

## CURRICULUM INTENTION

At Welton Primary School we aim to provide a **metacognitively ambitious curriculum**, driven to **challenge stereotypes**, based around the **locality of the Humber** region that meets the **bespoke needs** of our children.

*We aim to provide first-hand experiences that will stimulate enquiring, imaginative and creative minds which will widen the knowledge and skills required to deepen learning across all areas of the curriculum.*



## INTENT OF THE SCIENCE CURRICULUM

The intent of the Science Curriculum:

At Welton Primary School we aim to provide a **metacognitively ambitious curriculum** utilising the **science capital** available around the **locality of the Humber region**.

Our children will develop an understanding of **the world through biology, chemistry and physics** and understand how science can be used to **explain** what is occurring, **predict** how things will behave, and **analyse causes**. They will find out about the **lives and impact** of significant scientists that **challenge stereotypes** and **raises the aspirations** of our children.

## SCIENCE KNOWLEDGE AND SKILLS PROGRESSION

To ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics;
- understand the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them;
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Each of the **5 types of scientific enquiry** will be focused upon throughout the year:



## FOUNDATION STAGE SCIENCE

During the Early Years Foundation Stage children will develop their scientific understanding throughout the year as part of story-based projects. A large emphasis is placed upon developing children's vocabulary through texts and first-hand experiences.

Areas of provision, both indoors and outdoors, will support children to develop their scientific understanding e.g., by exploring changes of state at the playdough making station or exploring the flow of water using the channelling equipment.

Regular Outdoor Learning afternoons will provide opportunities for children to explore the changing seasons, different weather conditions, plants and animals within the school grounds. Children will be given multiple opportunities to explore scientific concepts such as changes of state and floating and sinking through play-based activities over the course of the year.

They will be able to use a range of sources to support their enquiries including use of a variety of texts and first-hand observations, in relation to both core stories and the children's own interests. The development of these enquiry skills will prepare children for learning about different scientific processes as they progress onto the National Curriculum in Year 1.

### **Early Years Foundation Stage Framework (2021) Educational Programmes: Understanding the World**

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

### **EARLY LEARNING GOAL: The Natural World**

Children at the expected level of development will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- 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;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

## YEAR 1

*(Seasonal Changes to be observed and taught throughout the year, recorded in a floor book, as well as during Summer 2)*

| Biology: Humans<br>Autumn 1  | Chemistry: Everyday Materials<br>Spring 1   | Chemistry: Everyday Materials<br>Summer 1   |
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| <p><b>National Curriculum objectives</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Using their senses to compare different textures, sounds and smells</p> <p><b>This unit will include an extended topic working scientifically to find out about the senses</b></p> | <p><b>National Curriculum objectives</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• distinguish between an object and the material from which it is made</li> <li>• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>• describe the simple physical properties of a variety of everyday materials</li> <li>• compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Performing simple tests to explore questions, for example: 'Which materials are bendy...? Which materials are stretchy...? Which materials are waterproof...?'</p> | <p><b>National Curriculum objectives</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• distinguish between an object and the material from which it is made</li> <li>• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>• describe the simple physical properties of a variety of everyday materials</li> <li>• compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul> <p><b>This unit will be a working scientifically unit based on prior learning.</b></p> <p><b>Pupils will work scientifically by:</b><br/>Performing simple tests to explore questions, for example: 'What is the best material for a parachute? ...for Amy in Australia? ...for keeping Amy dry? ...for keeping Amy warm? for keeping her lunch cool?'</p> |
| <p><b>Assessment Question:</b><br/><i>What 5 body parts do the senses come from?</i></p>   | <p><b>Assessment Question:</b><br/><i>Which materials are bendy / not bendy?</i></p>  | <p><b>Assessment Question:</b><br/><i>Which material would be best to keep Amy Johnson dry?</i></p>   |
| Biology: Plants<br>Autumn 2  | Biology: Animals<br>Spring 2  | Physics: Seasonal Changes<br>Summer 1   |
| <p><b>National Curriculum objectives</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> </ul>   | <p><b>National Curriculum objectives</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> </ul>   | <p><b>National Curriculum objectives</b><br/>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• observe changes over the four seasons</li> <li>• observe and describe weather associated with the seasons and how day length varies</li> </ul>  |

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| <ul style="list-style-type: none"> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/> <i>Observing closely, using magnifying glasses, and comparing and contrasting familiar plants;</i></p> <p><i>Describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees.</i></p> <p><i>Keeping records of how plants have changed over time, for example the leaves falling off trees and buds opening;</i></p> <p><i>Compare and contrast what they have found out about different plants.</i></p> | <ul style="list-style-type: none"> <li>• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</li> </ul> <p><b>Pupils will work scientifically by:</b><br/> <i>Using their observations to compare and contrast animals at first hand or through videos and photographs</i></p> <p><i>Describing how they identify and group them</i></p> <p><i>Grouping animals according to what they eat</i></p> | <p><b>Pupils will work scientifically by:</b><br/> <i>Observing and talk about changes in the weather and the seasons</i></p> <p><i>Making tables and charts about the weather</i></p> <p><i>Making displays of what happens in the world around them, including day length, as the seasons change.</i></p> |
| <p><b>Assessment Question:</b><br/> <i>Can you describe a plant and how to care for it?</i></p>  | <p><b>Assessment Question:</b><br/> <i>How is a mammal different to an amphibian?</i></p>  | <p><b>Assessment Question:</b><br/> <i>What type of weather might we expect to see during the winter that you probably won't see in the summer?</i></p>   |

## YEAR 2

| <p style="text-align: center;"><b>Biology: Living things and their habitat</b><br/>Autumn 1</p>   | <p style="text-align: center;"><b>Chemistry: Uses of Everyday Materials</b><br/>Spring 1</p>  | <p style="text-align: center;"><b>Biology: Animals including Humans</b><br/>Summer 1</p>  |
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| <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</li> <li>• identify and name a variety of plants and animals in their habitats, including microhabitats</li> </ul> | <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul> | <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• notice that animals, including humans, have offspring which grow into adults</li> <li>• find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> </ul> |

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| <p><b>Pupils will work scientifically by:</b></p> <p>Describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there</p>  | <p><b>Pupils will work scientifically by:</b></p> <p>Comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs)</p> <p>Observing closely, identifying and classifying the uses of different materials, and recording their observations</p>   | <p><b>Pupils will work scientifically by:</b></p> <p>Observing, through video or first-hand observation and measurement, how different animals, including humans, grow</p> <p>Asking questions about what things animals need for survival and what humans need to stay healthy</p> <p>Suggesting ways to find answers to their questions</p>  |
| <p><b>Assessment Question:</b></p> <p><i>What makes a good habitat?</i></p>   | <p><b>Assessment Question:</b></p> <p><i>What makes a good choice of material?</i></p>  | <p><b>Assessment Question:</b></p> <p><i>What are the basic needs of an animal?</i></p>  |
| <p><b>Biology: Living things and their habitat</b><br/>Autumn 2</p>   | <p><b>Physics: Plants</b><br/>Spring 2</p>  | <p><b>Biology: Animals including Humans</b><br/>Summer 2</p>   |
| <p><b>National Curriculum objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>• describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</li> </ul> <p><b>Pupils will work scientifically by:</b></p> <p>Sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts.</p> <p>Describe how they decided where to place things, exploring questions for example: ‘Is a flame alive? Is a deciduous tree dead in winter?’ and talk about ways of answering their questions.</p> <p>Construct a simple food chain that includes humans (e.g. grass, cow, human).</p> | <p><b>National Curriculum objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• observe and describe how seeds and bulbs grow into mature plants</li> <li>• find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> </ul> <p><b>Pupils will work scientifically by:</b></p> <p>Observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth</p> <p>Setting up a comparative test to show that plants need light and water to stay healthy.</p> | <p><b>National Curriculum objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul> <p><b>Pupils will work scientifically by:</b></p> <p>Observing and recording the impact of exercise on the body</p> <p>Sorting and classifying food into healthy unhealthy, the 5 groups</p> <p>Using experts to find out about the importance of hygiene</p> <p>Suggesting ways to find answers to their questions</p> |

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| <b>Assessment Question:</b><br><i>Can you give an example of a food chain?</i>  | <b>Assessment Question:</b><br><i>Do seeds and bulbs grow better in Summer or Winter?</i>   | <b>Assessment Question:</b><br><i>How can humans and animals grow in a healthy way?</i>  |
| <b>YEAR 3</b>   |   |  |
| <b>Chemistry: Rocks &amp; Fossils</b><br>Autumn 1   | <b>Physics: Forces &amp; Magnets</b><br>Spring 1  | <b>Biology: Animals including Humans -</b><br>Summer 1   |
| <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>• describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>• recognise that soils are made from rocks and organic matter.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/> <i>Observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time;</i></p> <p><i>Using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.</i></p> <p><i>Researching and discussing the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed.</i></p> <p><i>Exploring different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what</i></p> | <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare how things move on different surfaces</li> <li>• notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>• observe how magnets attract or repel each other and attract some materials and not others</li> <li>• compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>• describe magnets as having two poles</li> <li>• predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/> <i>Comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions;</i></p> <p><i>Exploring the strengths of different magnets and finding a fair way to compare them;</i></p> <p><i>Sorting materials into those that are magnetic and those that are not;</i></p> | <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/> <i>Compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat.</i></p> <p><i>Research different food groups and how they keep us healthy and design meals based on what they find out.</i></p> |

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| <p>changes occur when they are in water. They can raise and answer questions about the way soils are formed.</p>   | <p>Looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another;</p> <p>Identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.</p>   |   |
| <p><b>Assessment Question:</b><br/><i>What types of rock are you likely to find fossils preserved in and why?</i></p>  | <p><b>Assessment Question:</b><br/><i>What is meant by a magnet's poles and how do they act as a force?</i></p>   | <p><b>Assessment Question:</b><br/><i>What similarities and differences can you find between a human and animal anatomy?</i></p>  |
| <p><b>Physics: Light</b><br/>Autumn 2</p>  | <p><b>Biology: Plants</b><br/>Spring 2</p>  | <p><b>Biology: Animals including Humans</b><br/>Summer 1</p>  |
| <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• recognise that they need light in order to see things and that dark is the absence of light</li> <li>• notice that light is reflected from surfaces</li> <li>• recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>• recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>• find patterns in the way that the size of shadows change.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>• explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> <li>• investigate the way in which water is transported within plants</li> <li>• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser</p> <p>Discovering how seeds are formed by observing the different stages of plant life cycles over a period of time</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Identifying and grouping animals with and without skeletons and observing and comparing their movement</p> <p>Exploring ideas about what would happen if humans did not have skeletons.</p> |

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|   | <p>Looking for patterns in the structure of fruits that relate to how the seeds are dispersed</p> <p>Observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers</p> |   |
| <p><b>Assessment Question:</b><br/><i>Why do humans need light, and can it ever be dangerous?</i></p> | <p><b>Assessment Question:</b><br/><i>Can you name the parts of a flower and explain why each part is important?</i></p>  | <p><b>Assessment Question:</b><br/><i>What nutrients do humans need to survive and where do they get them from?</i></p> |

## YEAR 4

| <b>Biology: Animals Including Humans</b><br><i>Autumn 1</i>  | <b>Biology: Living Things and their Habitats</b><br>Spring 1  | <b>Chemistry: States of Matter</b><br>Summer 1  |
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| <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>describe the simple functions of the basic parts of the digestive system in humans</li> <li>identify the different types of teeth in humans and their simple functions</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Comparing the teeth of carnivores and herbivores, and suggesting reasons for differences;</p> <p>Finding out what damages teeth and how to look after them;</p> <p>Draw and discuss their ideas about the digestive system and compare them with models or images</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>recognise that living things can be grouped in a variety of ways</li> <li>explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Using and making simple guides or keys to explore and identify local plants and animals;</p> <p>Making a guide to local living things;</p> <p>Raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>compare and group materials together, according to whether they are solids, liquids or gases</li> <li>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Grouping and classifying a variety of different materials;</p> <p>Exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food</p> |

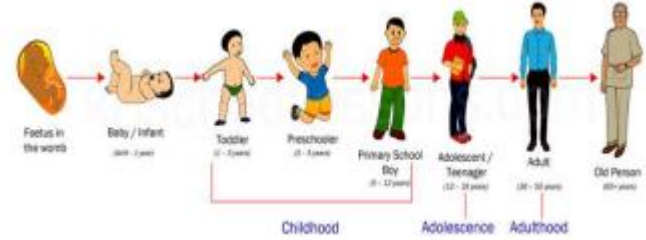


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|  |   | <p>such as chocolate crispy cakes and ice-cream for a party).</p> <p>Researching the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid.</p> <p>Observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.</p>   |
| <p><b>Assessment Question:</b></p> <p><i>What are the different parts of the digestive system in humans?</i></p>   | <p><b>Assessment Question:</b></p> <p><i>What are the differences between vertebrates and invertebrates?</i></p>  | <p><b>Assessment Question:</b></p> <p><i>What are the properties of solids, liquids and gases?</i></p>  |
| <p><b>Physics: Electricity</b><br/>Autumn 2</p>  | <p><b>Physics: Sounds</b><br/>Spring 2</p>  | <p><b>Biology: Animals Including Humans</b><br/><b>Living Things and Changing Environments</b><br/>Summer 2</p>   |
| <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify common appliances that run on electricity</li> <li>• construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• 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</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>• recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> <li>• recognise that vibrations from sounds travel through a medium to the ear</li> <li>• find patterns between the pitch of a sound and features of the object that produced it</li> <li>• find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• recognise that sounds get fainter as the distance from the sound source increases.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• construct and interpret a variety of food chains, identifying producers, predators and prey.</li> <li>• recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.</p> <p><b>Research to make links between science unit on predators, food chains, current unit and geography units.</b></p> |

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| <p>can and some cannot be used to connect across a gap in a circuit.</p>  | <p>Making earmuffs from a variety of different materials to investigate which provides the best insulation against sound</p> <p>Making and playing their own instruments by using what they have found out about pitch and volume.</p> |  |
| <p><b>Assessment Question:</b></p> <p><i>What are the components of a simple electrical circuit and can you draw the symbols to represent each one?</i></p> | <p><b>Assessment Question:</b></p> <p><i>How are sounds created?</i></p>   | <p><b>Assessment Question:</b></p> <p><i>Explain how a changing environment can have a positive or negative impact on living things.</i></p> |

## YEAR 5

| <p style="text-align: center;"><b>Physics: Earth and Beyond</b><br/>Autumn 1</p>   | <p style="text-align: center;"><b>Chemistry: Everyday Materials</b><br/>Spring 1</p>  | <p style="text-align: center;"><b>Biology: Living Things and their Habitats</b><br/>Summer 1</p>   |
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| <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>describe the movement of the Moon relative to the Earth</li> <li>describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Describing the movement of the Earth, and other planets, relative to the Sun in the solar system<br/>Describing the movement of the Moon relative to the Earth</p> <p>Describing the Sun, Earth and Moon as approximately spherical bodies</p> <p>Using the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes.</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>describe the life process of reproduction in some plants and animals.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences.</p> <p>Trying to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs.</p> |

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|   | <p>Researching and discussing how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials</p>  |   |
| <p><b>Assessment Question:</b></p> <p>Can you draw a detailed diagram of our Solar System?</p>  | <p><b>Assessment Question:</b></p> <p>Describe the reversible and non-reversible changes taking place when a candle burns.</p>   | <p><b>Assessment Question:</b></p> <p>Compare and contrast the life cycles of two or three of the following using a Venn Diagram: mammal, amphibian, bird or insect.</p>  |
| <p><b>Physics: Forces</b><br/>Autumn 2</p>  | <p><b>Chemistry: Everyday Materials</b><br/>Spring 2</p>   | <p><b>Biology: Animals including Humans</b><br/>Summer 2</p>  |
| <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>• identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>• recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective.</p> <p>Exploring resistance in water by making and testing boats of different shapes.</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</li> <li>• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4</p> <p>Carrying out tests to answer questions, for example, ‘Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?’</p> <p>Comparing materials in order to make a switch in a circuit.</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• describe the changes as humans develop to old age.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Researching the gestation periods of other animals and comparing them with humans;<br/>Finding out and recording the length and mass of a baby as it grows.</p>  |

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| <p><b>Assessment Question:</b></p> <p><i>What do air resistance, water resistance and friction all have in common? What would happen if these forces did not exist?</i></p> | <p><b>Assessment Question:</b></p> <p><i>List the materials a bike is made from. What properties do the materials have which make them suited for the purpose?</i></p> | <p><b>Assessment Question:</b></p> <p><i>Can you explain some of the changes that take place as we grow older?</i></p> |
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## YEAR 6

| <b>Biology: Evolution and Inheritance</b><br>Autumn 1  | <b>Biology: Animals including humans</b><br>Spring 1   | <b>Physics: Electricity</b><br>Summer 1  |
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| <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>• recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Observing and raising questions about local animals and how they are adapted to their environment;</p> <p>Comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.</p> <p>Analysing the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</p> | <p><b>National Curriculum objectives</b><br/><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>• compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</li> <li>• use recognised symbols when representing a simple circuit in a diagram.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/>Systematically identifying the effect of changing one component at a time in a circuit.</p> |

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| <p><b>Assessment Question:</b><br/> <i>What is the difference between an inherited feature and an environmental feature?</i></p>  | <p><b>Assessment Question:</b><br/> <i>What are the components of my circulatory system and how does it function?</i></p>  | <p><b>Assessment Question:</b><br/> <i>What can affect a bulb's brightness to change?</i></p>   |
| <p><b>Biology: Living Things and their habitats</b><br/> Autumn 2</p>   | <p><b>Physics: Light</b><br/> Spring 2</p>   | <p><b>Biology: Animals including humans</b><br/> <b>Independent research project</b><br/> Summer 2</p>  |
| <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</li> <li>• give reasons for classifying plants and animals based on specific characteristics.</li> </ul> <p><b>Pupils will work scientifically by:</b><br/> Using classification systems and keys to identify some animals and plants in the immediate environment.</p> <p>Researching unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.</p> | <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• recognise that light appears to travel in straight lines</li> <li>• 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</li> <li>• 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</li> <li>• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul> <p><b>Pupils will work scientifically by:</b></p> <ul style="list-style-type: none"> <li>• Investigating the relationship between light sources, objects and shadows by using shadow puppets.</li> </ul> | <p><b>National Curriculum objectives</b><br/> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> </ul> <p><b>Pupils will work scientifically by:</b><br/> Exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.</p> |
| <p><b>Assessment Question:</b><br/> <i>Can you create a classification key which includes all five kingdoms?</i></p>  | <p><b>Assessment Question:</b><br/> <i>On a road at night, how does the light travel for us to be able to see objects?</i></p>   | <p><b>Assessment Question:</b><br/> <i>How can I keep my body healthy and what can damage it?</i></p>   |