ROCKCLIFFE FIRST SCHOOL SCIENCE PROGRESSION OF KNOWLEDGE, SKILLS & VOCABULARY

Curriculum Overview (Two Year Cycle)

Key Stage One	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle 1 (A) 2023-24 *Y1 Plants, Animals, including humans and Seasonal Change should be taught/observed throughout the year.*	Y1 Everyday Materials	Y2 Uses of Everyday Materials	Y1 Animals, including humans (parts of the human body)	Y1 Animals, including humans (animals)	Y1 Plants	Y1 Seasonal Change
Cycle 2 (B) 2022-23 *Y2 Plants (growing seeds and bulbs) and Living things and their habitats should be taught/observed throughout the year.*	Y2 Plants (planning for growing seeds and bulbs outside) ** include additional statement from Y1 Plants*	Y2 Living things and their habitats	Y2 Animals, including humans (basic needs and keeping healthy)	Y2 Animals, including humans (offspring)	Y2 Living things and their habitats	Y2 Plants (harvesting and cooking) **include additional statement from Y1 Plants*

Key Stage Two	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Cycle 1 2023-24 *Y3 Plants (gathering evidence of lifecycles should be observed throughout the year)*	Y3 Animals, including humans	Y4 Animals, including humans (include animals and humans get nutrition from the food they eat)	Y4 States of Matter	Y4 States of Matter	Y4 Sound	Y3 Plants (life cycles)
Cycle 2 2022-23 *Y4 Living things and their habitats (naming the identifying living things in the local environment should be observed throughout the year)*	Y3 Rocks	Y3 Forces and Magnets	Y3 Light	Y4 Electricity	Y3 Plants (parts and their functions, investigating growth)	Y4 Living things and their habitats

*** See additional guidance overleaf**

Ensuring Progression across the Two-Year Cycle (Guidance from PLAN Assessment)

Key Stage One	**Key Stage Two**
Plants If pupils encounter the Year 2 Plants topic as the first cycle, they would not have the necessary prior knowledge from the Year 1 topic to access the learning. Consequently, the following statement from the Plants topic in Year 1 needs to be covered in both cycles. • *Identify and describe the basic structure of a variety of common flowering plants. including trees.* **Seasonal change** As indicated in the general sequencing information above for Year 1, pupils should be "making observations about the weather and how this affects living things". To maintain this learning interdependency between the Seasonal change and Plants topics, it is advisable that they are kept in one cycle. **Animals, including humans** The Year 2 statements "Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)" from the Animals, including humans topic and "… describe how different habitats provide for the basic needs of different kinds of animals…" from the Living things and their habitats topic are linked. To maintain this learning interdependency, it is advisable that they are kept in one cycle. **Materials** If pupils encounter the Year 2 Everyday materials topic as the first cycle, they would not have the necessary prior knowledge from the Year 1 topic to access the learning. Consequently, the following statements from the Everyday materials topic in Year 1 would need to be covered in both cycles. • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. All the materials statements from both year-groups can be covered in both cycles, starting with the Year 1 statements. To make the learning distinctly different in both cycles, the focus could be on exploring materials indoors in cycle A and outdoors in cycle B. Alternatively, different properties of materials can be explored in different cycles.	**Plants** Many plants have an annual cycle – having buds, flowers, seeds/berries at certain times in the year. Pupils should therefore visit the same plants throughout the year gathering evidence linked to their life cycle e.g. collecting seeds and taking photographs or making observational drawings for buds, flowers etc. This evidence can then be reviewed at the end of the year to exemplify a range of plants' life cycles. This topic is best taught in the summer term when there is sufficient light in the classroom to grow seedling and plants as part of enquiry work. Links can be made between the Plants, Rocks and Light topics. The ordering is not significant, but the links should be made explicit for the children by the teacher. **Animals, including humans** If pupils encounter the Year 4 Animals, including humans topic as the first cycle, they would not have the necessary prior knowledge that animals and humans "get nutrition from what they eat" from the Year 3 topic. Consequently, before teaching about the digestive system in the Year 4 Animals, including humans topic, the pupils will need to be taught that animals and humans get the nutrients they require from the food they eat. **States of matter** In the States of matter topic, children learn about solids, liquids and gases. This knowledge is required in order for children to understand, in the Sound topic, that vibrations from sounds travel through a medium to the ear. It is therefore appropriate to teach the States of matter topic before the Sound topic. **Sound** In the Sound topic, children need to understand that vibrations from sounds travel through a medium to the ear. It is useful if the children know about the three states of matter – solids, liquids and gases. It is therefore appropriate to teach the States of matter topic before the Sound topic. This topic is conceptually more challenging and is therefore best taught later in the year.

Progression of Content Knowledge (NC Objectives from other units are shown in blue)

Topic	Nursery	Reception	Year 1	Year 2	Year 3	Year 4
Plants	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	• Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats) • Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes)	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • Identify and describe the basic structure of a variety of common flowering plants, including trees.	• Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. • Identify and name a variety of plants and animals in their habitats, including microhabitats (Y2 – Living things in their habitats)	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • 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. Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things (Y4 – Living things and their habitats)
Living things and their habitats	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Begin to understand the need to respect and care for the natural environment and all living things.	• Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live.	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 – Plants) • Identify and name a variety of common	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • 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	• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)	• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose

			animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans). • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans). • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals including humans). • Observe changes across the four seasons. (Y1 – Seasonal Change).	plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including microhabitats. • 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. • Notice that animals, including humans, have offspring which grow into adults (Y2 – Animals including humans)		dangers to living things. • Construct and interpret a variety of food chains, identifying producers, predators and prey (Y4 – Animals including humans).
Animals, including humans	• Use all their senses in hands-on exploration of natural materials. • Begin to make sense of their own life-story and family's history. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	• Talk about members of their immediate family and community. • Name and describe people who are familiar to them. • Recognise some environments that are different to the one in which they live.	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (fish, amphibians,	• Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	• 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. • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	• Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey.

			reptiles, birds and mammals, including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	• 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 (Y2 - Living things and their habitats)		
Evolution and Inheritance	• Begin to understand the need to respect and care for the natural environment and all living things. (Nursery – Living things and their habitats)	• Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats)		• 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. (Y2 - Living things and their habitats) • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)	• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)	• Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)
Materials	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice.	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)	• Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens

			a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties	squashing, bending, twisting and stretching.	• 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. (Y3 - Forces and magnets)	in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)
Rocks	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. (Nursery – Living things and their habitats)	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter.	
Light	• Explore how things work. • Talk about the differences in materials and changes they notice.	• Describe what they see, hear and feel whilst outside.	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each		• Recognise that they need light in order to see things and that dark is the absence of light.	

			sense. (Y1 - Animals, including humans) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)		• Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change.	
Forces	• Explore how things work. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.		• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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. • Describe magnets as having two poles.	

					• Predict whether two magnets will attract or repel each other, depending on which poles are facing.	
Sound	• Explore how things work.	• Describe what they see, hear and feel whilst outside.	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)			• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases.
Electricity	• Explore how things work.					• Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • 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. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors.
Earth and Space		• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. (Y1 – Seasonal changes)			
Seasonal Changes	• Understand the key features of the life cycle of a plant and an animal. (Nursery – Plants & Animals, excluding humans)	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.		• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)	

Progression of Scientific Skills (EYFS statements are taken from the Development Matters document. NC statements are in blue. Extra detail and guidance in black.)

Skill	EYFS	Year 1 & 2 Work Scientifically by…	Year 3 & 4 Work Scientifically by…
Asking questions	• Show curiosity about objects, events and people • Questions why things happen • Comment and ask questions about aspects of their familiar world such as the place they live or the natural world • Know that information can be retrieved from books and computers	• Asking simple questions and recognising that they can be answered in different ways • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). • Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	• Asking relevant questions and using different types of scientific enquiries to answer them. • The children consider their prior knowledge when asking questions. • They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. Given a range of resources, the children decide for themselves how to gather evidence to answer the question. • They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. • They identify the type of enquiry that they have chosen to answer their question.
Setting up tests	• Take a risk, engage in new experiences and learn by trial and error. • Find ways to solve problems/find new ways to do things/test their ideas • They take account of one another's ideas about how to organise their activity • Chooses the resources they need for their chosen activities • Shows understanding of the need for safety when tackling new challenges, and considers and manages some risks.	• Performing simple tests • The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. • They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. • Identifying and classifying • Children use their observations and testing to compare objects, materials and living things.	• Setting up simple practical enquiries, comparative and fair tests • The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. • They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.

		• They sort and group these things, identifying their own criteria for sorting. • They use simple secondary sources (such as identification sheets) to name living things. • They describe the characteristics they used to identify a living thing.	
Observing and measuring	• Engage in open-ended activity Develop ideas of grouping, sequences, cause and effect. • Know about similarities and differences in relation to places, objects, materials and living things Closely observes what animals, people and vehicles do • Uses senses to explore the world around them • Handle equipment and tools effectively • Use everyday language related to time	• Observing closely, using simple equipment • Children explore the world around them. • They make careful observations to support identification, comparison and noticing change. • They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. • They begin to take measurements, initially by comparisons, then using non-standard units.	• Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • The children make systematic and careful observations. • They use a range of equipment for measuring length, time, temperature and capacity. • They use standard units for their measurements.
Recording data	• Create simple representations of events, people and objects.	• Gathering and recording data to help in answering questions • The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. • They classify using simple prepared tables and sorting rings.	• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • The children sometimes decide how to record and present evidence. • They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. • They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). • They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. • Children are supported to present the same data in different ways in order to help with answering the question.

Interpreting and communicating data	• Makes links and notices patterns in their experience • Answer how and why questions about their experiences • Make observations animals and plants and explain why some things occur, and talk about changes. • Develop their own narratives and explanations by connecting ideas or events. • Builds up vocabulary that reflects the breadth of their experience.	• Using their observations and ideas to suggest answers to questions • Children use their experiences of the world around them to suggest appropriate answers to questions. • They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. • The children recognise 'biggest and smallest', 'best and worst' etc. from their data	• Using straightforward scientific evidence to answer questions or to support their findings. • Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. • The answers are consistent with the evidence. Identifying differences, similarities or changes related to simple scientific ideas and processes • Children interpret their data to generate simple comparative statements based on their evidence. • They begin to identify naturally occurring patterns and causal relationships. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They draw conclusions based on their evidence and current subject knowledge. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary
Evaluating			• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.
Making predictions	• Children suggest answers to 'What would happen if..?' questions based on their existing knowledge and patterns they have	• Children suggest what might happen in different situations, with support from the teacher, based on first-hand experiences	• Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

	observed through first-hand, practical activities.	and patterns they have seen emerging from their scientific enquiries.	• Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.

Progression within the 5 Enquiry Types

NB. Further examples of year group specific enquiries can be found in Rockcliffe's 'Progression in Scientific Enquiry' Document.

Enquiry	Examples	EYFS	Year 1&2	Year 3&4
Observing Over Time	• How far will this snail travel in 5 minutes? • How do different trees change over autumn, winter, spring, summer? • How does bread change as it goes mouldy? • How long will a lump of ice take to melt? What happens to the ice as it melts? • How does cheese change as we heat it? • How will our shadows change over the course of a day? • How does the temperature change over the day/week/month/year? • How does the light level in the room change over the day?	Children show curiosity about how things change. They can answer questions about changes with help. They talk about their ideas to find out how things change. They use all of their senses to observe changes. They look closely at how things change. They can make simple records of how things change (with help as required). They use simple equipment to observe and record changes. They can talk about what they have done and what they have noticed.	Children ask questions about how and why things change. They can identify changes to observe and measure, and suggest how to do it. Children use non-standard units and simple equipment to record changes. They record in words and pictures, or in simple prepared formats such as tables and charts. Children can identify simple changes and talk about them. They can sequence the changes. They begin to use scientific language to talk about changes. They can discuss if the changes were what they expected.	Children talk about things changing and recognise when questions can be answered by observing over time. They decide what observations to make, how often and what equipment to use. Children use a range of equipment to collect data using standard measures. They make records using tables and bar charts. Children begin to use and interpret graphs produced by data loggers, such as Google Science Journal. Children draw simple conclusions from the changes they observed. They talk about changes using some scientific language. They suggest improvements to the ways they have observed.

Identifying and Classifying	• How can we identify what's alive and not alive? • Are all worms the same? • We've collected lots of fallen leaves.- How can we sort them out? • How can we sort items for recycling? • Can we sort moving toys by how they are powered? • We've had a power cut. Which things in the kitchen will still work? • How can we identify and sort different samples of soil?	Children are curious about similarities and differences. With help, they can ask questions about similarities and differences. They talk about their ideas for sorting or matching things. They use their senses to sort and match things. They match things that are the same. They find things that are similar or different. They sort or group things in their own ways. they use simple equipment to sort things (hoops, boxes, etc.) They talk about how they sorted things and matched things.	Children ask questions about how and why things are similar or different. They decide what to observe to identify or sort things. Children make comparisons between simple features of objects, materials or living things. They record their observations in words or pictures or simple tables. Children sort objects by observable and behavioural features. They record their sorting in sorting circles or tables. Children identify similarities and differences and talk about them. They begin to use scientific language to talk about how things are similar or different. Children try to use their records to help them sort or identify other things.	Children talk about what criteria they will use to sort and classify things. They decide what equipment to use to identify and classify things. They talk about things that can be grouped and recognise when questions can be answered by sorting and classifying. Children carry out simple tests to sort and classify according to properties or behaviour. They use Carroll diagrams, Venn diagrams and more complex tables to sort things. They use simple keys and branching databases to identify things. They make simple branching databases (keys) for things that have clear differences. Children draw simple conclusions about things they have sorted and classified. They talk about the similarities and differences they identified using some scientific language. They suggest improvements to the way they sort and identify things.
Pattern Seeking	• Do birds with the same types of beaks eat the same kind of food? • Do different insects prefer different kinds of flowers? • Do the tallest people have the strongest grip? • How many winds of the elastic band make our bottle roller go 1 metre? 2 metres? 3 metres?	Children are curious about patterns. With help, they ask questions about patterns. They can talk about their ideas for finding out about patterns. Children use their senses to look closely for patterns. They observe more than one thing at a time. They make simple records of what they notice, with help when required.	Children ask questions about how things are linked. With help, they can decide what patterns to observe and measure and suggest how to do it. Children use non-standard units and simple equipment to record events that might be related. Children record in words or pictures, or in simple prepared	Children talk about what patterns might be found and recognise when questions can be investigated by pattern seeking. They decide on sets of data to collect, what observations to make and what equipment to use. Children use a range of equipment to collect data using standard measures. They make records using tables, bar charts or simple

	• When are the wettest/windiest seasons? • Is there a link between the amount of noise and the locations around school?	Children talk about what they have done and patterns they have noticed.	formats such as tables, tally charts and maps. Children identify simple patterns and talk about them. They make links between two sets of observations. They begin to use scientific language to talk about the patterns. They can talk about whether the pattern they see was expected.	scatter graphs. They begin to use and interpret data collected through data loggers. Children draw conclusions about simple patterns between two sets of data. Children talk about patterns using some scientific language. Children
Research	• Are zoos a good thing? • How have animals adapted over time? • Why did our flowers wilt? • How are different types of flour made? • Why do sweat? • How do athletes train? • How are candles made? • Why don't cranes fall over? • How did the Egyptians move heavy rocks to build the pyramids? • When is a helicopter more useful than a plane? Why?	Children are curious about things in their surroundings. With help, they ask questions that can be answered using secondary sources. Children listen carefully. They know that information in books and in electronic media can be used to answer questions. They find pictures of things. They talk to people about what they do and how things work. Children talk about what they have found out.	Children ask questions about how things are and the way they work. With help, they make suggestions about how to find things out. They use simple books and electronic media to find things out. They ask questions to find out what people do and how things work. They record in words and pictures what they find out. Children begin to use scientific language to talk about what they found out. They talk about whether the information source was useful. They give an opinion about some things they found out.	Children talk about how things are and the way they work and recognise when questions can be answered by research using secondary sources. Children use information sources to find the information they need. They can use someone else's data. They can record what they find out in their own words. Children can present the information in different ways. Children draw conclusions from what they find out from different sources. They talk about what the information and data means using scientific language. They suggest ways to improve how they find out and use information.
Fair Testing	• Do woodlice move more in light or dark conditions? • Will seeds germinate in oily or salty water? • How does changing the amount of water make a difference to how well the plants grow?	Children are curious about things behave. With help, they ask questions about things they can test. They talk about their ideas for testing how things behave. Children use their senses to look closely at how things behave. They carry out simple tests. They make	Children ask why and how questions. They make comparisons about how things behave. With help, they notice links between cause and effect. With help, they identify simple variables to change and measure. They plan simple comparative tests.	Children talk about links between cause and effect and (with help) pose a fair test question. They help to plan a comparative or fair test. They decide what data to collect. They decide what equipment to use and how to make observations.

	• What difference does the type of soap make? • Do small bubbles travel faster? • Which of our shoes has the best grip? • Which type of sunglasses block the light the best?	simple records of what they notice (with help where necessary). They use simple equipment to observe and record. Children talk about what they have done and what they have noticed. They talk about whether something makes a difference.	Children use non-standard units and simple equipment to record data. They record in words, or pictures, or in simple prepared formats such as tables and tally charts. Children talk about their data. They use comparative data to rank materials or objects. They use simple scientific language to describe simple causal relationships. With help, they can say if their test was fair. They say if the relationship was what they expected.	Children use a range of equipment to collect data using standard measures. They make records using tables and bar charts. They begin to use and interpret data collected through data loggers. Children draw simple conclusions from their comparative and fair tests. They talk about, and explain, simple causal relationships using some scientific language. They suggest ways that they can improve their fair tests.

Progression in Scientific Vocabulary

- The vocabulary included for Nursery and Reception are words that children should be exposed to. They should use some correctly in a scientific context.
- The vocabulary included from Year 1 onwards are the words that children should know and use correctly in a scientific context. They should be able to define the specialist scientific vocabulary included.
- The vocabulary in blue is from other linked topics.
- The working scientifically vocabulary identified in the table below should be taught through the topics in each year-group during practical work or scientific enquiry.

Working Scientifically	
Year Group	**Vocabulary**
EYFS	look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group
Year 1&2	observe, changes, patterns, grouping, sorting, compare, same, different, identify (name), measure, data, record results, drawing, picture, table, tally chart, present, pictogram, block chart, Venn diagram, ask questions, test, investigate, explore, equipment, resources, magnifying glass, hand lens, ruler, tape measure, metre stick, pipette, syringe, spoon, teaspoon, answer questions, interpret results, scientific enquiry, pattern seeking, comparative testing, observing over time, classifying, researching using secondary sources
Year 3&4	practical work, fair testing, relationships, accurate, thermometer, data logger, stopwatch, timer, estimate, data, diagram, identification key, chart, bar chart, prediction, similarity, difference, evidence, information, findings, criteria, values, properties, characteristics, conclusion, explanation, reason, evaluate, improve

Plants	
Year Group	**Vocabulary**
Nursery	plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil, names of plants they grow
Reception	tree, bush, herb, names of plants they see (Reception - Living things and their habitats)
Year 1	leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area
Year 2	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling names of plants in local habitats and micro-habitats (Y2 - Living things and their habitats)
Year 3	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport
Year 4	classification, classification keys (Y4 - Living things and their habitats)

Living things and their habitats	
Year Group	**Vocabulary**
Nursery	natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil (Nursery - Plants)
Reception	plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest)
Year 1	names of garden and wild flowering plants in the local area (Y1 - Plants) head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group (Y1 - Animals, including humans) weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length (Y1 - Seasonal changes)
Year 2	living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants) offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, cat/kitten, caterpillar/butterfly) (Y2 - Animals, including humans)
Year 3	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (e.g. wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport
Year 4	classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans)

Animals, including humans	
Year Group	**Vocabulary**
Nursery	egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, fly, patterns, spots, stripes, grow, change, baby, toddler, child, adult, old person, smell, taste, touch, feel, hear, see, blind, deaf
Reception	names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, hair (e.g. black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (e.g. blue, brown, green, grey), skin (e.g. black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman
Year 1	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue
Year 2	offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy) living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival (Y2 - Living things and their habitats)
Year 3	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine
Year 4	digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey

Evolution and inheritance	
Year Group	**Vocabulary**
Nursery	natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern (Nursery - Living things and their habitats)
Reception	plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest) (Reception - Living things and their habitats)
Year 1	leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud (Y1 - Plants)
Year 2	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants) living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold (Y2 - Living things and their habitats)
Year 3	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (e.g. wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil (Y3 - Plants) soil, fossil, bone, flesh, minerals (Y3 - Rocks)
Year 4	environment, habitat, human impact, positive, negative, migrate, hibernate (Y4 - Living things and their habitats) herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans)

Seasonal Changes	
Year Group	**Vocabulary**
Nursery	grow, shoot, die, dead (Nursery - Plants) egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young (Nursery - Animals, excluding humans)
Reception	spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers
Year 1 & 2	weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length

Materials	
Year Group	**Vocabulary**
Nursery	mix, stir, cook, hot, oven, microwave, change, burn, melt, hard, runny, set, freeze, freezer, cold, blended, hard, soft, bendy, stiff, wobbly, wood, plastic, paper, card, fabric
Reception	ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back
Year 1	object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through
Year 2	opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching
Year 3	rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay) (Y3 - Rocks) magnetic force, magnet, attract, magnetic material, metal, iron, steel (Y3 - Forces and magnets)
Year 4	solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle electrical conductor, electrical insulator, metal, non-metal (Y4 - Electricity)

Rocks	
Year Group	**Vocabulary**
Nursery	natural, shells, pebbles, stones
Reception	
Year 1	object, material, rock, brick, clay, hard, soft, waterproof, absorbent, rough, smooth, shiny, dull, see-through, not see-through (Y1 - Everyday materials)
Year 2	opaque, transparent, translucent, reflective, non-reflective (Y2 - Uses of everyday materials)
Year 3	rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)
Year 4	

Light	
Year Group	**Vocabulary**
Nursery	light, torch, bulb, lamp, spotlight, shiny, bright, brighter, brightest, Sun, shine, glow, mirror
Reception	Sun, sunny, light, shadow, shady, clouds, torch, see-through, not see-through, source, light source
Year 1	senses, see, eyes (Y1 - Animals, including humans) shiny, dull, see-through, not see-through (Y1 - Materials)
Year 2	opaque, transparent, translucent, reflective, non-reflective (Y2 - Uses of everyday materials)
Year 3	light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous
Year 4	

Forces	
Year Group	**Vocabulary**
Nursery	object, float, sink, water, up, down, top, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, turn, spin, smooth, rough, fast, slow
Reception	float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, fast, slow, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce
Year 1	
Year 2	flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching (Y2 - Uses of everyday materials)
Year 3	force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole
Year 4	

Sound	
Year Group	**Vocabulary**
Nursery	sound, noise, loud, quiet, high, low, music, bang, blow, pluck, soft, hard, fast, slow, names of instruments
Reception	sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud, quiet, soft, volume, crackle, thunder, hum, buzz, roar
Year 1	senses, hear, ear (Y1 - Animals, including humans)
Year 2	
Year 3	
Year 4	sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation

Electricity	
Year Group	**Vocabulary**
Nursery	battery, plug, socket, electricity, wire, sound, light, move
Reception	
Year 1	
Year 2	
Year 3	
Year 4	electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol

Earth and space	
Year Group	**Vocabulary**
Nursery	Explore and respond to different natural phenomena in their setting and on trips.
Reception	Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float
Year 1	
Year 2	
Year 3	light, light source, Sun, sunlight, dangerous (Y3 - Light)
Year 4	