weathered and break down into small particles which combine with organic matter to become soil.</li> <li>• Describe and explain the difference between sedimentary and igneous rock.</li> </ul> | <p><b>Light</b></p> <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Explain that we need light in order to see and that darkness is the absence of light</li> <li>• Explain that light is needed in order to see. Explain that light is reflected from surfaces of a variety of objects (and this enables us to see them)</li> <li>• Explain that shadows are formed when light from a source is blocked by an opaque object and that the position and shape of a shadow can vary (based on practical investigations of shadow length).</li> <li>• Explain the danger of direct sunlight and describe how to keep protected.</li> </ul> |
|  | <p><b>Animals, including humans</b></p>  |  | <p><b>Forces and Magnets</b></p>   |

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|  | <p>To be able to:</p> <ul style="list-style-type: none"><li>• Explore the importance of a nutritious balanced diet in animals, including humans. Show knowledge of simple food groups – dairy, vegetables and fruit.</li><li>• Explain how nutrients, water and oxygen are transported within animals and humans.</li><li>• Describe and explain the skeletal and muscular system of a human. Name, locate and describe the functions of the main parts, e.g. <i>skull, spine, ribs of the musculoskeletal system in humans and other animals</i></li><li>• Describe the purpose of the skeleton in humans and in animals. Identify which parts protect, support or are involved in movement</li></ul> |  | <p>To be able to:</p> <ul style="list-style-type: none"><li>• Describe and compare how things move on different surfaces e.g. comment on the effects of simple forces like friction on the way objects move</li><li>• Explain how some forces require contact and some do not, giving examples.</li><li>• Describe, using key vocabulary, how magnetic forces can act at a distance and in different ways, e.g. <i>when poles of magnets face each other, when a variety of materials are tested</i></li><li>• Predict whether objects will be magnetic and carry out an enquiry to test this out.</li><li>• Describe how magnets work.</li><li>• Predict whether magnets will attract or repel and give a reason.</li></ul> |
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Year 4

| Working Scientifically   | Biology   | Chemistry   | Physics   |
|--|---|---|---|
| <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Ask relevant scientific questions.</li> <li>• Use observations and knowledge to answer scientific questions.</li> <li>• Set up a simple enquiry to explore a scientific question.</li> <li>• Set up a test to compare two things.</li> <li>• Set up a fair test and explain why it is fair.</li> <li>• Make careful and accurate observations, including the use of standard units.</li> <li>• Use equipment to make measurements.</li> <li>• Gather, record, classify and present data in different ways to answer scientific questions.</li> <li>• Use diagrams, keys bar charts and tables, using scientific language.</li> <li>• Use findings to report in different ways, including oral and written explanations.</li> <li>• Draw conclusions and suggest improvements.</li> <li>• Make a prediction with a reason.</li> </ul> <p>Identify differences, similarities and changes related to an enquiry.</p> | <p><b>Living things and their Habitats</b></p>  | <p><b>States of Matter</b></p>  | <p><b>Sound</b></p>   |
|  | <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Group living things in different ways</li> <li>• Use classification keys to group, identify and name living things.</li> <li>• Create classification keys to group, identify and name living things.</li> <li>• Explain how environments can change and that this can sometimes pose dangers to living things.</li> </ul>  | <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Group materials based on their state of matter (solid, liquid, gas).</li> <li>• Describe how a variety of materials change state when they are heated or cooled.</li> <li>• Explain how materials change state.</li> <li>• Measure the temperature of materials which change state.</li> <li>• Describe the water cycle.</li> <li>• Explain the part played by evaporation and condensation in the water cycle.</li> </ul> | <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Describe how sound is made, associating some of them with something vibrating.</li> <li>• Explain how sound travels from a source to our ears.</li> <li>• Explain the place. of vibration in hearing</li> <li>• Explore the correlation between pitch and the object producing a sound.</li> <li>• Explain the correlation between the volume of a sound and the strength of the vibrations that produced it.</li> <li>• Describe what happens to a sound as it travels away from its' source.</li> </ul>  |
|  | <p><b>Animals, including humans</b></p>   |   | <p><b>Electricity</b></p>   |
|  | <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Name and locate the main parts of the digestive system, i.e. <i>mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, in humans.</i></li> <li>• Describe the functions of the organs in the human digestive system.</li> <li>• Identify and describe the different types of teeth in humans.</li> <li>• Describe the functions of different human teeth.</li> <li>• Use food chains to identify producers, predators and prey.</li> </ul> |   | <p>To be able to:</p> <ul style="list-style-type: none"> <li>• Identify and name appliances that need electricity to function.</li> <li>• Conduct a series circuit.</li> <li>• Identify and name the components in a series circuit.</li> <li>• Draw a circuit diagram.</li> <li>• Predict and test whether a lamp will light within a circuit, based on whether or not the lamp is part of a complete loop with a battery</li> <li>• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• Name common conductors (such as metals and water) and insulators (such as wood, plastic).</li> <li>• Describe the difference between a conductor and an insulator.</li> </ul> |

| Working Scientifically   | Biology  | Chemistry   | Physics   |
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| <p>To be able to:</p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiry.</li> <li>Control variables in an enquiry.</li> <li>Measure accurately and precisely using a range of equipment.</li> <li>Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>Use the outcome of test results to make predictions and set up a further comparative fair test.</li> <li>Report findings from enquiries in a range of ways.</li> <li>Explain a conclusion from an enquiry.</li> <li>Explain. Causal relationships in an enquiry.</li> <li>Relate the outcomes from an enquiry to scientific knowledge in order to state whether evidence supports or refutes and argument/ theory.</li> <li>Read, spell and pronounce scientific vocabulary accurately</li> </ul> | <p style="text-align: center;"><b>Living things and their habitats</b></p>   | <p style="text-align: center;"><b>Reversible and Irreversible Changes</b></p>   | <p style="text-align: center;"><b>Earth and Space</b></p>   |
|  | <p>To be able to:</p> <ul style="list-style-type: none"> <li>Describe and compare different life cycles, in some specific types of animals and plants, e.g. <i>bat or hedgehog, newt, bumblebee, peregrine falcon</i></li> <li>Describe the differences between different life cycles.</li> <li>Describe the main changes as humans grow into adults and develop to old age, i.e. <i>baby, child, adolescent, adult, old person</i></li> <li>Describe and compare different reproductive processes in some animals and plants, including asexual (e.g. <i>taking cuttings</i>) and sexual reproduction in plants and sexual reproduction in humans and other animals.</li> </ul> | <p>To be able to:</p> <ul style="list-style-type: none"> <li>Compare and group materials based on their properties – hardness, solubility, transparency, conductivity.</li> <li>Explain what happens when dissolving occurs in everyday situations; explaining the process of dissolving.</li> <li>Describe processes that might be used to separate mixtures (i.e. <i>dry or wet mixture – no dissolved solids</i>) and solutions (solid dissolved in liquid) into their component materials.</li> <li>Describe and show how to recover a substance from a solution.</li> <li>Describe how some materials can be separated including through filtering, sieving and evaporating</li> <li>Give evidenced reasons why materials should be used for specific purposes.</li> <li>Know and can demonstrate that some changes are reversible and some are not. (e.g. <i>non reversible – baking, burning, rusting, adding bicarbonate of soda to vinegar, reversible – melting, evaporation</i>)</li> <li>Explain how some changes result in the formation of a new material and that this is usually irreversible (include changes associated with burning and the action of acid on bicarbonate of soda).</li> </ul> | <p>To be able to:</p> <ul style="list-style-type: none"> <li>Describe and explain the movement of the Earth and other planets relative to the Sun.</li> <li>Describe and explain the movement of the Moon relative to the Earth.</li> <li>Describe the Sun, Earth and Moon (using the term spherical).</li> <li>Explain the apparent movement of the sun across the sky in terms of the earth's rotation and that this results in day and night.</li> </ul> |
|  |  |   | <p style="text-align: center;"><b>Forces</b></p>  |



| Working Scientifically   | Biology  | Physics  |
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| <b>Chemical Reactions</b>  | <b>Living things and their habitats</b>  | <b>Light</b>   |
| <p>To be able to:</p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiry.</li> <li>Control variables in an enquiry.</li> <li>Measure accurately and precisely using a range of equipment.</li> <li>Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</li> <li>Use the outcome of test results to make predictions and set up a further comparative fair test.</li> <li>Report findings from enquires in a range of ways.</li> <li>Explain a conclusion from an enquiry.</li> <li>Explain causal relationships in an enquiry.</li> <li>Relate the outcomes from an enquiry to scientific knowledge in order to state whether evidence supports or refutes and argument/ theory.</li> <li>Read, spell and pronounce scientific vocabulary accurately</li> </ul> | <p>To be able to:</p> <ul style="list-style-type: none"> <li>Explain how observable features, similarities and differences between types of plants, animals and micro-organisms are used to group and classify them. Give reasons why this is useful.</li> <li>Describe how living things have been classified.</li> <li>Give reasons for classifying plants and animals in a specific way.</li> </ul>                                     | <p>To be able to:</p> <ul style="list-style-type: none"> <li>Explain how light travels.</li> <li>Use the idea that light from light sources, or reflected light, travels in straight lines and enters our eyes, to explain how we see objects,</li> <li>Use the idea that light travels in straight lines to explain the formation, shape and size of shadows.</li> <li>Explain why shadows have the same shape as the objects that casts them.</li> <li>Explain how simple optical instruments work – periscope, telescope, binoculars, etc.</li> </ul> |
|  | <b>Animals, including humans</b>   | <b>Electricity</b>   |
|  | <p>To be able to:</p> <ul style="list-style-type: none"> <li>Name and locate the main parts of the circulatory system, i.e. heart, blood vessels and blood.</li> <li>Describe the function of the heart, blood vessels and blood.</li> <li>Describe the effects of diet, exercise, drugs and lifestyle on how their bodies function.</li> <li>Describe the ways in which nutrients and water are transported in animals/humans.</li> </ul> | <p>To be able to:</p> <ul style="list-style-type: none"> <li>Explain how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer.</li> <li>Compare and give reasons for why components work and do not work in a circuit.</li> <li>Draw circuit diagrams using correct symbols.</li> </ul>  |
| <b>Evolution and Inheritance</b>   |  |  |

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|  | <p>To be able to:</p> <ul style="list-style-type: none"><li>• Describe how the earth and living things have changed over time.</li><li>• Explain how fossils can be used to find out about the past.</li><li>• Explain about reproduction and off-spring.</li><li>• Explain how animals and plants are adapted to suit their environment.</li><li>• Use the basic ideas of inheritance, variation and adaptation to describe how living things have changed over time and evolved.</li><li>• Explain evolution.</li></ul> |  |
|--|---|--|