



To be a Scientist at St Leonard's C of E Primary School



Our Curriculum Intent

Our intent for science is to inspire children to become curious, inquisitive and analytical thinkers with a broad understanding of the natural world – in other words, to think like scientists. Our intention is for children to develop the confidence to ask questions, make observations, carry out investigations, record data in a variety of ways and analyse and present their findings.

Our curriculum aims to build an awareness of how science influences everyday life and drives progress in society. The hope is to encourage pupils to become reflective, responsible individuals who use scientific knowledge and skills to make informed decisions and contribute positively to the world around them. We build the knowledge, language and skills throughout their scientific journey with us so they can build on their success within biology, chemistry and physics in secondary school and beyond in their future careers.

Implementation – The Units of Work

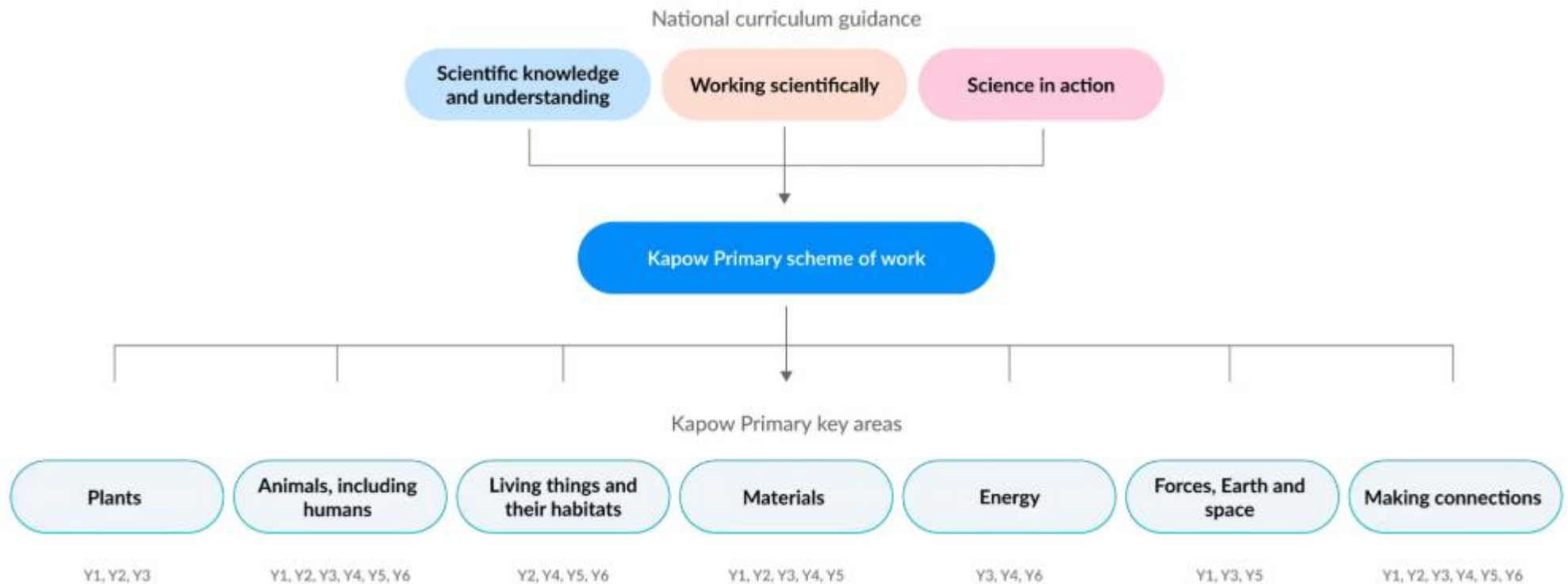
Within school, we follow the Kapow scheme of learning for Science. The scheme is organised into five core units (six in Year 5) consisting of predominantly six lessons. These ensure that all aspects of the National curriculum are covered.

In addition to this, there is a 'Making connections' unit that explores beyond the statutory curriculum, enabling pupils to revise, apply and extend their learning in innovative ways. These units help pupils to develop a deeper interdisciplinary understanding and appreciation of how scientific principles connect in the real world.

Our units have been sequenced to build both substantive and disciplinary knowledge as they progress through the school. Our curriculum is centred around the approach of a 'Spiral Curriculum', which gives children the opportunity to revisit and build on previous learning.



Coverage of the Units



Early Years Science

Animal Adventures	I am a Scientist	Our Beautiful Planet	Changing Seasons
Exploring animals big and small on the school grounds and further afield, identifying similarities and differences and sorting animals into groups.	Encouraging curiosity, the children explore the natural world through hands-on investigation, discovering how processes and changes occur around us.	Exploring outdoors, children discover the wonders of the natural world. They plant seeds, mix plants in the mud kitchen and learn to care for our beautiful planet.	A unit to be taught across the year: observing how the natural world transforms through the year and recognising how these changes affect the weather, plants and animals.

Overview of KS1 and KS2

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2	Y1/2 (A): Plants: Introduction to plants	Y1/2 (A): Forces and space: Seasonal changes	Y1/2 (A): Living things: Habitats	Y1/2 (A): Animals, including humans: Life cycles and health	Y1/2 (A): Plants: Plant growth	Y1/2 (A): Making connections: Ocean protectors
Year 3/4	Y3/4 (A): Energy: Light and shadows	Y3/4 (A): Animals, including humans: Movement and nutrition	Y3/4 (A): Materials: Rocks and soil	Y3/4 (A): Animals, including humans: Digestion and food	Y3/4 (A): Energy: Electricity and circuits	Y3/4 (A): Making connections: How does food affect muscle fatigue?
Year 5/6	Y5/6 (A): Materials: Mixtures and separation	Y5/6 (A): Materials: Properties and changes	Y5/6 (A): Forces and space: Earth and space	Y5/6 (A): Animals, including humans: Circulation and health	Y5/6 (A): Energy: Light and reflection	Y5/6 (A): Making connections: How reflective are space blankets?

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2	Y1/2 (B): Animals, including humans: Sensitive bodies	Y1/2 (B): Materials: Everyday materials	Y1/2 (B): Animals, including humans: Comparing animals	Y1/2 (B): Materials: Uses of everyday materials	Y1/2 (B): Living things: Microhabitats	Y1/2 (B): Making connections: Fairytale science
Year 3/4	Y3/4 (B): Forces and space: Forces and magnets	Y3/4 (B): Materials: States of matter	Y3/4 (B): Energy: Sound and vibrations	Y3/4 (B): Living things: Classification and changing habitats	Y3/4 (B): Plants: Plant reproduction	Y3/4 (B): Making connections: How does wind force affect seed dispersal?
Year 5/6	Y5/6 (B): Living things: Life cycles and reproduction	Y5/6 (B): Forces and space: Unbalanced forces	Y5/6 (B): Living things: Classifying big and small	Y5/6 (B): Energy: Circuits, batteries and switches	Y5/6 (B): Living things: Evolution and inheritance	Animals: Human timeline (3 lessons)/ How does light affect the direction of plant growth? (3 lessons)

Year 1/2 Cycle A

Unit 1	<u>Y1/2 (A): Plants: Introduction to plants</u> 7 lessons Venturing outside, the children identify and name common wild and garden plants (including deciduous and evergreen trees), observe plant parts with magnifying glasses and name them, sort leaves by appearance, investigate whether beans need water to grow and identify edible plant parts.	Unit 2	<u>Y1/2 (A): Forces and space: Seasonal changes</u> 7 lessons Reflecting on their experiences, the children learn about the four seasons and their associated weather, explore how seasonal changes affect trees, daylight hours and clothing and plan and present weather reports, considering the knowledge needed for the role.
Unit 3	<u>Y1/2 (A): Living things: Habitats</u> 7 lessons Considering the life processes shared by all living things, the children classify objects as alive, once alive or never alive, explore a range of habitats by naming plants and animals found there, learn how different living things depend on each other for food and shelter and create food chains to show the sequence in which living things eat each other.	Unit 4	<u>Y1/2 (A): Animals, including humans: Life cycles and health</u> 7 lessons Studying the life cycles of various animals, the children learn what animals need to survive, observe changes over time, collect and record data on their peers, develop measurement skills and consider how scientific knowledge supports healthy choices.
Unit 5	<u>Y1/2 (A): Plants: Plant growth</u> 7 lessons Carrying out comparative tests, the children investigate the conditions for seed germination, measure stem height with rulers, record data in tables and learn through practical activities that plants need water, light and suitable temperatures to grow and stay healthy.	Unit 6	<u>Y1/2 (A): Making connections: Ocean protectors</u> 6 lessons Consolidating knowledge of life cycles, habitats and food chains through ocean and rock pool exploration. Investigating what happens to litter when it is left in water and role-playing as a marine biologist to better understand how we can protect the oceans.

Year 1/2 Cycle B

Unit 1	<u>Y1/2 (B): Animals, including humans: Sensitive bodies</u> 7 lessons Identifying and naming body parts, the children conduct practical activities with the senses to spot patterns and answer questions.	Unit 2	<u>Y1/2 (B): Materials: Everyday materials</u> 7 lessons Identifying and naming objects and the materials from which they are made, the children compare and group materials by how they look and carry out tests to sort them based on unobservable properties.
Unit 3	<u>Y1/2 (B): Animals, including humans: Comparing animals</u> 7 lessons Learning about animals, the children compare and group them by similarities and differences in characteristics, physical features and diets.	Unit 4	<u>Y1/2 (B): Materials: Uses of everyday materials</u> 7 lessons Recognising the suitability of materials for specific purposes, the children explore how actions like stretching and bending affect solid objects, compare material suitability through tests and record data.
Unit 5	<u>Y1/2 (B): Living things: Microhabitats</u> 7 lessons Building on their knowledge of habitats, the children explore how microhabitats meet the needs of minibeasts, learn about scientific skills used to answer questions and plan and carry out an experiment to determine the conditions woodlice prefer.	Unit 6	<u>Y1/2 (B): Making connections: Fairytale science</u> 6 lessons Using fairytales as inspiration, the children broaden their understanding of animals, the senses and materials by gathering and recording data to investigate absorbency and the sense of touch, recapping the features of animal groups and building waterproof animal homes with natural materials.

Year 3/4 Cycle A

Unit 1	<u>Y3/4 (A): Energy: Light and shadows</u> 7 lessons Identifying light sources, the children learn that light is needed to see, explore how its absence causes darkness, investigate reflection and shadow formation and create shadow puppets to explore how light can be used in the arts.	Unit 2	<u>Y3/4 (A): Animals, including humans: Movement and nutrition</u> 7 lessons Studying the human skeleton, the children identify key bones, explore how muscle changes cause movement, learn how the body uses energy, understand what constitutes a balanced diet and discover how research informs nutritionist expertise.
Unit 3	<u>Y3/4 (A): Materials: Rocks and soil</u> 7 lessons Observing the appearance and physical properties of rocks, the children compare and group different rock samples, learn about fossil and soil formation and record soil drainage rates in a bar chart.	Unit 4	<u>Y3/4 (A): Animals, including humans: Digestion and food</u> 7 lessons Using models, the children describe the function of key organs in the digestive system, identify types of human teeth, investigate factors affecting dental health, compare human teeth to those of other animals and examine animal faeces to explore diet, digestion and dentition.
Unit 5	<u>Y3/4 (A): Energy: Electricity and circuits</u> 7 lessons Exploring appliances that use electricity, the children learn to work safely with electricity, build circuits, investigate conductors and insulators, examine the relationship between the number of cells and bulb brightness and use real scenarios and historical discoveries to understand scientific progression and home safety.	Unit 6	<u>Y3/4 (A): Making connections: How does food affect muscle fatigue?</u> 6 lessons Exploring the relationship between food consumption and muscle fatigue through a comparative test, the children analyse data, draw conclusions and apply their understanding of digestion, nutrition and movement to make predictions, plan and carry out an enquiry.

Year 3/4 Cycle B

Unit 1	<u>Y3/4 (B): Forces and space: Forces and magnets</u> 7 lessons Investigating motion on different surfaces, the children learn about friction, compare its uses and disadvantages, explore contact and non-contact forces and study the properties and uses of magnets.	Unit 2	<u>Y3/4 (B): Materials: States of matter</u> 7 lessons Investigating the properties of solids, liquids, and gases, the children learn about states of matter, explore changes of state through relatable examples, explain water cycle changes and study how temperature affects the rate of evaporation.
Unit 3	<u>Y3/4 (B): Energy: Sound and vibrations</u> 7 lessons Exploring different ways of producing sounds, the children learn how vibrations relate to what they hear, how pitch and volume can be altered and how sound can be insulated with different materials.	Unit 4	<u>Y3/4 (B): Living things: Classification and changing habitats</u> 7 lessons Children explore different ways living things can be grouped and make classification keys. They study ways that habitats may change over time and understand that humans can have both positive and negative effects on their surroundings.
Unit 5	<u>Y3/4 (B): Plants: Plant reproduction</u> 7 lessons Explaining how plants reproduce within the life cycle of a flowering plant, the children gather data on plant growth and investigate the structure and function of its parts.	Unit 6	<u>Y3/4 (B): Making connections: How does wind force affect seed dispersal?</u> 6 lessons Using different wind speeds to disperse seeds and measure how force affects the distance they travel, the children consider how seed shapes have contributed to product design as an example of biomimicry.

Year 5/6 Cycle A

Unit 1	<u>Y5/6 (A): Materials: Mixtures and separation</u> 7 lessons Exploring different types of mixtures, the children learn methods of separation, dissolve various substances, investigate how temperature affects dissolving time, design and create a water filter, sieve soil and evaporate solutions.	Unit 2	<u>Y5/6 (A): Materials: Properties and changes</u> 7 lessons Broadening their understanding of material properties, the children investigate hardness, transparency and conductivity, explore how these properties influence material uses, study reversible changes like dissolving and changes of state and compare them to irreversible changes like rusting, burning and mixing vinegar with bicarbonate of soda.
Unit 3	<u>Y5/6 (A): Forces and space: Earth and space</u> 7 lessons Exploring the movement of celestial bodies in the Solar System, the children learn about the Earth, other planets and the Moon, discover how the Earth's rotation causes night and day, understand how sundials work and investigate satellite uses and the issue of space junk.	Unit 4	<u>Y5/6 (A): Animals, including humans: Circulation and health</u> 7 lessons Studying the human circulatory system, the children learn about the roles of the heart, blood and blood vessels, use models to demonstrate their functions, explore how lifestyle choices affect health, advise patients using secondary sources, investigate the relationship between exercise and heart rate and analyse secondary data to understand fitness.
Unit 5	<u>Y5/6 (A): Energy: Light and reflection</u> 7 lessons Proving that light travels in a straight line, the children explain observations of reflection and shadows, how our eyes allow us to see, how mirrors can be used in various ways and investigate factors affecting the size of shadows and the laws of reflection.	Unit 6	<u>Y5/6 (A): Making connections: How reflective are space blankets?</u> 6 lessons Exploring the reflectiveness of space blankets through experiments, the children analyse data, draw conclusions and apply their understanding of reflection to make predictions, plan and carry out an enquiry.

Year 5/6 Cycle B

Unit 1	<u>Y5/6 (B): Living things: Life cycles and reproduction</u> 7 lessons Comparing the life cycles of plants, mammals, birds, amphibians and insects, the children investigate asexual reproduction in plants and compare sexual and asexual reproduction.	Unit 2	<u>Y5/6 (B): Forces and space: Unbalanced forces</u> 7 lessons Building on their knowledge of contact and non-contact forces, the children explore gravity, friction, air resistance and water resistance, consider the effects of unbalanced forces, plan investigations and test ideas using models to create the most effective pulley system.
Unit 3	<u>Y5/6 (B): Living things: Classifying big and small</u> 7 lessons Broadening their knowledge of grouping vertebrates, invertebrates, plants and micro-organisms by shared characteristics, the children learn about Carl Linnaeus's development of the Linnaean and binomial classification systems and use branching and number keys to sort and identify organisms.	Unit 4	<u>Y5/6 (B): Energy: Circuits, batteries and switches</u> 7 lessons Revisiting electrical circuits, the children draw conventional circuit diagrams, use models to explain current, resistance and voltage, compare batteries and their effects on bulb brightness and apply their knowledge to design and create practical devices.
Unit 5	<u>Y5/6 (B): Living things: Evolution and inheritance</u> 7 lessons Studying patterns in humans and other species, the children learn about inherited and environmental characteristics, understand how observations led Darwin and Wallace to develop theories, model finch variation and natural selection to explain species evolution and explore fossil evidence supporting this theory.	Unit 6	Animals: Human timeline (3 lessons)/ How does light affect the direction of plant growth? (3 lessons)