



Science Curriculum

Compassion, Self-Awareness, Aspiration, Commitment, Resilience and
Integrity

Science Curriculum:

There are three strands which run through the Science Scheme of Work:

Scientific knowledge and understanding – developing scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.

Working scientifically – develop an understanding of the nature, processes and methods of science through different types of scientific enquires that help the children answer scientific questions about the world around them.

Science in action – children are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Through this Science scheme, pupils will develop Scientific knowledge and understanding in seven key areas:

- Plants, including humans
- Living things and their habitats
- Materials
- Energy
- Forces, Earth and space
- Making connections.

Working scientifically forms one of the strands in our curriculum, meaning that it is interwoven into each and every unit alongside scientific knowledge and understanding. We have created a Working Scientifically enquiry cycle, which incorporates all the elements of working scientifically mentioned above in an easy-to-understand model that also helps pupils to understand the steps involved in a complete scientific enquiry.

Science Programme of Study:

Year One		
Autumn One	Autumn Two	Spring One
Forces and Space: Seasonal Changes	Materials: Everyday Materials	Animals: Sensitive Bodies
Biology	Chemistry	Biology
LO: To identify how the weather changes across the four seasons.	LO: To identify everyday materials. <i>Working scientifically: to sort objects into groups based on the materials they are made from.</i>	LO: To name parts of the human body <i>Working scientifically: to sort body parts into groups</i>
LO: To identify events and activities that take place in different seasons.	LO: To recognise the difference between objects and materials.	LO: To name the body parts used for each sense. <i>Working scientifically: to spot patterns in data</i>
LO: To recognise how trees change across the four seasons	LO: To describe the properties of materials.	LO: To name the body parts used for each sense. <i>Working scientifically: to spot patterns in data</i>
LO: To recognise that daylight hours change across the four seasons. <i>Working scientifically: to record data in a pictogram.</i>	LO: To group materials based on their properties (absorbency). <i>Working scientifically: to make observations and record data.</i>	LO: To identify the body parts used for the sense of smell and sight. <i>Science in action: to recognise that scientists are always making new discoveries</i>
LO: Knowledge To observe changes across the four seasons. <i>Working scientifically: to gather and record data about how seasons change over time.</i>	LO: To group materials based on their properties (waterproofness). <i>Working scientifically: to plan a test and suggest what might happen.</i>	LO: To identify the body part used for the sense of hearing. <i>Working scientifically: to investigate how sound changes as you move further away</i>
LO: To plan and carry out a weather report	LO: To group materials based on their properties (toughness). <i>Working scientifically: to answer questions based on results</i>	LO: To recognise how the senses are used in everyday life. <i>Science in action: to recognise the importance of the senses in certain jobs</i>

Year 1

Spring Two	Summer One	Summer Two
Animals: Comparing animals	Plants: Introduction to plants	Making connections: Investigating science through stories
Biology	Biology	Making connections across units
LO: To identify and group animals.	LO: To identify plants on the school grounds. <i>Working scientifically: to plan an investigation.</i>	LO: To observe changes across the seasons <i>Working scientifically: to spot patterns in data</i>
LO: To describe a variety of animals.	To identify parts of a flowering plant. <i>Working scientifically: to draw and label a diagram.</i>	LO: to describe and compare the features of animals <i>Working scientifically: to carry out research to find information</i>
LO: To compare the features of animals.	LO: To identify and name wild and garden plants. <i>Working scientifically: to sort flowers into groups.</i>	LO: To identify differences in animal features <i>Working scientifically: to use a ruler to measure</i>
LO: To identify animals that are carnivores, herbivores and omnivores. <i>Working scientifically: to research using nonfiction texts.</i>	LO: To identify and name deciduous and evergreen trees. <i>Working scientifically: to measure and compare leaves</i>	LO: To describe the properties of everyday materials <i>Working scientifically</i>
LO: To recognise animals that make suitable pets. <i>Working scientifically: to gather and record data to help in answering questions.</i>	LO: To recognise that new plants come from seeds and bulbs. <i>Working scientifically: to recognise that observations do not always match predictions.</i>	LO: To identify animals that are carnivores, herbivores and omnivores.
LO: To describe and compare the structure of animals. <i>Science in action: to know about famous scientists throughout history.</i>	<i>Science in action: to recognise the importance of a scientist's role.</i> <i>Working scientifically: to use observations to find answers to questions.</i>	

Year 2

Autumn One	Autumn 2	Spring One
Living things: Habitats	Living things: Microhabitats	Materials: Use of everyday materials
Biology	Biology	Chemistry
LO: To identify some of the characteristics of living things.	<i>Working scientifically: To classify a variety of minibeasts.</i>	LO: To recognise that objects are made from materials that suit their uses. <i>To recognise that objects can be grouped</i>
LO: To recognise the difference between things that are alive, were once alive or have never been alive. <i>Working scientifically: to classify objects into groups</i>	<i>Working scientifically: To recognise how scientists answer questions.</i>	LO: To recognise that objects are made from materials that suit their uses.
LO: To identify plants and animals in different habitats.	LO: To recognise that living things live in habitats to which they are suited. <i>Working scientifically: to gather and record data to answer a question.</i>	LO: To recognise that the shape of some solid objects can be changed. <i>Working scientifically: to record data in a table.</i>
LO: To identify how a habitat provides animals and plants with what they need to survive. <i>Working scientifically: to carry out research to find answers to questions</i>	<i>Working scientifically: to ask questions and plan how to carry out an experiment</i>	LO: To compare the suitability of materials for particular uses. <i>Working scientifically: to gather data and use it to answer a question</i>
LO: To recognise how animals and plants depend on each other.	<i>Working scientifically: to carry out an experiment and record data in a table</i>	LO: To recognise that the strength of some materials can be changed. <i>Working scientifically: to record data in a block graph.</i>
LO: To recall how animals get their food from plants and other animals.	LO: To identify a variety of flowering plants. <i>Science in action: to understand the role of a botanist.</i>	LO: To compare the suitability of materials for particular uses. <i>Science in action: to recognise that some materials are harmful to the environment.</i>

Year 2

Spring Two	Summer One	Summer Two
Animals: Life cycles and health	Plants: Plant growth	Making connections: Plant based materials
Biology	Biology	Making connections across units
LO: To identify different stages of the human life cycle.	LO: To recognise that seeds need certain conditions for growth. <i>Working scientifically: to plan comparative tests.</i>	LO: To describe how materials can be reused. <i>Science in action: to understand how the 3Rs contribute to sustainable products</i>
LO: To know which offspring come from which parent animal.	LO: To recognise that seeds and bulbs contain what they need to grow into a plant. <i>Working scientifically: to measure with a ruler</i>	LO: To identify human-made and natural materials. <i>Working scientifically: to group based on characteristics</i>
LO: To observe and measure growth in humans. <i>Working scientifically: to use simple measuring equipment.</i>	LO: To describe what seeds need to germinate. <i>Working scientifically: to record data in a table.</i>	LO: To identify suitable materials based on their properties. <i>Working scientifically: to perform a test and gather data</i>
LO: To identify and list the basic needs for survival for humans and animals. <i>Working scientifically: to use secondary sources to research.</i>	LO: To describe the effect of light on plant growth. <i>Working scientifically: to observe using a magnifying glass.</i>	LO: To identify a material to help plant growth. <i>Working scientifically: to use observations to answer a simple question.</i>
To recognise the importance of exercise and personal hygiene. <i>Working scientifically: to make observations over time</i>	LO: To identify stages of a plant's life cycle. <i>Working scientifically: to draw and label diagrams.</i>	LO: To choose materials to create a suitable plant pot. <i>Working scientifically: to identify and classify living things</i>
LO: To identify how to have a balanced diet. <i>Working scientifically: to interpret collected results.</i>	LO: To recognise what plants need for healthy growth. <i>Science in action: to recognise that humans have a responsibility to care for plants.</i>	

Year 3

Autumn One	Autumn Two	Spring One
Animals: Movement and nutrition	Forces and space: Forces and magnets	Materials: Rocks and Soil
Biology	Physics	Chemistry
LO: To explain the role of a skeleton. <i>Working scientifically: to group animals based on their physical properties</i>	LO: To describe the effects of contact forces. <i>Working scientifically: to label a diagram using arrows and scientific vocabulary.</i>	LO: To group rocks using their appearance. <i>Working scientifically: to observe the appearance of rocks closely, using a magnifying glass.</i>
LO: To recognise the main bones in the body. <i>Working scientifically: to measure and sort data.</i>	LO: To recognise the effects and uses of forces. <i>Working scientifically: to write a scientific conclusion identifying cause and effect.</i>	LO: To group rocks using their physical properties. <i>Working scientifically: to make predictions, suggest improvements and explain observations over time</i>
LO: To explain how muscles are used for movement. <i>Science in action: to explore scientific advances.</i>	LO: To interpret how and why things move differently on different surfaces. <i>Working scientifically: to plan an investigation using variables.</i>	LO: To describe the process of fossil formation. <i>Working scientifically: to present research on fossil formation</i>
LO: To explain how food is an essential energy source for animals. <i>Working scientifically: to gather and compare data to answer questions.</i>	LO: To describe the effects of magnets. <i>Working scientifically: to write a method</i>	LO: To identify fossils and group rocks accordingly. <i>Working scientifically: to use the fossil record to answer questions about the past.</i>
LO: To identify the main nutrient groups and their simple functions. <i>Working scientifically: To record information using secondary sources.</i>	LO: To compare the properties of different types of magnets. <i>Working scientifically: to display data using a bar chart.</i>	LO: To compare soils and how they were formed. <i>Working scientifically: to record the drainage rate for different soils in a bar chart.</i>
LO: To explain what makes a balanced diet. <i>Science in action: To explore how knowledge has progressed and how different jobs use this information.</i>	LO: To explain the uses of magnets. <i>Working scientifically: to research the uses of magnets</i>	LO: To describe a soil sample using sedimentation. <i>Working scientifically: to draw and label a diagram.</i>

Year 3

Spring Two	Summer One	Summer Two
Energy: Lights and shadows	Plants: Plant reproduction	Making connections: Does the hand span affect grip strength?
Physics	Biology	Making connections across units
LO: To explain the role of light sources. <i>Working scientifically: to plan and draw a results table.</i>	LO: To identify the growth and survival needs of plants. <i>Working scientifically: to pose relevant questions.</i>	LO: To revise the unit's states of matter, classification and changing habits. <i>Working scientifically: to plan a comparative test.</i>
LO: To compare light reflecting on different surfaces	LO: To describe the relationship between structure and function in plants. <i>Working scientifically: to design simple results tables</i>	LO: To revise the unit movement and nutrition and plant reproduction. <i>Working scientifically: to gather and record data.</i>
LO: To recognise which materials cast a shadow. <i>Working scientifically: to ask testable questions and plan how to answer them.</i>	LO: To investigate how water is transported in plants. <i>Working scientifically: to plan a simple enquiry.</i>	LO: To revise the unit forces and magnets. <i>Working scientifically: to conclude and evaluate the investigation</i>
LO: To summarise how shadows change throughout the day. <i>Working scientifically: to evaluate a method.</i>	LO: To explore the role of flowers in the life cycle of a plant. <i>Working scientifically: to complete, read and interpret data in a bar chart</i>	LO: To revise the unit uses of materials <i>Working scientifically: to use sets of data to inform design</i>
LO: To investigate how the distance of the light source affects the size of its shadow. <i>Working scientifically: to find patterns in data and form conclusions</i>	LO: To apply knowledge of plant life and growth. <i>Working scientifically: to identify and suggest changes to an enquiry</i>	LO: To revise the unit's light and shadows, movement, and nutrition. <i>Working scientifically: to report on my findings using a shadow puppet display.</i>
LO: To tell a story using shadow puppets. <i>Science in action: to recall how different people work with light and shadows.</i>	LO: To explore seed dispersal methods. <i>Working scientifically: to use results to draw conclusions.</i>	

Year 4

Autumn One	Autumn Two	Spring One
Animals: Animal digestion and food	Energy: Electricity and circuits	Materials: States and matter
Biology	Physics	Chemistry
LO: To describe the function of the human digestive system. <i>Working scientifically: to evaluate a model.</i>	LO: To recognise how electrical appliances are powered. <i>Working scientifically: to record and classify qualitative data</i>	LO: To identify solids using their properties. <i>Working scientifically: to ask relevant questions about the properties of solids.</i>
LO: To recognise the different types of human teeth and their roles in eating. <i>Science in action: to describe real observation methods and evidence collected.</i>	LO: To construct an electrical circuit. <i>Working scientifically: to draw a scientific diagram.</i>	LO: To identify liquids and gases using their properties. <i>Working scientifically to use results to draw simple conclusions about the properties of liquids.</i>
LO: To explain how to care for our teeth. <i>Working scientifically: to plan an enquiry by considering which variables should be changed, measured and controlled.</i> <i>Science in action: to determine why scientists need to work collaboratively and evaluate experiments.</i>	L.O: To explain the use of switches in a circuit.	LO: To describe melting and freezing. <i>Working scientifically to use thermometers to take accurate measurements before and after melting.</i>
LO: To recognise that differences in teeth relate to an animal's diet. <i>Working scientifically: to classify animals based on their diet.</i>	LO: To explain the use of materials as electrical conductors or insulators. <i>Working scientifically: To write a method.</i>	LO: To describe condensing and evaporating. <i>Working scientifically: to make predictions for new values about evaporation rates.</i>
LO: To recognise producers, predators and prey in food chains. <i>Working scientifically: to analyse trends in line graphs and form conclusions using scientific knowledge.</i>	LO: To investigate what affects bulb brightness. <i>Working scientifically: to pose questions and plan ways to test them.</i>	LO: To describe the different stages of the water cycle. <i>Working scientifically: to record the stages of the water cycle using a labelled diagram</i>
LO: To recognise that animal poo can give us clues about digestion, teeth and diet. <i>Working scientifically: to construct a results table for recording observations.</i>	LO: To explain how to be safe around electricity. <i>Science in action: to explore how scientific advances inform safety advice.</i>	LO: To describe how temperature affects evaporation rates and the water cycle. <i>Working scientifically: to research climate change and the water cycle.</i>

Year 4

Spring Two	Summer One	Summer Two
Energy: Sounds and vibrations	Animals: Classifications and changing habitats	Making connections: How does the flow of liquids compare?
Physics	Biology	Making connections across units
LO: To describe how sounds are made. <i>Working scientifically: To observe closely how different instruments create a sound.</i>	LO: To group animals in various ways. <i>Working scientifically: To record data in different ways.</i>	LO: To revise the units' states of matter and classification and changing habitats. <i>Working scientifically: to plan a comparative test</i>
LO: To describe how sounds are heard through different mediums. <i>Working scientifically: to research how whales and dolphins communicate underwater.</i>	LO: To group plants in various ways. <i>Working scientifically: to apply and create classification keys.</i>	LO: To revise the unit electricity and circuits. <i>Working scientifically: to gather and record data.</i>
LO: To describe the relationship between vibration strength and volume. <i>Working scientifically: to present results using a bar chart.</i>	<i>Working scientifically: to make careful observations. To make and use classification keys</i>	<i>Working scientifically: to make careful observations. To make and use classification keys</i>
LO: To describe the relationship between volume and distance. <i>Working scientifically: to suggest which variables to measure and for how long.</i>	LO: To recognise and describe different habitats and their inhabitants. <i>Working scientifically: to gather, record, classify and present data</i>	LO: To revise the unit uses of materials. <i>Working scientifically: to use sets of data to inform design.</i>
LO: To describe pitch and how to change it. <i>Working scientifically: to design simple results tables.</i>	LO: To recognise the impact humans can have on habitats. <i>Working scientifically: to research using an information sheet.</i>	LO: To revise the unit's light and shadows, movement, and nutrition. <i>Working scientifically: to report on my findings using a shadow puppet display.</i>
To explain how insulating materials can be used to muffle sound. <i>Working scientifically: to identify when results or observations do not match predictions</i>	LO: To recognise the impact of natural disasters on habitats.	

Year 5		
Autumn One	Autumn Two	Spring One
Materials: Mixtures and separation	Materials: Properties and changes	Forces and space: Earth and space
Chemistry	Chemistry	Physics
LO: To describe mixtures. <i>Working scientifically: to research using a range of secondary resources</i>	LO: To determine the hardness of materials and link this to their uses. <i>Working scientifically: to evaluate the hardness test to determine the degree of trust in the results.</i>	LO: To compare the contributions of Ptolemy, Alhazen and Copernicus to models of the Solar system. <i>Working scientifically To pose testable questions about the solar system</i>
LO: To explain the process of sieving. <i>Working scientifically: to draw and annotate a diagram to explain a concept.</i>	LO: To determine the transparency of different materials and link this to their uses. <i>Working scientifically: to plan and draw a table of results.</i>	LO: To describe the movement and shapes of the celestial bodies in our Solar System. <i>Working scientifically: to develop a model to represent the Solar System</i>
LO: To explain the process of filtering. <i>Working scientifically: to identify testable questions and how to answer them.</i>	To determine the conductivity of different materials and link this to their uses. <i>Working scientifically: to write a detailed, organised method which is easy to follow.</i>	LO: To describe the movement of the Moon relative to the Earth. <i>Working scientifically: to design and draw a table</i>
LO: To describe solutions and how they can be identified. <i>Working scientifically: to make observations about solutions.</i>	LO: To demonstrate reversible changes. <i>Working scientifically: to write a prediction using prior knowledge of the states of matter.</i>	LO: to explain the causes of day and night and the seasons. <i>Working scientifically: to draw a diagram to explain day and night.</i>
LO: To identify which factors affect the time taken to dissolve. <i>Working scientifically: to plan a fair test with consideration of variables and measurements</i>	LO: To demonstrate irreversible changes. <i>Working scientifically: to analyse observations about rusting and use them to support a conclusion</i>	LO: to devise a sundial to tell the time. <i>Working scientifically: to calibrate and use a sundial to measure time.</i>
LO: To describe the process of evaporation.	LO: To demonstrate irreversible changes. <i>Working scientifically: to measure the circumference of a balloon accurately.</i>	<i>Science in action: to describe some uses of satellites and the problems posed by space junk. Working scientifically: to use temperature data to make predictions about climate change.</i>

Year 5

Spring Two	Summer One	Summer Two
Living things: Life cycles and reproduction	Forces and space: Unbalanced forces	Making connections: Does the size of an asteroid affect the diameter of the impact crater?
Biology	Physics	Making connections across units
LO: To describe the life cycle of a plant, including the reproductive stage. <i>Working scientifically: to observe and compare equivalent parts in different flowers.</i>	LO: To describe gravity and its effects. <i>Working scientifically: to analyse data to write a conclusion.</i>	LO: To revise the units earth and space and life cycles and reproduction <i>Working scientifically: to plan a comparative test</i>
LO: To describe the life cycle of a mammal. <i>Working scientifically: To research the life cycles of different mammals</i>	LO: To describe air resistance and its effects. <i>Working scientifically: to plan a fair test to investigate air resistance.</i>	LO: To review the units unbalanced forces and mixtures and separation. <i>Working scientifically: to gather and record data</i>
LO: To describe the life cycle of a bird and compare it with that of a mammal. <i>Working scientifically: to pose questions to compare the life cycles of different birds.</i>	LO: To describe water resistance and its effects. <i>Working scientifically: to design a results table.</i>	LO: To revise the units separating mixtures and unbalanced forces. <i>Working scientifically: to conclude and evaluate the investigation.</i>
LO: To describe the life cycle of an amphibian. <i>Working scientifically: to suggest how temperature may affect egg hatching.</i>	LO: To describe friction and its effects. <i>Working scientifically: to evaluate a method.</i>	
LO: To describe the life cycle of an insect and compare it with that of an amphibian. <i>Working scientifically: to use data to describe a relationship and make predictions.</i>	LO: To describe the effects of levers, pulleys and simple machines on movement. <i>Working scientifically: to draw and label a diagram.</i>	
LO: To describe asexual reproduction in plants. <i>Working scientifically: to represent root growth over time on a line graph</i>	LO: To describe the relationship between lever length and effort. <i>Working scientifically: to draw an accurate line graph.</i>	

Year 6		
Autumn 1	Autumn 2	Spring 1
Living things: Classifying big and small	Energy: Light and reflection	Living things: Evolution and Inheritance
Biology	Physics	Biology
LO: To explain how organisms are classified using the Linnaean system.	LO: To describe the pathway of light. <i>Working scientifically: To use evidence to form conclusions</i>	LO: To explain why there are differences within a species. <i>Working scientifically: to group factors</i>
LO: To classify the cold-blooded vertebrate groups using their common characteristics.	LO: To describe how we see. <i>Working scientifically: To draw scientific diagrams.</i>	LO: To recognise the inheritance of characteristics in plants and animals.
LO: To classify the warm-blooded vertebrate groups using their common characteristics.	LO: To explain how shadows change. <i>Working scientifically: To pose questions</i>	LO: To explain why adaptation is necessary.
LO: To classify invertebrates.	LO: To investigate what affects the angle of the reflected ray. <i>Working scientifically: To record results as a line graph.</i>	LO: To model how natural selection affects population size. <i>Working scientifically: To evaluate the degree of trust and pose new questions for further enquiry</i>
LO: To describe how the plant kingdom is organised (based on shared characteristics). <i>Working scientifically: To produce a working classification key.</i>	LO: To explain how a periscope works.	LO: To describe the theory of evolution. <i>Working scientifically: To consider evidence used to inform theories.</i>
LO: To describe and classify micro organisms.	LO: To explain how mirrors are helpful. <i>Science in action: To explore different jobs or inventions that depend on reflection</i>	LO: To recognise evidence that can be used for evolution. <i>Working scientifically: To consider the degree of trust in the evidence used.</i>

Year 6

Spring Two	Summer One	Summer Two
Energy: Circuits, batteries and switches	Animals: Circulation and health	Making connections: Are some sunglasses safer than others?
Physics	Biology	Making connections across units
LO: To use recognised symbols for electrical components.	LO: To identify factors that affect our health and how to reduce their negative impact. <i>Working scientifically: To evaluate sources of information</i>	LO: To revise the units <i>Circulation and health</i> and <i>Light and reflection</i> . <i>Working scientifically: To plan a comparative tes</i>
LO: To predict and present results for electrical circuits. <i>Working scientifically: To use standardised symbols when drawing diagrams.</i>	LO: To summarise the key structures and purpose of the circulatory system	LO: To revise the units <i>Light and reflection</i> and <i>Circuits, batteries and switches</i> . <i>Working scientifically: To gather and record data.</i>
LO: To recognise a link between the number of components and resistance. <i>Working scientifically To explain results using scientific knowledge.</i>	LO: To identify the key roles of blood. <i>Working scientifically: To evaluate a model</i>	LO: To revise the units <i>Light and reflection</i> and <i>Circulation and health</i> . <i>Working scientifically: To conclude and evaluate the investigation.</i>
LO: To identify ways to change voltage within an electrical circuit. <i>Working scientifically To design a results table.</i>	LO: To explore the relationship between animal size and heart rate. <i>Working scientifically: To interpret patterns in data.</i>	LO: To revise the units <i>Classifying big and small</i> , <i>Evolution and inheritance</i> , <i>Light and reflection</i> and <i>Circulation and health</i> . <i>Working scientifically: To use further data to inform a conclusion</i>
LO: To investigate how voltage affects bulb brightness. <i>Working scientifically To plan an enquiry.</i>	LO: To investigate the relationship between exercise and heart rate. <i>Working scientifically: To write a method</i>	LO: To revise the units <i>Light and reflection</i> and <i>Circulation and health</i> . <i>Working scientifically: To report on findings in the form of an advert.</i>
LO: To apply knowledge of circuits and components to a practical solution. <i>Science in action To recognise that scientific knowledge can solve a problem.</i>	LO: To describe the relationship between heart rate and fitness. <i>Working scientifically: To draw a line graph.</i>	