

Kingsham Primary School



Science Long Term Plan

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

The national curriculum for science aims to ensure that all pupils:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of 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

Science – Topics and Opportunities

	Autumn	Spring	Summer
Year 1 / 2 A	<p>Living things and their habitats Habitats, early food chains (7 weeks)</p> <p>Materials Use of different everyday materials, classifying and grouping, changing materials by bending etc. (5 weeks)</p> <p>Seasonal change Observe changes across the four seasons, weather, length of day</p> <p>Ongoing</p>	<p>Materials - Use of different everyday materials, classifying and grouping, changing materials by bending etc.(6 weeks)</p> <p>Plants - Identification and labelling inc. trees, structure of plants, including roots, stem, flower. Living and non-living things, what plants need to grow, growing from seeds and bulbs (6)</p> <p>Seasonal change - Observe changes across the four seasons, weather, length of day -</p> <p>Ongoing</p>	<p>Living things and their habitats Habitats, early food chains (7 weeks)</p> <p>Animals (including Humans) Exercise and healthy living, name parts of the human body, animals have offspring, which grow to be adults</p> <p>7 weeks</p> <p>Seasonal change Observe changes across the four seasons, weather, length of day</p> <p>Ongoing</p>
Year 1 / 2 B	<p>Seasonal change Observe changes across the four seasons, weather, length of day (Ongoing)</p> <p>Animals (including Humans) Identification and labelling common birds and animals, know carnivores and herbivores, how animals are suited to their environment What animals and humans need to survive</p> <p>Living things and their habitats Habitats, early food chains</p>	<p>Seasonal change Observe changes across the four seasons, weather, length of day (Ongoing)</p> <p>Light Observe and name a variety of light sources, associate shadows with light blockage</p>	<p>Seasonal change Observe changes across the four seasons, weather, length of day</p> <p>Ongoing</p> <p>Materials Use of different everyday materials, classifying and grouping, changing materials by bending etc.</p>

Science – Topics and Opportunities

	Autumn	Spring	Summer
Year 3 / 4 A	<p>Animals nutrition, skeletons 6</p> <p>Forces and magnets 5</p>	<p>Electricity 6</p> <p>States of matter 6</p> <p>SLG, heating and cooling, evaporation and condensation</p>	<p>Plants 3</p> <p>Function of parts, what plants need, life cycle of a plant, how water is transported in plants</p>
Year 3 / 4 B	<p>Rocks 3</p> <p>How formed, different kinds, fossils</p>	<p>Animals (inc humans)</p> <p>Digestive system & Teeth</p> <p>Living things 6</p> <p>ID and name living things in wider and local environment, environments can change and pose dangers</p>	<p>Sound 6</p> <p>Source, vibration, loud and faint, pitch, volume</p> <p>Light 6</p> <p>Sources, including sun and electricity, shadows, reflection, vocabulary</p>
Year 5 / 6 A	<p>Earth and Space and Magnetism (6 weeks)</p> <p>Earth relative to the sun, moon relative to the earth, relationship between sun, earth and moon, earth's rotation, day and night</p> <p>Light (6 weeks)</p> <p>How light travels, the eye, shadows</p>	<p>Light (continued)</p> <p>Forces (8-10 weeks)</p> <p>Gravity, air resistance, water resistance, friction, gears, pulleys, levers and springs</p>	<p>Animals (inc humans) (6-8 weeks)</p> <p>Circulatory system, heart and blood vessels, diet, exercise and drugs, transport of nutrients through the body</p> <p>Changes as humans develop from birth to old age (linked to SRE one week)</p>

<p>Year 5 / 6 B</p>	<p>Electricity (6- 8 weeks)</p> <p>Electrical circuits (series)</p> <p>Properties and changes of materials (6-8 weeks)</p> <p>Dissolving, evaporating, filtering, reversible and irreversible changes</p>	<p>Properties and changes of materials (continued)</p> <p>All living things (6 weeks)</p> <p>Classification, vertebrates and invertebrates, classifying reptiles, amphibians, mammals, insects</p> <p>Life cycle of plants and animals</p> <p>Birth, growth, development and reproduction</p>	<p>Evolution and inheritance (6 weeks)</p> <p>Fossils tell about the past, off spring, changes to the human skeleton over time, Darwin</p> <p>Changes as humans develop from birth to old age (linked to SRE one week)</p>
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Progression of Enquiry Skills from Key Stage One to Key Stage Two

Key Stage 1	Lower Key Stage 2	Upper Key Stage 2
Explore the world around them and raise their own simple questions	Raise their own relevant questions about the world around them	Use their science experiences to explore ideas and raise different kinds of questions
Experience different types of science enquiries, including practical activities	Should be given a range of scientific experiences including different types of science enquiries to answer questions	Talk about how scientific ideas have developed over time
Begin to recognise different ways in which they might answer scientific questions	Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions	Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions
Carry out simple tests	Set up simple practical enquiries, comparative and fair tests Recognise when a simple fair test is necessary and help to decide how to set it up	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why
Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying)	Talk about criteria for grouping, sorting and classifying; and use simple keys	Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment
Ask people questions and use simple secondary sources to find answers	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations	Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact
Observe closely using simple equipment with help, observe changes over time	Make systematic and careful observations Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used	Make their own decisions about what observations to make, what measurements to use and how long to make them for
With guidance, they should begin to notice patterns and relationships	Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them	Look for different causal relationships in their data and identify evidence that refutes or supports their ideas
Use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data	Take accurate measurements using standard units Learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately	Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.
Record simple data	Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data	Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
Use their observations and ideas to suggest answers to questions Talk about what they have found out and how they found it out	With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions	Identify scientific evidence that has been used to support or refute ideas or arguments
With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language	Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, including oral and written explanations, displays or presentations of results and conclusions	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results
	With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done.	Use their results to make predictions and identify when further observations, comparative and fair tests might be needed