

PROGRESSION OF DISCIPLINARY KNOWLEDGE – Science

	Working Scientifically						
Sub-Process	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking questions and carrying out fair and comparative tests.	<p>To begin to explain why some things occur and talk about changes.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>With support begin to ask and answer simple questions.</p> <p>To develop vocabulary.</p> <p>Compare and contrast environments.</p>	<p>Begin to explore the world around them, leading them to ask some simple scientific questions about how and why things happen.</p> <p>With adult support, begin to recognise ways in which they might answer scientific questions.</p> <p>Start to ask people questions and use simple secondary sources to find answers.</p> <p>Start to carry out simple practical tests, using simple equipment.</p> <p>Begin to experience different types of scientific enquiries, including practical activities.</p> <p>With support, talk about the aim of scientific tests they are working on.</p>	<p>Explore the world around them, leading them to ask some simple scientific questions about how and why things happen.</p> <p>Recognise ways in which they might answer scientific questions.</p> <p>Ask people questions and use simple secondary sources to find answers.</p> <p>Carry out simple practical tests, using simple equipment.</p> <p>Experience different types of scientific enquiries, including practical activities.</p> <p>Talk about the aim of scientific tests they are working on.</p>	<p>Start to raise their own relevant questions about the world around them in response to a range of scientific experiences.</p> <p>Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.</p> <p>Start to recognise when a fair test is necessary.</p> <p>With adult support, decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.</p> <p>Set up and carry out simple comparative and fair tests.</p>	<p>Raise their own relevant questions about the world around them in response to a range of scientific experiences.</p> <p>Make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.</p> <p>Recognise when a fair test is necessary.</p> <p>Help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.</p> <p>Set up and carry out simple comparative and fair tests.</p>	<p>With growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences.</p> <p>With increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.</p> <p>Begin to explore and talk about their ideas, raising different kinds of scientific questions.</p> <p>Start to ask their own questions about scientific phenomena. Select and plan the most appropriate type of scientific enquiry to use to answer scientific questions.</p> <p>Start to make their own decisions about what observations to make, what measurements to use and how long to</p>	<p>Independently raise their own relevant questions about the world around them in response to a range of scientific experiences.</p> <p>Make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.</p> <p>Explore and talk about their ideas, raising different kinds of scientific questions.</p> <p>Ask their own questions about scientific phenomena. Select and plan the most appropriate type of scientific enquiry to use to answer</p>

						<p>make them for, and whether to repeat them.</p> <p>With some support, plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary.</p> <p>Start to use their test results to identify when further tests and observations may be needed.</p> <p>Use test results to make predictions for further tests.</p>	<p>scientific questions.</p> <p>Make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them.</p> <p>Plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary.</p> <p>Use their test results to identify when further tests and observations may be needed.</p> <p>Use test results to make predictions for further tests.</p> <p>Choose the most appropriate equipment to make measurements and explain how to use it accurately.</p>
Observing and Measuring Changes	Begin to understand the effect of the changing seasons on the natural world around them.	Observe the natural and humanly constructed world around them.	Observe the natural and humanly constructed world around them.	Make systematic and careful observations.	Make systematic and careful observations.	Begin to choose the most appropriate equipment to make measurements and explain how to use it accurately.	Take measurements using a range of scientific equipment with increasing

	<p>Begin to observe and record the weather.</p> <p>Discuss and explain ideas.</p> <p>Develop vocabulary.</p>	<p>Observe changes over time.</p> <p>Use simple measurements and equipment.</p> <p>Make careful observations, sometimes using equipment to help them observe carefully.</p>	<p>Observe changes over time.</p> <p>Use simple measurements and equipment.</p> <p>Make careful observations, sometimes using equipment to help them observe carefully.</p>	<p>Observe changes over time.</p> <p>Use a range of equipment, including thermometers and data loggers.</p> <p>Ask their own questions about what they observe.</p> <p>Where appropriate, take accurate measurements using standard units using a range of equipment.</p>	<p>Observe changes over time.</p> <p>Use a range of equipment, including thermometers and data loggers.</p> <p>Ask their own questions about what they observe.</p> <p>Where appropriate, take accurate measurements using standard units using a range of equipment.</p> <p>Talk about criteria for grouping, sorting and classifying</p>	<p>Start to take measurements using a range of scientific equipment with increasing accuracy and precision.</p> <p>Being to make careful and focused observations.</p> <p>Start to know the importance of taking repeat readings and take repeat readings where appropriate.</p>	<p>accuracy and precision.</p> <p>Make careful and focused observations.</p> <p>Know the importance of taking repeat readings and take repeat readings where appropriate. Independently group, classify and describe living things and materials.</p>
<p>Identifying, classifying, recording and presenting data.</p>	<p>Begin to sort into groups e.g: nocturnal creatures/ those active in the day.</p> <p>Begin to talk about similarities and differences.</p> <p>Draw pictures to represent ideas/ think of own ways of recording.</p>	<p>Begin to use simple features to compare objects, materials and living things.</p> <p>Start to decide how to sort and classify objects into simple groups with some help.</p> <p>With some support, record and communicate findings in a range of ways with support.</p> <p>Sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables.</p>	<p>Use simple features to compare objects, materials and living things.</p> <p>Decide how to sort and classify objects into simple groups with some help.</p> <p>Record and communicate findings in a range of ways with support.</p> <p>Sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables.</p>	<p>With support, being to talk about criteria for grouping, sorting and classifying. Group and classify things.</p> <p>Start to collect data from their own observations and measurements.</p> <p>With support, present data in a variety of ways to help in answering questions.</p> <p>Start to use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and</p>	<p>Group and classify things.</p> <p>Collect data from their own observations and measurements.</p> <p>Present data in a variety of ways to help in answering questions.</p> <p>Use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.</p> <p>Record findings using scientific language, drawings, labelled diagrams,</p>	<p>Begin to independently group, classify and describe living things and materials.</p> <p>Start to use and develop keys and other information records to identify, classify and describe living things and materials.</p> <p>With support, decide how to record data from a choice of familiar approaches.</p> <p>With support, record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.</p>	<p>Use and develop keys and other information records to identify, classify and describe living things and materials.</p> <p>Decide how to record data from a choice of familiar approaches.</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.</p>

				spelling knowledge. Start to record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.	keys, bar charts and tables		
Drawing conclusions, noticing patterns and presenting findings.	<p>Explain similarities and differences.</p> <p>Begin to observe effects of seasonal changes.</p> <p>Begin to observe and interact with natural processes like ice melting. Talk about ideas.</p>	<p>Start to notice links between cause and effect with support.</p> <p>Begin to notice patterns and relationships with support.</p> <p>Begin to draw simple conclusions.</p> <p>Start to identify and discuss differences between their results.</p> <p>Start to use simple and scientific language.</p> <p>Begin to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.</p> <p>Start to talk about their findings to a variety of audiences in a variety of ways.</p>	<p>Notice links between cause and effect with support.</p> <p>Notice patterns and relationships with support.</p> <p>Become more confident to draw simple conclusions.</p> <p>Identify and discuss differences between their results.</p> <p>Use simple and scientific language. Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.</p> <p>Talk about their findings to a variety of audiences in a variety of ways.</p>	<p>Begin to draw simple conclusions from their results.</p> <p>Start to make predictions.</p> <p>Start to suggest improvements to investigations.</p> <p>With some support, raise further questions which could be investigated.</p> <p>With support, first talk about, and then go on to write about, what they have found out.</p> <p>Being to report and present their results and conclusions to others in written and oral forms with increasing confidence.</p>	<p>Draw simple conclusions from their results.</p> <p>Make predictions.</p> <p>Suggest improvements to investigations.</p> <p>Raise further questions which could be investigated.</p> <p>First talk about, and then go on to write about, what they have found out.</p> <p>Report and present their results and conclusions to others in written and oral forms with increasing confidence.</p>	<p>Start to notice patterns.</p> <p>Being to draw conclusions based in their data and observations.</p> <p>Start to use their scientific knowledge and understanding to explain their findings.</p> <p>Being to read, spell and pronounce scientific vocabulary correctly.</p> <p>With some support, identify patterns that might be found in the natural environment.</p> <p>Look for different causal relationships in their data. Start to discuss the degree of trust they can have in a set of results.</p> <p>With support, independently report and present their conclusions to others in oral and written forms.</p>	<p>Notice patterns.</p> <p>Draw conclusions based in their data and observations.</p> <p>Use their scientific knowledge and understanding to explain their findings.</p> <p>Read, spell and pronounce scientific vocabulary correctly.</p> <p>Identify patterns that might be found in the natural environment. Look for different causal relationships in their data.</p> <p>Discuss the degree of trust they can have in a set of results.</p> <p>Independently report and present their conclusions to others in oral and written forms.</p>
Using scientific evidence and secondary sources of information	<p>Interact with natural processes.</p> <p>Begin to describe what they see, hear and feel whilst outside.</p>	<p>Start to link what they can hear and see, feel and hear outside to identify similarities, differences, patterns and changes relating to</p>	<p>From what they have observed outside, identify similarities, differences, patterns and changes relating to simple scientific ideas and processes.</p>	<p>Start to make links between their own science results and other scientific evidence.</p>	<p>Make links between their own science results and other scientific evidence.</p> <p>Use straightforward scientific evidence</p>	<p>Start to use primary and secondary sources evidence to justify ideas.</p> <p>Being to identify evidence that refutes or supports their ideas.</p>	<p>Use primary and secondary sources evidence to justify ideas.</p>

	Begin to share fiction and non-fiction.	simple scientific ideas and processes.		<p>Begin to use straightforward scientific evidence to answer questions or support their findings.</p> <p>Start to identify similarities, differences, patterns and changes relating to simple scientific ideas and processes.</p> <p>Begin to recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</p>	<p>to answer questions or support their findings.</p> <p>Identify similarities, differences, patterns and changes relating to simple scientific ideas and processes.</p> <p>Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</p>	<p>Start to recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact.</p> <p>Start to use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. Talk about how scientific ideas have developed over time.</p>	<p>Identify evidence that refutes or supports their ideas.</p> <p>Recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact.</p> <p>Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. Talk about how scientific ideas have developed over time.</p>
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	Plants						
	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Describe what they see, hear and feel whilst outside- observe plants and draw pictures.</p> <p>Begin to name and describe some plants. Recognise familiar plants.</p> <p>Begin to understand a plant has different parts and begin to know names of these parts.</p>	<p>To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>To identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>To observe and describe how seeds and bulbs grow into mature plants.</p> <p>To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>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.</p> <p>Investigate the way in which water is transported within plants.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>		<p>Describe the life process of reproduction in some plants.</p>	

Animals and Humans

	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>To make observations of animals and talk about them.</p> <p>To make simple drawings of animals.</p> <p>To recognise familiar animals.</p>	<p>To identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>To identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets).</p> <p>To identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p>To notice that animals, including humans, have offspring which grow into adults.</p> <p>To find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>To describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>To 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.</p> <p>To identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>To describe the simple functions of the basic parts of the digestive system in humans.</p> <p>To identify the different types of teeth in humans and their simple functions.</p> <p>To construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>To describe the changes as humans develop to old age.</p>	<p>To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>To describe the ways in which nutrients and water are transported within animals, including humans.</p>

Materials and their properties

	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>To describe what they see, hear and feel.</p> <p>Begin to recognise and name different materials (plastic, wood, metal, fabric).</p> <p>To describe materials and think about what they could be used for.</p> <p>Begin to understand objects are made from different materials.</p>	<p>To distinguish between an object and the material from which it is made.</p> <p>To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.</p> <p>To describe the simple physical properties of a variety of everyday materials.</p> <p>To compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>			<p>To compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>Describe how to recover a substance from a solution.</p> <p>To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>	<p>To describe what they see, hear and feel.</p> <p>Begin to recognise and name different materials (plastic, wood, metal, fabric).</p> <p>To describe materials and think about what they could be used for.</p> <p>Begin to understand objects are made from different materials.</p>

States of Matter

	States of Matter						
	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Start to observe and interact with natural processes linked to weather such as ice melting and freezing.</p>				<p>To compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>To observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C).</p> <p>To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>	<p>Start to observe and interact with natural processes linked to weather such as ice melting and freezing.</p>

Living Things and their Habitats

	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>To begin to know some similarities and differences in relation to places, objects, animals and living things.</p> <p>To observe and discuss animals and plants.</p> <p>To talk about where animals live and why.</p>		<p>To explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>To 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.</p> <p>To identify and name a variety of plants and animals in their habitats, including microhabitats.</p> <p>To 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.</p>		<p>To recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>To describe the life process of reproduction in some plants and animals.</p>	<p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</p> <p>To give reasons for classifying plants and animals based on specific characteristics.</p>

Geology and the world around us

	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Explore the natural world around them. What can we touch, smell, hear and feel?	To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.	To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.	<p>To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>To describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>To recognise that soils are made from rocks and organic matter.</p>		<p>To describe the movement of the Earth and other planets relative to the sun in the solar system.</p> <p>To describe the movement of the moon relative to the Earth.</p> <p>To describe the sun, Earth and moon as approximately spherical bodies.</p> <p>To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	<p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>

	Forces						
	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Begin to investigate forces by playing with cars, ramps, slopes and tunnels.</p>		<p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance.</p> <p>To observe how magnets attract or repel each other and attract some materials and not others.</p> <p>To 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.</p> <p>Describe magnets as having 2 poles.</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</p>		<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p>	

	Light						
	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Start to observe and interact with natural processes outside e.g. an object casting a shadow.</p>			<p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>Find patterns in the way that the size of shadows change.</p>			<p>Recognise that light appears to travel in straight lines.</p> <p>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>

	Electricity						
	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Begin to understand that some devices need power to work.</p>				<p>Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>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.</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>		<p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>

	Sound						
	FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Begin to observe and interact with natural processes such as a sound causing a vibration.</p> <p>Read about our 5 senses.</p>	<p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>			<p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>		

