

Science Curriculum Intent at Moulton Primary School

Principles of Instruction:

Teaching at Moulton Primary school incorporates Barak Rosenshine's Principles of Instruction as the vehicle for high quality teaching for all. We have adopted these principles within and across lessons in all subjects as research indicates they have a substantially positive impact on pupil progress. In the science curriculum, they are not a tick list for every lesson but will be apparent within a sequence of lessons.

Rosenshine's Principles of Instruction	Implementation in Science
1.Begin a lesson with a short review of previous learning	Lessons build cumulatively and coherently beginning with prior learning through the use of quizzes, questions, two things, give one and get one routines. These activities help to embed learning into the long term memory and prepares the pupils to link new learning to existing schemas, building their cognitive load gradually.
2.Present new material in small steps with student practice after each new step	Lessons follow the Teach-Task cumulative model (teach-task-teach-task)which draws on the six phases of a lesson and supports coherent and effective creation of knowledge in the long-term memory. Teachers use a variety of activities and tasks to embed skills and knowledge using this format.
3.Ask a large number of questions and check responses of all pupils	Direct/ 'no hands-up' and open ended questions are used for formative assessment. Cumulative questions are interwoven into the Science curriculum to check understanding. Additional open ended 'big idea' questions are offered to all children so that they can retrieve information from prior learning.
4.Provide models	We use knowledge organisers, carefully constructed knowledge notes, worked examples, full or partially completed diagrams, high quality resources and specific vocabulary to support children with their learning. The Teach Task model ensures that alongside these worked-examples, high quality teacher modelling gives a clear understanding of key conceptions.
5.Guide Pupil Practice	Following teacher instruction, pupils are given frequent opportunities to rephrase, summarise using 'I know and I think' statements, explain, and elaborate on their work to ensure they can master the knowledge or skill. This is the stage that will allow for misconceptions to be identified and feedback to be given at the point of learning.

<p>6.Check for pupil understanding</p>	<p>Teachers check on individual understanding using a variety of application strategies in which children display their understanding; such as describing an aspect of learning, reasoning and justifying. Cumulative questions ensure that they are all able to move confidently on to the next stage.</p>
<p>7.Obtain a high success rate</p>	<p>Lessons follow a clear structure to allow for a high rate of success for all.</p> <ol style="list-style-type: none"> 1. Connect (retrieval of prior learning) 2. Explain and Example (Instruction using Teach Talk Model) 3. Attempt (deliberate practise and addressing of misconceptions) 4. Apply (guided or independent practise of knowledge and skills) 5. Challenge (to summarise, 'I know' and 'I think' statements and quiz)
<p>8.Scaffolding</p>	<p>The use of knowledge organisers, carefully constructed knowledge notes, worked examples, full or partially completed diagrams, high quality resources and specific vocabulary assist learning and help pupils strive for aspirational targets; especially those with SEND.</p>
<p>9.Independent practice</p>	<p>Lessons include opportunities for pupils to showcase their understanding of lesson content and appropriate, scientific vocabulary. Our 'thinking hard' routines are used to help pupils explain and connect their learning.</p>
<p>10.Engage in review weekly/ monthly</p>	<p>Lessons are carefully planned and sequenced to enable constant rehearsal and review of information, both within year groups and across the whole of the Science Curriculum. Cumulative questions are planned throughout the learning sequence to check understanding. This will be reviewed at the end of the learning sequence. Targets will be set and revisited again. This will embed knowledge into long term memory.</p>

The subject content for each year group is as follows:

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
EYFS	<p>Me and My Community:</p> <p>Discuss simple changes as they have grown from being a baby.</p> <p>Creep, Crawl and Wiggle:</p> <p>Plants and animals are living things. They need food and water to survive.</p>	<p>Long Ago:</p> <p>Describe simply how weather changes as the seasons change</p>	<p>Let's Explore:</p> <p>Observe and describe living things and their habitats within the local environment.</p> <p>Compare and group objects and materials according to simple given criteria.</p>	<p>Signs of Spring:</p> <p>Name and describe natural phenomena, such as the size of shadows, the colours of a rainbow, the speed of clouds moving across the sky and the strength of a wave</p>	<p>Animal Safari:</p> <p>Identify common features for different groups of animals, including wild and domestic animals.</p> <p>Big Wide World:</p> <p>Identify common features for different groups of animals, including wild and domestic animals.</p> <p>With support, observe, record and talk about living things.</p>	<p>On The Beach:</p> <p>know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read.</p> <p>Sunshine and Flowers:</p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>Describe some ways that plants or animals should be cared for in order for them to survive.</p>

Year 1	Seasons and Weather Day and Night – Physics (3 lessons)	Continue Introduce Plants, including trees – Biology (5/6 lessons)	Introduce Everyday materials - Chemistry (4-6 lessons)	Start Revisit Plants, Including Trees - Biology (5 lessons)	Continue Revisit Plants, including trees- Biology (3 lessons)	Second Revisit Animals including humans - Biology Plants Including trees - Biology (6 Lessons)
	Introduce Animals, including humans – Biology (4 lessons)				Revisit Animals including humans - Biology (3 lessons)	
Year 2	Introduce Living Things and Their Habitats - Biology (6 lessons)	Introduce Animals Including Humans - Biology (4-6 lessons)	Uses of Everyday Materials - Chemistry (4-6 lessons)	Introduce Plants - Biology (4-6 lessons)	Revisit Living Things and Their Habitats - Biology (2 lessons)	Second Revisit Uses of Everyday Materials - Chemistry (3 lessons)
					Revisit Everyday Materials - Chemistry (1 lessons)	
					Revisit Plants and Animals Including Humans - Biology (4 lessons)	Second Revisit Living Things and Their Habitats - Biology (3 lessons)
Year 3	Introduce Rocks - Chemistry (6 lessons)	Introduce Animals Including Humans - Biology (lesson 3 lessons)	Introduce Forces and Magnets - Physics (5 lessons)	Introduce Plants - Biology (5 lessons)	Revisit Rocks - Chemistry (3 lessons)	Revisit and Review

		Introduce Light - Physics (3 lessons)				
Year 4	Introduce Living Things and Their Habitats - Biology (5/6 lessons)	Introduce States of Matter - Chemistry (5/6 lessons)	Introduce Animals Including Humans - Biology Teeth (2/3 lessons) Digestion (2/3 lessons)	Food Chains (2/3 lessons)	Sound - Physics (3 lessons)	Revisit and Review
				Electricity - Physics (3 lessons)	Revisit Living Things and Their Habitats - Biology (3 weeks)	
Year 5	Introduce Properties and Changes of Materials - Chemistry (6 lessons)	Introduce Forces - Physics (5/6 lessons)	Earth and Space - Physics (5/6 lessons)	Introduce Living Things and Their Habitats - Biology (6 weeks)	Introduce Animals Including Humans - Biology (2/3 lessons) RSE (3 lessons)	Revisit Living Things and Their Habitats - Biology (3 lessons) Second Revisit Living Things and Their Habitats - Biology (3 lessons)
Year 6	Introduce Living Things and Their Habitats - Biology (5/6 lessons) ensure NEW 2023 content is followed	Introduce Light - Physics (4-6 lessons)	Start Introduce Animals Including Humans - Biology Circulatory System (5-6 lessons)	Continue Introduce Animals Including Humans - Biology Circulatory System (2-3 lessons)	Introduce Animals Including Humans - Biology - Water Transportation (2-3 lessons)	Introduce Evolution and Inheritance - Biology (6 lessons)
					Introduce Electricity - Physics (3 Lessons)	

Impact:

Assessment and Expected Outcomes

- Teachers assess pupil's science attainment weekly during science lessons and following work submitted for marking. Misconceptions are picked up and addressed within the lesson during the 'apply' stage of the learning sequence.
- Insight will be used for teachers to keep track of children's attainment, using their ongoing science assessments. Cumulative questions will be built into lessons to capture a pupil's understanding of a Scientific skill/concept. Ongoing tracking will identify gaps and will inform future planning.
- Summative data is collected three times a year and is used to inform us of the progress and attainment of each individual and of particular groups of children across the school e.g. SEND and PPG.
- Moulton Primary sets challenging targets for all pupils' achievement based on prior attainment and in line with the aspirations of the school. We expect that 80% of our children will be working at Age Related Expectations in Science and a growing percentage to achieve Greater Depth.

Science Progression of Skills 2023

National Curriculum Statements:

Working Scientifically				
<p>A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.</p>				
	By the end of EYFS	By the end of Year 2	By the end of Year 4	By the end of Year 6
To work Scientifically	<p>Look closely at similarities, differences, patterns and change</p>	<ul style="list-style-type: none"> ● Ask simple questions ● Know how to use simple equipment ● Know how to observe closely ● Understand how to perform simple tests ● Know how to identify and classify Use observations and ideas to suggest answers to questions ● Know how to gather and 	<ul style="list-style-type: none"> ● Ask relevant questions ● To know how to set up simple practical enquiries and comparative and fair tests to know how to make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers. ● To know how to gather, record, classify and present data in a variety of ways to help in answering questions. ● Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. ● Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Know how to use 	<ul style="list-style-type: none"> ● Plan enquiries, including recognising and controlling variables where necessary. Knows how to use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. ● Know how to take measurements, using a range of scientific equipment, with increasing accuracy and precision. ● Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Report findings from enquiries, including oral and written explanations of results,

		record data to help answer questions	results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests. <ul style="list-style-type: none">● Knows how to identify differences, similarities or changes related to simple, scientific ideas and processes.● Understands how to use straightforward, scientific evidence to answer questions or to support their findings	explanations involving causal relationships, and conclusions. Present findings in written form, displays and other presentations. Use test results to make predictions to set up further comparative and fair tests. <ul style="list-style-type: none">● Know how to use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments
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Progression of skills for Working Scientifically at Moulton Primary School:

SCIENCE		EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	Upper KS2 (Y5 and Y6)	
QUESTION		Ask simple questions about immediate environment.	Ask questions and know some can be answered using scientific enquiry.		Identify scientific questions. ie can be investigated through scientific enquiry.		Raise scientific questions and hypothesise	
	OBSERVE	Qualitative Talk about similarities and differences.	Qualitative and Simple Quantitative		Qualitative and Quantitative		Qualitative and Quantitative	
			Observe change over time. Use senses/ equipment.	Measure change over time e.g. plant growth. Select equipment	Systematic / careful observations. Use bar charts, pictograms, tables.	Accurate measurements Use time graphs and other graphs.	Accurate/ precise measurements, Diagrams, tables, bar and line graphs.	Take repeat readings when appropriate. Scatter graphs.
	CLASSIFY and FIND PATTERNS	Talk and Sort	Identify and Classify		Classify and Find Patterns		Classify and Find Patterns	
		Use simple scientific criteria.	e.g. familiar plants, animals, materials Compare and contrast	e.g. living/ dead/ never alive; materials Compare differences	Classify animals/ materials. Link two variables e.g. <i>find patterns in the way that the size of shadows change.</i>	Use simple classification keys to help group identify and name living things.	Use complex classification keys. Identify causal relationships	Develop classification keys. Identify evidence that supports/ disproves causal relationships

	CONTROL INVESTIGATIONS: comparative and fair testing	Explore objects/ materials/ living things/ resources designed to model scientific processes.	Simple comparative tests		Comparative and fair tests		Design own comparative and fair tests	
			e.g. <i>What is the best material for an umbrella?</i>	e.g. <i>What if plants do not get light and water?</i>	Predict. Fair tests e.g. <i>How does distance affect magnet strength?</i>	Predict. Language of independent and control variable (States of matter)	Identify when and how to use tests. Recognise and control variables. Make predictions based on previous test results.	
	RESEARCH	Listen and respond to stories about scientific processes/ events/ objects.	Find information using given sources. e.g. <i>animals.</i>	Select information from a range of given sources.	Research using given sources. e.g. <i>research different food groups and how they keep us healthy</i>	Select information to support findings. e.g. <i>research animals</i>	Explore relevant information by using a wide range of secondary sources.	
							Explore how scientific ideas have developed over time.	Identify evidence that has been used to support or disprove ideas.

CONCLUDE	Explain state simple observations	<ul style="list-style-type: none"> • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions 	<ul style="list-style-type: none"> • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from 	<ul style="list-style-type: none"> • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs,
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			<p>enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <ul style="list-style-type: none">● using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions● identifying differences, similarities or changes related to simple scientific ideas and processes● using straightforward scientific evidence to answer questions or to support their findings	<p>bar and line graphs</p> <ul style="list-style-type: none">● using test results to make predictions to set up further comparative and fair tests● reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations● identifying scientific evidence that has been used to support or refute ideas or arguments
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National Curriculum Programme of Study - Science

	By the end of EYFS	By the end of Year 1	By the end of Year 2	By the end of Year 3	By the end of Year 4	By the end of Year 5	By the end of Year 6
Animals, including humans	<p>Making observations about animals</p> <p>Drawing pictures of animals</p>	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>Identify, name, draw and label the basic parts</p>	<p>To know that animals, including humans, have offspring which grow into adults.</p> <p>To know and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>Know and describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>To identify and know 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>Identify and know that humans and some animals have skeletons and muscles for support, protection and movement.</p>	<p>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.</p> <p>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>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>

		of the human body and say which part of the body is associated with each sense.					
Plants	<p>Children should know about similarities and differences in relation to places, objects, materials and living things.</p> <p>They talk about the features of their own immediate environment and how environments might vary from one another.</p> <p>They make observations of plants and</p>	<p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identify and describe the basic structure of a variety of common flowering plants (seeds, roots etc.) including trees.</p>	<p>To observe and know how seeds and bulbs grow into mature plants.</p> <p>To find out and describe how plants need water, light and suitable temperature to grow and stay healthy.</p>	<p>Identify, know and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Explore and know 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 and understand the way in which water is transported</p>			

	explain why some things occur, and talk about changes.			within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
Living things and their habitats.			Explore and compare difference 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 needs of different kinds		identify and name a variety of living things (plants and animals) in the local and wider community. Give reasons for classifying plants and animals based on specific characteristics. Recognise that environments are constantly changing and that this can sometimes pose dangers	To know and describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird.	Describe how living things are classified into broad groups according to common observable characteristic and based on similarities and differences, including micro organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.

of animals and plants, and how they depend on each other.

to specific habitats.

Evolution and inheritance

Recognise that livings have changed over time and that fossils provide information about living things that inhabited the EArth millions of years ago.

Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.

Identify how animals and plants are adapted to suit their environment in different wats and that adaptation

							may lead to evolution.
Everyday Materials		<p>Distinguish between an object and the material from which it is made.</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</p> <p>Describe the physical properties of a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials based on their simple physical properties.</p>	<p>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>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>		<p><u>States of Matter</u></p> <p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>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.</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation</p>	<p><u>Properties and changes of Materials</u></p> <p>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>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</p>	

					<p>with temperature.</p>	<p>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 in and changes of state are reversible changes.</p> <p>Explain that some changes result in the formation of new materials,</p>	
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						and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on the bicarbonate of soda.	
Light				<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 to the eyes.</p> <p>Recognise that shadows are formed when</p>			<p>Recognise that light appears to travel in straight lines 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</p>

				<p>light from a light source is blocked by a solid object.</p> <p>Find patterns in the way that the size of shadows change.</p>			<p>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>
Seasonal Changes		<p>Observe and talk about changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies, including understanding that it is unsafe to look directly at the Sun.</p>					
Sound					Identify how sounds are made, associating some of them		

					<p>with something vibrating.</p> <p>Recognise that vibrations from sounds travel through medium to the ear.</p> <p>Find patterns between 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's source increases.</p>		
Earth and Space						Describe the movement of the Earth, and	

						<p>other planets, relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night, and the apparent movement of the Sun across the sky.</p>	
Forces				<p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact</p>		<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the</p>	

				<p>between 2 objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>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</p>		<p>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>	
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				which poles are facing.			
Electricity					<p>Identify common appliances that run on electricity.</p> <p>Construct a simple series of electrical circuits. 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</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>

					<p>circuit and associate this with whether or not a lamp lights in a simple series of circuit.</p> <p>Recognise some common conductors and insulators and associate metals with being good conductors.</p>		
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Progression and Sequence of Science

	Unit title and substantive focus	Previous Learning	Big Ideas/ Key Questions/Learning focus	Tier 2 Vocabulary (Multiple Meaning or High Frequency)	Tier 3 Vocabulary (Subject Specific)
EYFS	KUW: Explore the natural world around them, making observations and drawing pictures of animals and plants	N/A		senses young feather fur seed bark wild branch plant tree fruit flower roots leaf garden living grow	wild domestic stem
EYFS	KUW: Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.	N/A		hard soft stretch bend sand snow sun sea	materials
EYFS	KUW: Understand some important processes	N/A		weather sun rain	month season spring

	and changes in the natural world around them, including the seasons and changing states of matter.			snow cloud day night	summer autumn winter
Year 1	Seasons and weather Day and Night Physics The study of energy forces mechanics waves structure of atoms physical universe	Managing Self Manage their own basic hygiene and personal needs, including dressing, going to the toilet, and understanding the importance of healthy food choices. The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants. Understanding some important processes and changes in the natural world around them, including seasons and changing states of matter.	Seasons and weather What are the four seasons? What's the weather like in Autumn, Winter, Spring and Summer? Day to night Why does day become night?	dawn dusk mild rotate soaked weather	month season spring summer autumn winter
Year 1	Animals, including humans. Biology	Managing Self Manage their own basic hygiene and personal needs,	Animals What is an animal? What types of animals are there?	blood senses young feathers	mammal amphibian reptile herbivore

	<p>The study of living things, including:</p> <ul style="list-style-type: none"> - Types of animal - Food animals eat - Senses 	<p>including dressing, going to the toilet, and understanding the importance of healthy food choices.</p> <p>The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>Understanding some important processes and changes in the natural world around them, including seasons and changing states of matter.</p>	<p>What is similar and what is different?</p> <p>Eating What does food tell us about an animal?</p> <p>Senses What makes me an animal? What senses do I have?</p>	<p>fur scales</p>	<p>carnivore omnivore</p>
Year 1	<p>Common plants and trees in a local environment</p> <p>Biology The study of living things, including:</p> <ul style="list-style-type: none"> - Types of animal - Food animals eat - Senses 	<p>Managing Self Manage their own basic hygiene and personal needs, including dressing, going to the toilet, and understanding the importance of healthy food choices.</p> <p>The Natural World Explore the natural world around them, making observations</p>	<p>Structure of plants What are the parts of a plant?</p> <p>Wild and common plants What are wild plants and where do you find them? What are garden plants and where do you find them?</p> <p>Trees What makes a tree? What types of tree are there? (Trees that live around my</p>	<p>bud trunk branch bark seed wild</p>	<p>nutrients stem deciduous evergreen</p>

		<p>and drawing pictures of animals and plants.</p> <p>Understanding some important processes and changes in the natural world around them, including seasons and changing states of matter.</p>	<p>school) What's the difference between trees?</p>		
Year 1	<p>Everyday Materials</p> <p>Chemistry The study of the composition, behaviour and properties of matter</p>	<p>Managing Self Manage their own basic hygiene and personal needs, including dressing, going to the toilet, and understanding the importance of healthy food choices.</p> <p>The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>Understanding some important processes and changes in the natural world around them, including seasons and changing states of</p>	<p>Materials What are materials? What are things made of in school?</p> <p>Properties How can I describe materials? Which materials are waterproof and which are not? Which materials are transparent and which are opaque?</p> <p>Use what you know What's the best material for the job? Why?</p>	<p>absorb rough smooth waterproof metal plastic</p>	<p>materials properties flexible transparent opaque physical</p>

		matter.			
Year 2	<p>Living Things and Their Habitats</p> <p>Biology</p> <p>The study of living things, including characteristics of living things Relationship of living things and their environment</p>	<p>EYFS – Natural Word</p> <p>Y1 Plants</p> <p>Y1 Animals including humans</p>	<p>Characteristics of living things</p> <p>What is alive and what is not?</p> <p>What do all living things have in common?</p> <p>Location of living things</p> <p>Where do plants and animals live?</p> <p>What plants and animals live in our local environment?</p> <p>How living things are connected</p> <p>What are food chains?</p> <p>How are they connected?</p> <p>Why do plants and animals need each other?</p>	<p>thrive</p> <p>depend</p> <p>producer</p> <p>consume</p> <p>prey</p> <p>predator</p>	<p>oxygen</p> <p>nutrition</p> <p>respiration</p> <p>sensitivity</p> <p>reproduction</p> <p>excretion</p>
Year 2	<p>Animals, including humans</p> <p>Biology</p> <p>The study of living things, including: Reproduction Basic needs Diet and exercise for humans</p>	<p>EYFS – Natural Word</p> <p>Y1 Plants</p> <p>Y1 Animals including humans</p>	<p>Animals and change</p> <p>REMEMBER: what is an animal?</p> <p>How do animals change as they mature?</p> <p>Air, water and food</p> <p>How do we change as we mature?</p> <p>What do all animals need to stay alive?</p> <p>Health and food Keeping healthy: why do we exercise?</p>	<p>healthy</p> <p>survive</p> <p>exercise</p> <p>heart</p> <p>lungs</p> <p>muscles</p>	<p>hygiene</p> <p>larva</p> <p>pupa</p> <p>vertebrates</p> <p>invertebrates</p> <p>metamorphosis</p>

			Keeping healthy: why do we eat different types of food?		
Year 2	<p>Use of Everyday Materials</p> <p>Chemistry</p> <p>The study of the composition, behaviour and properties of matter</p>	<p>EYFS Natural world</p> <p>Y1 Everyday materials</p>	<p>Materials</p> <p>What are materials used for?</p> <p>Categorise and compare wood, metal, plastic and glass.</p> <p>What are materials used for? Categorise and compare ceramics, rock, paper and card, and fabric.</p> <p>Changes</p> <p>What happens when we squash, bend, twist or stretch a material?</p> <p>Purpose</p> <p>What's the right material for the job?</p> <p>What's the most absorbent material?</p> <p>Who invented waterproofing?</p>	<p>artificial</p> <p>brittle</p> <p>extracted</p> <p>fabric</p> <p>manufactured</p> <p>natural</p>	<p>ceramic</p> <p>durable</p> <p>inflexible</p> <p>reflective</p> <p>rigid</p> <p>translucent</p>
Year 2	<p>Plants</p> <p>Biology</p> <p>The study of living things, including</p> <p>Growth</p> <p>Health</p> <p>Relationship of living</p>	<p>EYFS – Natural Word</p> <p>Y1 Plants</p> <p>Y1 Animals, including humans</p> <p>Y2 Living things and</p>	<p>Growing from a seed</p> <p>How do seeds germinate and what happens?</p> <p>Growing from a bulb What happens when bulbs sprout?</p>	<p>wither</p> <p>dormant</p> <p>mature</p> <p>bulb</p> <p>anchor</p> <p>sustain</p>	<p>germination</p> <p>perennial</p> <p>carbon dioxide</p> <p>glucose</p> <p>clone</p>

	things and their environment	their habitats	<p>Healthy plants What do plants need to thrive and be healthy? What can happen if plants don't get the things they need? What do I notice about plants around the school? How are they healthy? How are they unhealthy?</p> <p>Show what you know How do seeds and bulbs grow? What do plants need to be healthy?</p>		
Year 3	<p>Rocks</p> <p>Chemistry The study of the composition, behaviour and properties of matter</p>	<p>Y1 Everyday materials</p> <p>Y2 Use of everyday materials</p>	<p>Types How are rocks formed? What types of rocks are there?</p> <p>Change Can rocks change? How can we test a rock to see if it is limestone or chalk?</p> <p>Soil Is soil just dirt? What makes soil? Fossils How are fossils formed?</p> <p>Elaborate and remember rocks, soils and fossils.</p>	<p>cemented compacted decay prehistoric soil transform</p>	<p>fossil igneous magma metamorphic minerals sedimentary</p>

<p>Year 3</p>	<p>Animals, Including Humans</p> <p>Biology</p> <p>The study of living things, including: Amount and type of nutrition Structure of humans and animals</p>	<p>EYFS Natural world</p> <p>Y1 Animals, including humans</p> <p>Y2 Animals, including humans</p> <p>Y2 Living things and their habitats</p>	<p>Food What effect does the food we eat have?</p> <p>Skeleton Where is my skeleton and what does it do?</p> <p>Muscle Where are my muscles and what do they do?</p>	<p>minerals skeleton skull voluntary involuntary nerves</p>	<p>biceps triceps vertebrae vitamins proteins carbohydrates</p>
<p>Year 3</p>	<p>Forces and Magnets</p> <p>Physics</p> <p>The study of energy forces mechanics waves structure of atoms physical universe Earth in Space</p>	<p>Y1 Seasonal changes</p> <p>Y1 Everyday materials</p> <p>Y2 Uses of everyday materials</p>	<p>Contact force and friction What are contact forces? How do surfaces affect the motion of an object? How does friction affect moving objects?</p> <p>Non-contact force What is a non-contact force? How is this different to a contact force?</p> <p>Magnetic force How do magnets attract and repel? Which materials are magnetic? Forces and magnetism summary.</p>	<p>consequence contact force attract north south</p>	<p>magnet resistance friction repel pole magnetic field</p>
<p>Year 3</p>	<p>Light</p> <p>Physics</p> <p>The study of energy</p>	<p>Y1 Seasonal changes</p> <p>Y1 Everyday materials</p>	<p>Seeing Do we need light to see things?</p>	<p>absence cast (shadow) impenetrable reflect</p>	<p>constant dependent independent illuminate</p>

	<p>forces mechanics waves structure of atoms physical universe Earth in Space</p>	<p>Y2 Uses of everyday materials</p> <p>Y3 Forces and magnets</p>	<p>Shadows How are shadows formed?</p> <p>Changing variables What happens to the size of a shadow when the object moves closer to, or away from, the light source?</p>	<p>shadow source (light)</p>	<p>translucent variable</p>
Year 4	<p>Living Things and Their Habitats</p> <p>Biology The study of living things, including: Grouping Classification Environmental change and impact</p>	<p>Y1 Plants</p> <p>Y1 Animals, including humans</p> <p>Y2 Living things and their habitats</p> <p>Y2 Plants</p> <p>Y3 Plants</p>	<p>Living things What are the characteristics of living things?</p> <p>Vertebrates and invertebrates What animals are vertebrates? What animals are invertebrates?</p> <p>Plants What groups are plants classified in? Classification keys What is classification? How do I use a key?</p> <p>Environmental changes What happens if the environment in a habitat changes?</p>	<p>classification environment interdependence interact beneficial hierarchy</p>	<p>vertebrate invertebrate biotic ecosystem species niche</p>
Year 4	<p>States of Matter</p> <p>Chemistry The study of the composition,</p>	<p>Y1 Everyday materials</p> <p>Y2 Use of everyday materials</p>	<p>What is matter?</p> <p>What does 'state' mean?</p> <p>What are solids, liquids and</p>	<p>permanent particle solid liquid gas</p>	<p>evaporate condense melt matter state</p>

	behaviour and properties of matter	Y3 Forces and magnets	gases? Melting: how do materials change state? Evaporating: how do materials change state? Condensing: how do materials change state? Summary: how do materials change their state of matter?	vapour	volume
Year 4	Animals Including Humans Biology The study of living things, including: Structure of digestive system Function of digestive system Relationship Food chains	Y1 Plants Y1 Animals, including humans Y2 Living things and their habitats Y2 Plants Y3 Plants Y4 Living things and their habitats	Teeth and eating What teeth do humans have? What do they do? How does our mouth and teeth help digestion? What's the process? Can teeth tell us what animals eat? The digestive system What are the parts of the digestive system? What do they do? How does digestion work? What's the process? Food chains What are food chains How do they work? How do I construct and	expel compact digestion acid stomach intestines	incisor canine molar enzyme saliva peristalsis

			interpret a food chain? SUMMARY How are teeth, digestion and food chains connected?		
Year 4	Electricity Physics The study of energy forces mechanics waves structure of atoms physical universe Earth in Space	Y1 Seasonal changes Y1 Everyday materials Y2 Uses of everyday materials Y3 Forces and magnets	Sources of electricity What appliances use electricity? What sort of power makes them work? Components Name it - what are the components in a simple series circuit? Apply what you know Diagnose it – what are the effects of changing circuit components and batteries?	associate identify portable effect appliance series	component electrical insulator electrical conductor circuit hypothesis variable
Year 4	Sound Physics The study of energy forces mechanics waves structure of atoms physical universe Earth in Space	Y1 Seasonal changes Y1 Everyday materials Y2 Uses of everyday materials Y3 Forces and magnets Y4 Electricity	Properties What is sound? Movement How does sound travel? Pitch and loudness What is the pitch and loudness of sound?	produce property source frequent regular affect	vibrate pitch volume medium vacuum sound wave
Year 5	Properties and changes of materials	Y1 Everyday materials	Properties, mixtures and solutions	property particle	atom molecule

	<p>Chemistry</p> <p>The study of the composition, behaviour properties of matter</p>	<p>Y2 Uses of everyday materials</p> <p>Y3 Rocks</p> <p>Y3 Light</p> <p>Y4 States of matter</p>	<p>What properties do materials have?</p> <p>How do we use them?</p> <p>What is a mixture?</p> <p>What is a solution? (Solubility)</p> <p>Separation of materials</p> <p>How can we separate materials from a mixture? (Sieving and filtration)</p> <p>How can we separate materials from a solution? (Evaporation)</p> <p>Reversible and irreversible change</p> <p>What changes are reversible?</p> <p>What changes are irreversible?</p>	<p>separate</p> <p>combine</p> <p>recover</p> <p>comparative</p>	<p>chemical (changes)</p> <p>physical (changes)</p> <p>reversible reaction</p>
Year 5	<p>Animals, including humans</p> <p>Biology</p> <p>The study of living things</p> <p>Lifespan and life cycle</p> <p>Change and growth</p>	<p>Y1 Animals, including humans</p> <p>Y2 Animals, including humans</p> <p>Y3 Animals, including humans</p> <p>Y4 Animals, including humans</p>	<p>Life</p> <p>What is the human timeline?</p> <p>Growth</p> <p>How do we change into adults?</p> <p>Compare</p> <p>How do human and animal lifespans compare?</p>	<p>development</p> <p>diverse</p> <p>unique</p> <p>generation</p> <p>mature</p> <p>equipped</p>	<p>adolescence</p> <p>puberty</p> <p>gestation</p> <p>embryo</p> <p>foetus</p> <p>womb</p>
Year 5	<p>Forces</p> <p>Physics</p>	<p>Y3 Forces and magnetism</p>	<p>Non-contact and contact forces</p> <p>Remember gravity. When is</p>	<p>opposite</p> <p>reaction</p> <p>advantage</p>	<p>pulley</p> <p>gear</p> <p>pivot</p>

	<p>Matter Forces and motion Sound, light and waves Electricity and magnetism Earth in Space</p>	<p>Y3 Light Y4 States of matter Y4 Electricity Y4 Sound</p>	<p>friction helpful and when is it not? Resistance What is the effect of air resistance? Air resistance investigation What's the effect of water resistance? Levers, pulleys and gears How do levers help us? How do pulleys and gears help us?</p>	<p>displace weight mass</p>	<p>fulcrum lever upthrust</p>
Year 5	<p>Earth and Space Physics Matter Forces and motion Sound, light and waves Electricity and magnetism Earth in Space</p>	<p>Y3 Forces and magnetism Y3 Light Y4 States of matter Y4 Electricity Y4 Sound Y5 Forces</p>	<p>Position, relationship / movement of planets / spherical bodies. What are the planets in our solar system? (Planet comparison) How does the view of the Moon change in a solar month? (Moon phases, moon diaries) The effect of the Earth's rotation, tilt and orbit has on day, night and seasons. Why does the rotation of the Earth result in day and night? Why is the Earth's tilt (axis) responsible for the seasons?</p>	<p>luminous phenomenon attraction approximately relative apparent</p>	<p>orbit axis crescent gravitational waxing waning</p>
Year 5	<p>Living Things and their Habitats</p>	<p>Y1 Plants Y2 Plants</p>	<p>Mrs GREN Recap of life processes</p>	<p>deduce process re-form</p>	<p>embryo sexual metamorphosis</p>

	<p>Biology</p> <p>The study of living things, including: Structure Order Life cycles Reproduction</p>	<p>Y3 Plants</p> <p>Y3 Living things and their habitats</p> <p>Year 4 Living things and their habitats</p>	<p>Life Cycles</p> <p>What's the difference between a mammal and amphibian? What's the difference between an insect and a bird? What is similar and what is different between the life cycle of a mammal, amphibian, insect and bird?</p> <p>Inspirational scientists Who was Maria Merion and what did she do?</p> <p>Reproduction How do living things reproduce? Plants and animals – what's the life process of reproduction.</p>	<p>transform adolescence contrast</p>	<p>incubate biochemical fertilisation</p>
Year 6	<p>Living things and their habitats.</p> <p>Biology</p> <p>The study of living things, including Pioneering scientists Classification</p>	<p>Y1 Plants</p> <p>Y2 Plants</p> <p>Y3 Plants</p> <p>Y3 Living things and their habitats</p> <p>Year 4 Living things and their habitats</p>	<p>Pioneering scientists Who was the scientist Carl Linnaeus and what did he do?</p> <p>Classification How do we classify vertebrates? How do we classify invertebrates we know? How do we classify invertebrates we don't know? How do we classify</p>	<p>Characteristic Interdependence Specific Categorise Primitive Hierarchy</p>	<p>Fungus Arthropod Taxonomy Kingdom Phylum Genus</p>

		Y5 Living thing and their habitats	<p>invertebrates we don't know?</p> <p>Apply What animals can I classify? What animals and plants exist in my local environment?</p>		
Year 6	<p>Light</p> <p>Physics Matter Forces and motion Sound, light and waves Electricity and magnetism</p> <p>Earth in Space</p>	<p>Y1 Everyday materials</p> <p>Y2 Uses of everyday materials</p> <p>Y3 Light</p> <p>Y4 States of matter</p> <p>Y4 Sound</p> <p>Y4 Electricity</p> <p>Y5 Forces</p> <p>Y5 Earth in Space</p>	<p>Properties of light How does light travel? What colour is light made of?</p> <p>Reflection Reflection - how does light help us to see objects? Which surfaces make the best reflectors?</p> <p>Colour Why do we see objects as a particular colour?</p> <p>Refraction What happens to the appearance of objects when placed in water?</p>	<p>Impurity Emit Absorb Constituent Filter Artificial</p>	<p>Refraction Incidence Spectrum Prism Lux Piment</p>
Year 6	<p>Animals, including humans</p> <p>Biology The study of living things Structure and function of the circulatory system</p>	<p>Y1 Animals, including humans identify animals – mammal, reptile, bird, amphibian, fish</p> <p>Y2 Animals, including humans</p>	<p>Blood and blood vessels What is blood made of and why do we need it? Why do our bodies need nutrients and how are they transported? What is our circulatory system?</p>	<p>Cell Chamber System Circulation Vessel Clot Filter Expel</p>	<p>Plasma Platelet Artery Capillary Vein Ventricle Kidney Bladder</p>

	Health and exercise	<p>Reproduction and basic needs</p> <p>Y3 Animals, including humans Nutrition Structure of humans and animals</p> <p>Y4 Animals, including humans Human digestion</p> <p>Y5 Animals, including humans Lifespans and life cycles, growth and change</p>	<p>The functions of the heart What is our heart like inside? How does it work? Who influenced what we know about our circulatory system?</p> <p>The effect of exercise, drugs and lifestyle What can we do to keep healthy? Present and explain what we know about the circulatory system, nutrients and keeping healthy.</p> <p>Digestion and circulation Remember circulation and digestion: how are these two systems connected?</p> <p>Removal of waste Where are the kidneys and what do they do?</p> <p>Keeping healthy How do kidneys keep us healthy?</p>	Substance Function Regulate Transform	Urine Excretion Toxin Nutrient
Year 6	<p>Electricity</p> <p>Physics</p> <p>Matter Forces and motion Sound, light and waves</p>	<p>Y1 Everyday materials (chem)</p> <p>Y2 Uses of everyday materials (chem)</p> <p>Y3 Light</p>	<p>Do-it What is electricity? How does it work? How do we build and represent a series circuit? What are the components in a series circuit?</p>	Component Consequence Systematic Represent Source Generate	Proton Neutron Electron Terminal Series Voltage

	Electricity and magnetism	Y4 States of matter Y4 Sound Y4 Electricity Y5 Forces Y5 Earth in Space	Test-it How does the number of cells and voltage affect components in a circuit? Diagnose-it What are the effects and consequences of changing circuit components and batteries?		
Year 6	Evolution Biology The study of living things Change Evolution Adaption Environment	Y3 Plants Y4 Living things and their habitats Y5 Living things and their habitats Y6 Living things and their habitats	Change over time How have living things changed over time? How do we know? How has life evolved over time? Biological change What is DNA and what does it do? Are all offspring identical to their parents? Theories of evolution Darwin and Wallace – what evidence did they share to argue the case for evolution? Survival of the fittest - how have animals adapted and evolved to suit their environment?	Characteristic Adaptation Acquire Theory Modify Generation	Evolve Survival Species Clone Inherit Fossil