



Science Curriculum Overview 2023-24

Our Vision

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Year	Term 1	Term 2	Term 3	Term 4 <i>British Science Week / Pupil Led Investigation</i>	Term 5	Term 6
FS Following children's own interests and investigations	<p>Theme: Ourselves/ International Term</p> <p>Key Question: What do I like/ dislike about where I live?</p> <p>Skills: Create drawings and models of their environment.</p> <p>Knowledge: Identify features of the local environment.</p>	<p>Theme: Celebrations/ Festivals</p> <p>Key Question: Cooking: Why does that happen?</p> <p>Skills: Explore objects/ materials/ living things/ resources designed to model scientific processes.</p> <p>Knowledge: Notice changes.</p>	<p>Theme: Journeys & Transport</p> <p>Key Question: Loose parts. I wonder...?</p> <p>Skills: Explore objects/ materials/ living things/ resources designed to model scientific processes.</p> <p>Knowledge: Dependent upon the children.</p>	<p>Theme: Buildings</p> <p>Key Question: What makes a good building?</p> <p>Skills: Explain simple phenomena: How? Why?</p> <p>Knowledge: Talk about similarities, patterns and change.</p>	<p>Theme: The Global Garden - Minibeasts / Animals</p> <p>Key Question: Are they the same?</p> <p>Skills: Listen and respond to stories about scientific processes/ events/ objects.</p> <p>Knowledge: Know about similarities and differences in relation to animals</p>	<p>Theme: The Great Outdoors</p> <p>Key Question: What do I notice?</p> <p>Skills: Qualitative Talk about similarities and differences.</p> <p>Knowledge: Know how environments differ. Talk about changes</p>
1	<p>Theme: Animals Including Humans</p> <p>Key Question: What are senses?</p> <p>Skills: Investigate functions of body parts. Use observations to say which part of the body is associated with each sense. Use observations and ideas to suggest answers to questions.</p> <p>Knowledge: Identify and name parts of the human body. Identify the 5 senses.</p> <p>Pupil-Led Investigation: What body parts do I have? Which parts of my body are associated with my 5 senses?</p> <p>Enquiry Skill: Researching</p>	<p>Theme: Seasonal Changes</p> <p>Key Question: Why do we have different weather?</p> <p>Skills: Collect data through observations across the seasons about the changing weather. Observe over time and record data to help in answering questions.</p> <p>Knowledge: Name the 4 seasons and describe their properties. Name different types of weather. Daylight changes.</p> <p>Pupil-Led Investigation: How does our school environment change throughout the seasons? <i>(This topic should be touched upon throughout the year).</i></p> <p>Enquiry Skill: Observing Over Time</p>	<p>Theme: Animals Including Humans</p> <p>Key Question: How are animals different?</p> <p>Skills: Identify and classify animals by their animal group and diet. Understand how to look after pets.</p> <p>Knowledge: Name different types of common animals (fish, bird, reptile etc). Name different diets (herbivore, carnivore, omnivore).</p> <p>Pupil-Led Investigation: How can I classify my favourite animal?</p> <p>Enquiry Skill: Identifying, Grouping & Classifying</p>	<p>Theme: Pupil Led Investigations</p> <p>Key Question: Child-led, e.g. 'What makes the bounciest bubble?' How, what, why.</p> <p>Skills: Make simple predictions. Collect data and record findings.</p> <p>Knowledge: Dependent on investigations.</p>	<p>Theme: Plants</p> <p>Key Question: What are the key parts of a plant?</p> <p>Skills: Identify and describe the basic structure and parts of a variety of common plants. Investigate planting seeds using different materials. Observe if and how a plant grows.</p> <p>Knowledge: Where plants grow; what plants and flowers need to grow; name the basic parts of flowers including trees; name common flowers and trees.</p> <p>Pupil-Led Investigation: What is the structure of a plant?</p> <p>Enquiry Skill: Pattern Seeking</p>	<p>Theme: Everyday Materials</p> <p>Key Question: What is a material?</p> <p>Skills: Compare, classify and group together a variety of everyday materials on the basis of their simple physical properties. Select appropriate materials using simple knowledge of their properties.</p> <p>Knowledge: Name and describe the simple properties of everyday materials such as wood, glass, metal and plastic. Compare objects based on their material.</p> <p>Pupil-Led Investigation: How would you group these materials?</p> <p>Enquiry Skill: Comparative & Fair Testing</p>
2	<p>Theme: Plants</p> <p>Key Question: What do plants need to grow and be healthy?</p> <p>Skills: Observe closely, noticing differences and</p>	<p>Theme: Animals Including Humans</p> <p>Key Question: How do animals survive and reproduce?</p>	<p>Theme: Uses of Everyday Materials</p> <p>Key Question: How are different materials used and why?</p>	<p>Theme: Uses of Everyday Materials – Pupil Led Investigations</p> <p>Key Question: Child-led, e.g. 'What is the stretchiest fabric?' How, what, why.</p>	<p>Theme: Living Things and Their Habitats</p> <p>Key Question: Where, how and why do animals live?</p>	<p>Theme: Animals inc Humans</p> <p>Key Question: How do animals survive and reproduce?</p>



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	<p>similarities. Use simple equipment to conduct pupil led investigations on how best to grow seeds. Measure and compare plant growth. Create graph of parts of plants.</p> <p>Knowledge: Describe how plants need water, light and a suitable temperature to grow and stay healthy. Recognise parts of the plants and their uses. What parts of plants we eat. Seed dispersal.</p> <p>Pupil-Led Investigation: What do plants need to grow and be healthy?</p> <p>Enquiry Skill: Observing Over Time</p>	<p>Skills: Use of appropriate scientific language to communicate their ideas. Record observations and make predictions by using existing knowledge. Identify differences between and sort things that are living, dead, and things that have never been alive.</p> <p>Knowledge: Describe differences between things that are living, dead, and things that have never been alive. Describe an animal's life cycle. Identify the basic survival needs of animals and humans and the relationship between diet and exercise, and health.</p> <p>Pupil-Led Investigation: How can we sort & compare living & non-living things?</p> <p>Enquiry Skill: Pattern Seeking</p>	<p>Skills: Ask simple questions and recognise that they can be answered in different ways. Make predictions and devise investigations about the suitability and properties of materials for different purposes, and the altering of materials. Use different ways to test waterproofness and compare these.</p> <p>Knowledge: Name properties of materials and suggest uses. Categorise natural and man-made materials. Understand the recycling process of some materials. Explain how materials may change when heated.</p> <p>Pupil-Led Investigation: What material is the most waterproof? What material is the most suitable for making a bucket to put out a fire?</p> <p>Enquiry Skill: Comparative & Fair Testing</p>	<p>Skills: Devise and conduct investigations into properties and suitability of materials building on knowledge. Use and interpret bar graphs.</p> <p>Knowledge: Discover the bounciest ball; stretchiest fabric, etc. Others will be determined by children's own investigations.</p>	<p>Skills: Explore different habitats and the animals that live there. Construct a simple food chain. Make links to the survival needs of animals. Construct a micro habitat suitable for a chosen animal.</p> <p>Knowledge: Explain how an animal survives in it's habitat. Identify whether something is alive, dead, or has never been alive.</p> <p>Pupil-Led Investigation: How can we observe and research which animals live in our school environment?</p> <p>Enquiry Skill: Researching</p>	<p>Skills: Use a range of scientific language to discuss an animal's lifecycle and it's basic survival needs.</p> <p>Knowledge: Describe an animal's life cycle. Identify the basic survival needs of animals and humans and the relationship between diet and exercise, and health.</p> <p>Pupil-Led Investigation: How can we match animals & and their offspring?</p> <p>Enquiry Skill: Identifying, Grouping & Classifying</p>
3	<p>Theme: Rocks</p> <p>Key Question: Why and how are rocks formed?</p> <p>Skills: Simply describe and demonstrate how rocks are formed. Compare and group together different kinds of rocks on the basis of their properties. Reporting on findings from enquiries and drawing conclusions.</p> <p>Knowledge: Rock formation; types of rocks; rock properties; rock uses.</p> <p>Pupil-led Investigation: What rocks are the most suitable for building houses and why?</p>	<p>Theme: Forces and Magnets</p> <p>Key Question: What are forces?</p> <p>Skills: Use scientific evidence to answer questions and support findings. Ask questions and use enquiries to answer them. Set up simple, fair practical enquiries. Gather, record and present data (in a table or bar chart) to help in answering questions. Record accurate measurements.</p> <p>Knowledge: Understand different types of force (magnetism, touching). Compare how things move on different surfaces. Properties of magnetism, and facts relating to materials.</p>	<p>Theme: Animals Including Humans</p> <p>Key Question: How are bodies structured?</p> <p>Skills: Suggest healthy meals; explore alternative diets; understand traffic light system. Gather and record data in a variety of ways. Use different types of scientific enquiries to answer questions including secondary sources.</p> <p>Knowledge: Purpose of skeletons and muscles in animals & humans for support, protection & movement. Animals get nutrition from food. Healthy diets.</p>	<p>Theme: Pupil Led Investigations</p> <p>Key Question: Child-led relating to topic or own ideas.</p> <p>Skills: Predictions, reasoning, data collection, beginning to analyse data, conclusions.</p> <p>Knowledge: Dependent on investigation choices.</p>	<p>Theme: Plants</p> <p>Key Question: Do all plants need the same things to be healthy?</p> <p>Skills: Explore the requirement of plants for life and growth, and how they vary from plant to plant. Investigate how water is transported in plants. Making systematic and careful observations. Use simple apparatus to make and record measurements using standard units.</p> <p>Knowledge: Describe functions of the parts of plants; life cycle / reproduction of plants.</p> <p>Pupil-Led Investigation: How much water do plants need?</p>	<p>Theme: Light</p> <p>Key Question: What can light do?</p> <p>Skills: Investigate and measure shadows at different times, looking for patterns and making a series of observations. Gather and record data to answer questions. Record observations in a systematic way that relates to a scientific question.</p> <p>Knowledge: Understand that light is needed to see, for reflections and for shadows. Recognise that shadows are formed when the light from a light source is blocked by an opaque subject.</p>



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	<p>Enquiry Skill: Identifying, Grouping & Classifying</p>	<p>Pupil-Led Investigation: Which surface slows the toy car down the most?</p> <p>Enquiry Skill: Pattern Seeking</p>	<p>Pupil-Led Investigation: How is the human skeleton structured?</p> <p>Enquiry Skill: Researching</p>		<p>Enquiry Skill: Observing Over Time</p>	<p>Pupil-Led Investigation: Can everything make a shadow?</p> <p>Enquiry Skill: Comparative & Fair Testing</p>
4	<p>Theme: Sound</p> <p>Key Question: What is sound?</p> <p>Skills: Explain sound is produced by vibrations. Investigate how different sounds are produced by different materials. Identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Knowledge: Recognise that vibrations from sounds travel through a medium to the ear. How sound travels best; how materials can alter sounds; descriptions of sounds (high, low, pitch etc).</p> <p>Pupil-Led Investigation: What makes the best string telephone?</p> <p>Enquiry Skill: Pattern Seeking</p>	<p>Theme: Electricity</p> <p>Key Question: How does electricity work?</p> <p>Skills: Construct a simple circuit with switches; wire a plug; investigate how circuits can be altered. Using results to draw simple conclusions, make predictions for new values, suggest improvements.</p> <p>Knowledge: Give examples of electricity (batteries, mains etc) and what uses electricity. Safety awareness. How electricity works in a simple way e.g. recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Insulator / conductor materials.</p> <p>Pupil-Led Investigation: How can we make a purposeful switch? (for a Christmas card)</p> <p>Enquiry Skill: Comparative & Fair Testing</p>	<p>Theme: Animals Including Humans</p> <p>Key Question: How does food affect our bodies?</p> <p>Skills: Explain how the digestive system works; understand how teeth develop; explain the effects of different diets. Identify predators and prey. Use results to draw simple conclusions. Suggest explanations for findings, improvements and raise further questions.</p> <p>Knowledge: How the digestive system works; how diets affect the body including teeth; examine the difference between 3 core diets (herbivore, omnivore, carnivore). What are the functions of teeth, what damages teeth and how to look after them.</p> <p>Pupil-Led Investigation: How do different drinks effect our teeth?</p> <p>Enquiry Skill: Researching</p>	<p>Theme: Pupil Led Investigations</p> <p>Key Question: Child-led relating to topic or own ideas.</p> <p>Skills: Predictions, reasoning, data collection, beginning to analyse data, conclusions.</p> <p>Knowledge: Dependent on investigation choices.</p>	<p>Theme: Living Things and Their Habitats</p> <p>Key Question: How can we group living things, and why should we protect them?</p> <p>Skills: Classify and group living things in different ways. Gather, record and classify data.</p> <p>Knowledge: Understand that environmental changes can be dangerous for living things and their habitats. Classification keys. Recognise that living things can be grouped in a variety of ways. When animals belong to different 'groups' they therefore have different needs and habitats.</p> <p>Pupil-Led Investigation: What vertebrates & invertebrates live in our local school environment?</p> <p>Enquiry Skill: Identifying, Groups & Classifying</p>	<p>Theme: States of Matter</p> <p>Key Question: What causes materials to change state?</p> <p>Skills: Observe changes of materials and investigate and measure temperatures. Classify materials. Investigate and observe evaporation. Set up a fair test by identifying what is to be changed and what is to be kept the same. Identify what needs to be measured/observed to see changes.</p> <p>Knowledge: Which materials change state when heated / cooled and at what temperature & rate. Understand the differences between solids, liquids and gases. Explain the water cycle in relation to evaporation and condensation.</p> <p>Pupil-Led Investigation: Which conditions are the best to dry materials by evaporation?</p> <p>Enquiry Skill: Observing Over Time</p>
5	<p>Theme: Forces</p> <p>Key Question: What different forces are there, and can we change them?</p> <p>Skills: Predict and investigate gravitational forces, resistances and friction, and draw conclusions from</p>	<p>Theme: Earth and Space</p> <p>Key Question: How do the planets affect us on Earth?</p> <p>Skills: Explain day and night in relation to its rotations. Demonstrate movements of planets. Gather and record</p>	<p>Theme: Properties and Changes of Materials</p> <p>Key Question: What happens when we make changes to everyday materials?</p> <p>Skills: Carry out an investigation to test out a hypothesis. Investigate</p>	<p>Theme: Pupil Led Investigations</p> <p>Key Question: Child-led e.g. "What is the best thermal insulator for a lunch box?" "What is the best electrical conductor to make a bulb shine brightest?"</p>	<p>Theme: Living Things and Their Habitats</p> <p>Key Question: How do animals and plants reproduce?</p> <p>Skills: Investigate and describe comparisons between species. Record data and results of increasing</p>	<p>Theme: Animals Including Humans</p> <p>Key Question: What happens when we get older?</p> <p>Skills: Observe changes and make comparisons. Take accurate measurements using a range of equipment. Plot</p>



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	<p>experiments. Systematically collect results. Measure, taking repeat readings for improved accuracy.</p> <p>Knowledge: Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Understand how mechanisms can change the effect of forces. Identify the effect of air resistance that acts between moving surfaces.</p> <p>Pupil-Led Investigation: How does the length of wing/number of paper clips/size of paper affect the time it takes for the spinner to fall?</p> <p>Enquiry Skill: Pattern Seeking</p>	<p>data using tables and graphs (in a line graph or bar chart).</p> <p>Knowledge: Movement of planets in relation to each other and the Sun, and how this creates night and day. Movement of the Moon. Understand the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Pupil-Led Investigation: How are ‘craters’ formed?</p> <p>Enquiry Skill: Comparative & Fair Testing</p>	<p>dissolving and separating and reversing processes. Give reasons through testing for different material uses. Compare and group materials. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials. Use test results to make predictions to set up further comparative and fair tests.</p> <p>Knowledge: Understand solutions are made by dissolving. Explain how new materials can be made through an irreversible process. Deeper understanding of material properties including conductivity and magnetism. Compare everyday materials on basis of their thermal conductivity.</p> <p>Pupil-Led Investigation: Which cup will keep the tea warm and insulate it for the longest?</p> <p>Enquiry Skill: Identifying, Groups & Classifying</p>	<p>Skills: Devise and conduct investigations into properties and suitability of materials building on knowledge. Predictions, reasoning, data collection, beginning to analyse data, conclusions.</p> <p>Knowledge: Understand solutions are made by dissolving. Explain how new materials can be made through an irreversible process. Deeper understanding of material properties including conductivity and magnetism.</p>	<p>complexity using scientific diagrams and labels, classification keys, tables and bar graphs.</p> <p>Knowledge: Understand how life cycles are different depending on the animal. Describe reproductive processes in living things. Identify how different plants disperse their seeds.</p> <p>Pupil-Led Investigation: How are seeds dispersed in our local environment?</p> <p>Enquiry Skill: Researching</p>	<p>results accurately on a graph (e.g. a line graph).</p> <p>Knowledge: Understand the physiological changes to humans as they age.</p> <p>Pupil-Led Investigation: What could we measure to show how humans develop as they grow older?</p> <p>Enquiry Skill: Observing Over Time</p>
6	<p>Theme: Living Things and Their Habitats</p> <p>Key Question: How and why do we classify living things?</p> <p>Skills: Classify organisms, plants and micro-organisms by their characteristics. Create questions which separate animals/plant groups. Identify organisms within their local area. Record the results of a survey using a classification key including scientific language.</p> <p>Knowledge: Correct names and characteristics of organisms. Carl Linnaeus classification system. Links between micro-organisms and</p>	<p>Theme: Animals including Humans</p> <p>Key Question: What factors affect our health and how?</p> <p>Skills: Carry out a scientific enquiry to answer a question. Compare lifestyles and examine effects of different lifestyles on health. Explain and model the transportation of nutrients and water around the body. Use test result to make predictions and set up further comparative & fair tests.</p> <p>Knowledge: Understand the impact of diet, drugs, exercise and lifestyle on the health and function of the body. Identify</p>	<p>Theme: Evolution and Inheritance</p> <p>Key Question: How do living things change over time?</p> <p>Skills: Observe and compare characteristics inherited between generations and make real-life links. Explain the process of natural selection and evolution. Report and present.</p> <p>Knowledge: That humans and living things have evolved over time, and factors and behaviours affect changes. The work of Darwin. Plants and animals adapt to their environment. Living things produce offspring of some</p>	<p>Theme: Pupil Led Investigation</p> <p>Key Question: Child-led relating to topic or own ideas.</p> <p>Skills: Predictions, reasoning, data collection and recording, analyse data, conclusions.</p> <p>Knowledge: Dependent on investigation choices.</p>	<p>Theme: Light</p> <p>Key Question: How does light help us see?</p> <p>Skills: Explain complex processes about how we see objects and shapes. Take accurate measurements and record data accurately on a graph (e.g. a line graph).</p> <p>Knowledge: Recognise that light appears to travel in straight lines and understand that we see due to light reflections in the eye. Understand that light travels. Understand why shadows have the same shape as their objects.</p>	<p>Theme: Electricity</p> <p>Key Question: How do we alter circuits?</p> <p>Skills: Investigate and give reasons for variations in brightness and volume within circuits. Create a scientific question which identifies the ‘change’ and ‘measure.’ Plan a scientific enquiry to answer a question, recognising and controlling variables to ensure a fair test.</p> <p>Knowledge: Compare variations in how electrical components function and understand what factors affect volume and brightness.</p>



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	<p>diseases. Give reasons for classifying plants and animals based on specific characteristics.</p> <p>**Link to Kingswood**</p> <p>Pupil-Led Investigation: How else can we classify animals?</p> <p>Enquiry Skill: Identifying, Groups & Classifying</p>	<p>and name parts of the human circulatory system and describe different functions. Describe the functions of the heart, blood vessels and blood.</p> <p>**Link to PSHCE**</p> <p>Pupil-Led Investigation: How do different poses & positions effect my heart rate?</p> <p>Enquiry Skill: Observing Over Time</p>	<p>kind, not always identical to their parents.</p> <p>Pupil-Led Investigation: How has my made-up animal adapted to live in its environment?</p> <p>Enquiry Skill: Researching</p>		<p>Pupil-Led Investigation: How does the shadow of an object change?</p> <p>Enquiry Skill: Pattern Seeking</p>	<p>Correct symbols and scientific language within circuitry.</p> <p>Pupil-Led Investigation: How can you change the brightness of a bulb in a circuit?</p> <p>Enquiry Skill: Comparative & Fair Testing</p>
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