

GREENFIELDS COMMUNITY PRIMARY SCHOOL VALUES:

Be Amazed - Stay curious and follow your dreams. Never lose your sense of wonder.

Be Brave - Confront your fears and take a chance. Mistakes are the best lessons.

Be Original - Never stop asking questions. Seek out the answers.

Be Bold - You are capable of changing a situation. Become the explorer of tomorrow.

GREENFIELDS COMMUNITY PRIMARY SCHOOL INTENT:

The Greenfields curriculum is driven by our school values. There are clear links between what we say the ambition for our children is and how we intend to achieve it. It is our aim to enable our children to stand on the shoulders of those that have gone before and create things which may well help them fuel solutions to society's problems. In selecting specific content, staff celebrates and embraces the different backgrounds, heritage, language and traditions of all the children living in this country as well as introducing them to the best that has been thought and said in the past and present. Over the course of the academic year, children will have the opportunity to explore more deeply each of our school values in a planned and progressive way.

GREENFIELDS COMMUNITY PRIMARY SCHOOL IMPLEMENTATION:

How the Greenfields curriculum works: Our curriculum is unique to our school and our children. Our values underpin the curriculum at Greenfields which allows our children to understand in explicit detail our ambition for them; what it means to be a part of our school. Teachers use the national curriculum objectives as a starting point to design the curriculum for their year groups, all the while thinking about how best to connect different content and skills in a meaningful way. This enables teachers to use the very best examples from across each subject discipline to foster the curiosity and fire ambition within our children.

Making meaningful links: Teachers use the overarching value for that term to link children's learning. Staff use our values as the starting point when making decisions about the lens through which very deliberate and specific content is viewed in individual subjects, ensuring that our children have the opportunity to develop progressive knowledge, skills and behaviours, and that these assimilate over time through many different experiences and opportunities offered across school; we are building schemas.

The extended Greenfields curriculum: Across the school, from Pre-school to Year 6, embedded within the Greenfields curriculum is the understanding that 'real life' experiences and outdoor learning are vital to children achieving their best. Experiences and visits are planned in a progressive way across school, ensuring that there is a core offer across children's career at Greenfields.

... be amazed...

This value in our curriculum is all about fostering a sense of curiosity by introducing our children to the widest of worlds including the most spectacular that the human and natural world has to offer. In the Early Years, this begins by looking at finding wonder in the everyday; changing of the seasons, a growing plant, simple cause and effect. With our eldest children, we expose children to the finest examples of academia, the creative arts, science, sports, society and exploration; giving our children the very best and varied examples from which to aspire.

Subjects are linked in progressively and conceptually through our 'be amazed' value in the following way:

EYFS	KS1	LKS2	UKS2	AMAZED (Autumn 1)
love, dreams, beauty	love, dreams, beauty	love, dreams, beauty	love, dreams, beauty	
	passion, creativity,	passion, creativity	passion, creativity	
		diversity, belief	diversity, belief	
			equality, values	

...be brave...

This value in our curriculum is to instil in our children the confidence to take a chance. Our children know that making mistakes are fundamental to learning. Resilience is not taught; it is a retrospective skill that is developed over time. Our curriculum gives our children the opportunity to build resilience by being confident to take the first step. In the Early Years, this begins by being willing to have a go at something new. In our eldest children, we prepare our children for the pressures of life beyond our school, both academic, social and personal, equipping them with skills to become strong and mentally healthy young adults with high self-esteem.

Subjects are linked progressively and conceptually through our 'be brave' value in the following way:

EYFS	KS1	LKS2	UKS2	BRAVE (Autumn 2)
empathy, fears	empathy, fears	empathy, fears	empathy, fears	
	consequence, mistake, strength	consequence, mistake, strength	consequence, mistake, strength	
		power, conflict	power, conflict	
			adversity, protest	

...be original...

This value in our curriculum is all about fostering our children to be questioning and evaluative of all they see and hear. Our children are encouraged to think originally about what they have learnt and how to apply their learning between different situations. In the Early Years, this begins by establishing a voice for children who feel undaunted by sharing what they know, as only by developing what you know can you begin to question. In our eldest children, we look for opportunities to think of solutions that might not always be obvious; being selective and having the skills to prioritise information so that they can be effective in their efforts.

Subjects are linked progressively and conceptually through our 'be original' value in the following way:

EYFS	KS1	LKS2	UKS2	ORIGINAL (Spring)
change, identity	change, identity	change, identity	change, identity	
	individuality, freedom	individuality, freedom	individuality, freedom	
		wisdom, reform	wisdom, reform	
			morality, truth, faith	

...be bold...

This value in our curriculum encourages the skills of reflection to ensure children understand how they have gained the knowledge they have. Our children know that their learning is not defined by content but by developing the skill of using what they know. It is a combination of confidence and caution in the right measures and at the right time. In the Early Years, this begins by children initiating their own learning. In our eldest children, it is developing subtlety in their opinions and thoughts; understanding that others may hold different viewpoints, but that they are able to act with respect and tolerance.

Subjects are linked progressively and conceptually through our 'be bold' value in the following way:

EYFS	KS1	LKS2	UKS2	BOLD (Summer)
choice, responsibility	choice, responsibility	choice, responsibility	choice, responsibility	
	fairness, loyalty	fairness, loyalty	fairness, loyalty	
		influence, democracy	influence, democracy	
			justice, opportunity	

Across the school year, we have grouped together subjects that form the focus for the term or half term. We know that by giving children the time to immerse themselves in a subject in an experiential way which allows them to make purposeful connections and associations with prior knowledge, allows them to learn better. In essence, children who are given the opportunity to live and breathe a subject as they are learning it, remember more. The children are given the opportunity to consolidate their learning over multiple sessions, rather than concentrating the same amount of practice into one session. We ensure that children are given the opportunity to recall information from previous lessons, previous weeks and terms, all which together helps to support rich, deep learning embedded with a child's longer term memory.

AUTUMN 1	AUTUMN 2	SPRING	SUMMER
<i>...be amazed</i>	<i>...be brave</i>	<i>...be original</i>	<i>...be bold</i>
FOCUS SUBJECTS ~ Art, D&T	FOCUS SUBJECTS ~ Geography & History	FOCUS SUBJECTS ~ Geography, D&T, Music	FOCUS SUBJECTS ~ History, Art, Music
ONGOING SUBJECTS ~ English, Maths, Science, PSHE & RSE, MfL, RE, PE, Computing	ONGOING SUBJECTS ~ English, Maths, Science, PSHE & RSE, MfL, RE, PE, Computing	ONGOING SUBJECTS ~ English, Maths, Science, PSHE & RSE, MfL, RE, PE, Computing	ONGOING SUBJECTS ~ English, Maths, Science, PSHE & RSE, MfL, RE, PE, Computing

GREENFIELDS COMMUNITY PRIMARY SCHOOL:

The expectation of the Greenfields curriculum: The content of the Greenfields curriculum is rooted in the National Curriculum. By the time children reach the end of each year group, our children will have developed a rich body of knowledge in all subjects and had the opportunity to practise skills that will enable them to enter the next stage of their education successfully. It is our expectation that children will have broad and wide-ranging knowledge, understanding and examples from which to begin to form opinions about their preferences and aspirations into adulthood. It is our fierce determination that regardless of a child's background, they will have had the same opportunities and exposed to the best examples from all subject disciplines, capturing their desire to continue learning as they become adults.

All learning leads towards an end point. The Greenfields curriculum has been designed both to offer progression from year to year, but also across a year. The content of each subject has been deliberately ordered to best support children's understanding.

SCIENCE CURRICULUM:

In Science, children are encouraged to develop a sense of curiosity about natural phenomena and the world around them. They are given opportunities to use purposeful questioning and practical investigation to explain what is occurring, predict how things behave and analyse cause and effect. Through building up a foundation of scientific knowledge and skills, pupils begin to recognise how Science has changed our lives and how it is vital to the world's future prosperity.

At Greenfields, we make links between STEAM subjects, allowing children to acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Through the evaluation of past and present Science, pupils develop a critical understanding of its impact on daily life and the wider world, as well as implications for the future of the world around us. In Science, children identify how the work of past and present Scientists has influenced our lives and are introduced to opportunities that may be available to them in the future, in terms of STEM careers. We also ensure there are a vast number of opportunities for taking learning outdoors, providing meaningful and memorable experiences to bring Science learning to life.

The aim of our Science curriculum is to ensure that all pupils:

- Develop their scientific knowledge through specific disciplines of biology, chemistry & physics
- Have the opportunity to learn in different environments, in the outdoor spaces of our school grounds and the local area
- Develop their understanding of nature, processes and methods of Science through different types of enquiry: prediction, observation, pattern seeking, questioning, research using sources and comparative & fair testing
- Are able to identify the best way to answer scientific questions about natural phenomena and the world around them
- Are equipped with the knowledge they require to understand the uses of Science and the implications for today and the future

At Greenfields, we ensure that children are at the heart of our teaching and learning of Science. We aim to make Science an inspiring and practical subject where children learn real-life skills that equip them for lifelong learning and careers. Science is timetabled weekly and taught as a discrete subject. Where specific skills have been taught, pupils are then encouraged to use these skills throughout the other curriculum areas to demonstrate that the knowledge has been remembered and understood.

SCIENCE:

At Greenfields, we teach Science through our Greenfields curriculum. Each subject stands alone in its own right allowing teachers to select the very best examples of the subject discipline. Subjects are linked by our overarching school value for that term, allowing breadth and depth of subject content to be explored. Where natural links can be made, teachers can group teaching of specific content to allow children the context for the content.

GREENFIELDS COMMUNITY PRIMARY SCHOOL

Yearly Overview- SCIENCE

Scientific Knowledge & Understanding

Science Enquiry & Working Scientifically

Uses & Implications of Science today and for the future

		Pre-School	Nursery	Reception
E Y F S	 Progression through Early Years			
	Early Adopter Development Matters Content	<p>Understand simple questions about 'who', 'what' and 'where'</p> <p>Notice patterns and arrange things in patterns.</p> <p>Explore materials with different properties.</p> <p>Explore natural materials, indoors and outside.</p> <p>Explore and respond to different natural phenomena in their setting and on trips.</p>	<p>Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"</p> <p>Use all their senses in hands- on exploration of natural materials.</p> <p>Select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc.</p> <p>Explore collections of materials with similar and/or different properties.</p>	<p>Learn new vocabulary</p> <p>Articulate their ideas in well thought out sentences</p> <p>Explore the natural world around them.</p> <p>Recognise some environments that are different to the one in which they live.</p> <p>Understand the effect of changing seasons on the natural world around them.</p>

		<p>Explore how things work</p> <p>Explore and talk about different forces they can feel</p>	
Specific content	<p>Provide patterned material and small objects to arrange in patterns.</p> <p>Offer lots of different textures for exploration with fingers, feet and whole body. Suggestions: wet and dry sand, water, paint and playdough.</p> <p>Share the fascination of a child who finds woodlice teeming under an old log.</p> <p>Model the careful handling of a worm and helping children return it to the dug-up soil.</p> <p>Carefully planting, watering and looking after plants they have grown from seeds</p>	<p>Shared book reading to widen children's vocabulary, including high quality picture books.</p> <p>Provide experiences of size changes. Suggestions: "Can you make a puddle larger?", "When you squeeze a sponge, does it stay small?"</p> <p>Provide den-making materials. Allow children to play freely with these materials, outdoors and inside. When appropriate, talk about the shapes and how their properties suit the purpose.</p> <p>Provide interesting natural environments for children to explore freely outdoors. Make collections of natural materials to investigate and talk about.</p> <p>Provide equipment to support these investigations e.g. magnifying glasses or a tablet with a magnifying app.</p> <p>Plant seeds and bulbs so children observe growth and decay over time</p> <p>Observe an apple core going brown and mouldy over time</p>	<p>Identify new vocabulary before planning activities, for example, changes in materials: 'dissolving', 'drying', 'evaporating'</p> <p>Bring in objects, pictures and photographs to talk about, for example vegetables to taste, smell and feel.</p> <p>Discuss which category the word is in, for example: "A cabbage is a kind of vegetable. It's a bit like a sprout but much bigger".</p> <p>Ask open questions - "How did you make that? Why does the wheel move so easily? What will happen if you do that?"</p> <p>Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences.</p> <p>Create opportunities to discuss how we care for the natural world around us. Offer opportunities to sing songs and join in with rhymes and poems about the natural world.</p>

			<p>Help children to care for animals and take part in first-hand scientific explorations of animal life cycles, such as caterpillars or chick eggs</p> <p>Draw children's attention to forces. Suggestions: how the water pushes up when they try to push a plastic boat under it, how they can stretch elastic, snap a twig, but can't bend a metal rod, magnetic attraction and repulsion, cooking - combining different ingredients, and then cooling or heating (cooking) them, melting - leave ice cubes out in the sun, see what happens when you shake salt onto them</p> <p>Explore how different materials sink and float.</p> <p>Explore how you can shine light through some materials, but not others. Investigate shadows and how they change.</p>	<p>After close observation, draw pictures of the natural world, including animals and plants.</p> <p>Observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.</p> <p>Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside.</p> <p>Share non-fiction texts that offer an insight into contrasting environments.</p> <p>Guide children's understanding of seasons and weather by drawing children's attention to the weather and seasonal features.</p>
Subject Voc	<p>Plant, animal, alive, worm, insect, spider, wet, dry, muddy, dirty</p> <p>Who, what, where, pattern, repeat</p>	<p>Sink, float, stretch, snap, bend, cook, cool, heat, melt, freeze, shine, shadow, look, colours, animals, caterpillar, chick, egg, adult, baby</p> <p>Who, what, where, when, why, explore</p>	<p>Names of plants and animals, season, weather, rainy, sunny, windy, cold, hot, outside, nature, touch, smell, hear, taste, see, dissolve, dry</p> <p>Who, what, where, when, why, how, explore, name, describe</p>	

 Progression across Year 1		1 → The seasonal changes that occur from children returning to school after the Summer holidays to October half term are significant - Autumn/Winter changes are very visual and this lends itself well to the working scientifically objectives of observing and asking questions about the environment.	2 → The materials topic has been placed here because the working scientifically objectives required for effective exploration of materials (performing simple tests, using observational skills, gathering and recording data) are slightly more complex. Therefore, placing it here allows children to have settled into the formalities of Year 1 from Early Years but it builds upon their independent exploration & questioning in the Early Years environment.	3 → The plants topic is studied around Springtime, when children can observe, in their school grounds and local area, the growth of plants. This also allows for further discussion around seasonal change to build upon children's learning at the beginning of Year 1.	4 → Placing the Animals including Humans topic at the end of the year allows for a smoother transition into Year 2 Science. Children will apply what they have learned in Year 1 to the more challenging concepts in Year 2 and build upon the vocabulary they have learned this year.
 Year 1	NC Content	<p><u>Seasonal Change</u></p> <p>Observe changes across the 4 seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies</p> <p>Asking simple questions and recognising that they can be answered in different ways</p> <p>Observing closely, using simple equipment</p> <p>Observations of the seasons and the weather will take place across the whole year, but the specific content & vocabulary teaching around day length, naming seasons etc. will take place here.</p>	<p><u>Everyday materials</u></p> <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 simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties</p> <p>Seasonal change</p> <p>Asking simple questions and recognising that they can be answered in different ways</p>	<p><u>Plants</u></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, including trees</p> <p>Seasonal change - new season & how seasons affect plants</p> <p>Identifying and classifying</p>	<p><u>Animals including Humans</u></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 of the human body and say which part of the body is associated with each sense</p> <p>Seasonal change - new season & how seasons affect animals' behaviour</p>

			<p>Performing simple tests</p> <p>Using their observations and ideas to suggest answers to questions</p> <p>Gathering and recording data to help in answering questions</p>		<p>Identifying and classifying</p>
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<p>Specific content</p>	<p>Can name the four seasons and identify when in the year they occur</p> <p>Can describe weather in different seasons over a year</p> <p>Can describe days as being longer (in time) in the summer and shorter in the winter</p> <p>Can describe other features that change through the year</p> <p>Present this information in tables and charts to compare the weather across the seasons.</p> <p>Collect information, regularly throughout the year, of features that change with the seasons e.g. plants, animals, humans.</p> <p>Demonstrate their knowledge in different ways e.g. making a weather forecast video, writing seasonal poetry, creating seasonal artwork</p>	<p>Classify objects made of one material in different ways e.g. texture, what it would be used for, appearance etc.</p> <p>Classify in different ways one type of object made from a range of materials e.g. a collection of spoons made of different materials.</p> <p>Classify materials based on their properties.</p> <p>Test the properties of objects e.g. absorbency of cloths, strength of party hats made of different papers, stiffness of paper plates, waterproofness of shelters. They should work scientifically to explore the answers to questions such as:</p> <p>What is the best materia for an umbrella? For lining a dog basket? For curtains? For a gymnast's leotard?</p>	<p>Children to use Identification Sheets (lots available on Woodland Trust). Children need to look at actual plants and trees in the school grounds & local area, not just pictures.</p> <p>Make close observation of real leaves, seeds, flowers etc. and compare them.</p> <p>Classify leaves, seeds, flowers etc. using a range of characteristics.</p> <p>Identify plants by matching them to named images.</p> <p>Make observations of how plants change over a period of time.</p> <p>Spot plants that are the same as those in the local area studied regularly, describing the key features that helped them be identified.</p> <p>Where possible, children should observe the growth of flowers and vegetables they have planted themselves.</p>	<p>Make first-hand, close observations of animals from each of the groups - if possible to see real animals, if not then observe from diagrams.</p> <p>Compare two animals from the same or different groups.</p> <p>Classify animals using a range of features.</p> <p>Identify animals by matching them to named images.</p> <p>Classify animals according to what they eat.</p> <p>Make first-hand close observations of parts of the body e.g. hands, eyes. Learn the names through games, songs & rhymes.</p> <p>Compare two people in the class by taking measurements and comparing them to their own body.</p> <p>Look for patterns between people e.g. Do people with big hands have big feet?</p> <p>Investigate human senses e.g. Which part of my body is good for feeling, which is not? Which food/flavours can I identify by taste?</p>
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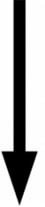
					Which smells can I match?
Subject Vocab	<p>Weather (sunny, rainy, windy, snowy etc.)</p> <p>Seasons (winter, summer, spring, autumn)</p> <p>Sun, sunrise, sunset, day, day length, year</p> <p>Measure, describe, present, collect, observe</p>	<p>Object, material, wood, plastic, glass, metal, water, rock, 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</p> <p>Classify, material, texture, appearance, object, property</p>	<p>Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, evergreen, deciduous, growth</p> <p>Names of trees in the local area</p> <p>Names of garden and wild flowering plants in the local area.</p> <p>Identify, characteristic, feature, observe, regular</p>	<p>Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, carnivore, herbivore, omnivore, hibernation Names of animals - amphibian, reptile, mammal, bird, fish</p> <p>Senses - touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue</p> <p>Identify, compare, investigate, observe, features, characteristic</p>	

 Progression across Year 2		<p>1 → To allow for a smoother transition between Year 1 and Year 2, children study the Animals including Humans topic first in Year 2, building upon the learning from the very end of Year 1. They should be able to explain what they already know and apply this to the new Year 2 content, as well as learning the new information and vocabulary.</p>	<p>2 → In order to explain how habitats provide for the needs of living things, children first need to know what animals need to survive. They get this information from the Animals including Humans topic that they study before this one in Year 2.</p>	<p>3 → The Plants topic is studied around Springtime, when children can observe, in their school grounds and local area, the growth of plants from seed/bulb to mature plants.</p>	<p>4 → The materials topic has been placed here because the working scientifically objectives required for effective exploration of materials (performing simple tests, using observational skills, gathering and recording data) are more complex. Therefore, as the children are older and have had more opportunities to work scientifically by this point in the year, the topic would be best placed in the Summer term.</p>
 Year 2	NC Content	<p><u>Animals including humans</u></p> <p>Notice that animals, including humans, have offspring which grow into adults</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>Identifying and classifying Asking simple questions and recognising that they can be answered in different ways</p>	<p><u>Living Things & Their Habitats</u></p> <p>Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>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>Identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>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>Identifying and classifying</p>	<p><u>Plants</u></p> <p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p> <p>Identifying and classifying Observing closely, using simple equipment</p>	<p><u>Uses of everyday materials</u></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>Asking simple questions and recognising that they can be answered in different ways Performing simple tests Observing closely, using simple equipment Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions</p>

	<p>Specific content</p>	<p>Ask people questions and use secondary sources to find out about the life cycles of some animals.</p> <p>Observe animals growing over a period of time e.g. chicks, caterpillars, a baby.</p> <p>Ask questions of a parent about how they look after their baby.</p> <p>Ask pet owners questions about how they look after their pet.</p> <p>Explore the effect of exercise on their own bodies.</p> <p>Classify food in a range of ways, including using the Eatwell Guide</p> <p>Investigate washing hands, using glitter gel.</p> <p>Create a life cycle book for a younger child</p>	<p>Explore the outside environment regularly to find objects that are living, dead and have never lived.</p> <p>Classify objects found in the local environment.</p> <p>Observe animals and plants carefully, drawing and labelling diagrams.</p> <p>Create simple food chains for a familiar local habitat from first-hand observation and research.</p> <p>Create simple food chains from information given e.g. in picture books (Gruffalo etc.)</p> <p>Can explain in simple terms why an animal or plant is suited to a habitat e.g. the caterpillar cannot live under the soil like a worm as it needs fresh leaves to eat; the seaweed we found on the beach cannot live in our pond because it is not salty</p>	<p>Make close observations of seeds and bulbs.</p> <p>Classify seeds and bulbs.</p> <p>Research and plan when and how to plant a range of seeds and bulbs.</p> <p>Look after the plants as they grow - weeding, thinning, watering etc.</p> <p>Make close observations and measurements of their plants growing from seeds and bulbs.</p> <p>Make comparisons between plants as they grow</p>	<p>Classify materials.</p> <p>Make suggestions about alternative materials for a purpose that are both suitable and unsuitable</p> <p>Test the properties of materials for particular uses e.g. compare the stretchiness of fabrics to select the most appropriate for a superhero costume, test materials for waterproofness to select the most appropriate for a rain hat/umbrella, test the absorbency of different brands of baby's nappies as an investigation for a supermarket.</p>
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		<p>Show what they know about looking after an animal by creating a pet owners' guide.</p>			
Subject Voc	<p>Offspring, survival, life cycle, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples - meat, fish, vegetables, bread, rice, pasta)</p> <p>Investigate, question</p>	<p>Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, habitat, food chain</p> <p>Names of local habitats e.g. pond, woodland etc.</p> <p>Names of micro-habitats e.g. under logs, in bushes etc.</p> <p>Explore, classify, similar, different</p>	<p>As for Year 1 plant vocabulary plus:</p> <p>light, shade, sun, warm, cool, water, grow, healthy</p> <p>Compare, comparisons, similarities, differences, observe</p>	<p>Names of materials - wood, metal, plastic, glass, brick, rock, paper, cardboard</p> <p>Properties of materials - as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid</p> <p>Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p> <p>Uses, purposes, test, suggest, data, record, results</p>	

<p>Progression across Year 3</p> 	<p>1 → To allow for a smoother transition between Year 2 and Year 3, children revisit a topic they have previously studied (Animals including Humans) but this time at a deeper/more complex level. This is the only topic revisited between Year 2 and 3, except for Plants, which we teach in the Spring term.</p>	<p>2 → Forces & Magnets is studied here because, although the topic is new and some concepts are difficult, it lends itself well to practical investigation, exploration and working scientifically. This allows children to develop those investigative skills that they need to apply in the following three topics.</p>	<p>3 → We study the Rocks topic prior to plants, as there are opportunities to learn about soil and its components. This will lend itself to learning about what plants get from the soil to grow and survive.</p>	<p>4 → The Plants topic is studied around Springtime, when children can observe, in their school grounds and local area, the growth of plants from seed/bulb to mature plants.</p>	<p>5 → We study the Light topic at the end of Year 3 due to the complexity of some of the concepts children need to investigate and understand.</p>
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<p>Year 3</p> 	<p>NC Content</p>	<p><u>Animals Including Humans</u></p> <p>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>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p>	<p><u>Forces & Magnets</u></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>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 which poles are facing</p> <p>Asking relevant questions and</p>	<p><u>Rocks</u></p> <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Recognise that soils are made from rocks and organic matter</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p>	<p><u>Plants</u></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>Setting up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations.</p>	<p><u>Light</u></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>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p>
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			<p>using different types of scientific enquiries to answer them</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>		<p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p>	<p>Using straightforward scientific evidence to answer questions or to support their findings.</p>
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<p>Specific content</p>	<p>Use food labels to explore the nutritional content of a range of food items. Identify similarities & differences</p> <p>Find out the types of food that contain the different nutrients.</p> <p>Use food labels to answer enquiry questions e.g. How much fat do different types of pizza contain? How much sugar is in soft drinks? Gather & record data in charts, tables & graphs.</p> <p>Plan a daily diet to contain a good balance of nutrients.</p> <p>Explore the nutrients contained in fast food.</p> <p>Research the parts and functions of the skeleton.</p> <p>Investigate patterns asking questions such as: Can people with longer legs run faster? Can people with bigger hands catch a ball better?</p> <p>Compare, contrast and classify skeletons of different animals.</p>	<p>Carry out investigations to explore how objects move on different surfaces e.g. spinning tops/coins, rolling balls/cars, clockwork toys, soles of shoes etc.</p> <p>Explore what materials are attracted to a magnet. Make predictions and then gather data in order to plan further tests.</p> <p>Classify materials according to whether they are magnetic.</p> <p>Use a marked magnet to find the unmarked poles on other types of magnets.</p> <p>Explore how magnets work at a distance e.g. through the table, in water, jumping paper clips up off the table.</p> <p>Devise an investigation to test the strength of magnets and then use the data to rank them in order of strength. Record data in tables or graphs..</p>	<p>Classify rocks in a range of ways, based on their appearance. Identify similarities & differences.</p> <p>Devise a test to investigate how much water different rocks absorb.</p> <p>Gather & record data and present in tables, charts or graphs.</p> <p>Observe how rocks change over time e.g. gravestones or old buildings.</p> <p>Research how fossils are formed.</p> <p>Classify soils in a range of ways based on their appearance and absorbency.</p> <p>Observe how soil can be separated through sedimentation.</p> <p>Research the work of Mary Anning on fossils.</p>	<p>Observe what happens to plants over time when the leaves or roots are removed.</p> <p>Observe the effect of putting cut white carnations or celery in coloured water.</p> <p>Investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amounts of space. Use the results to draw conclusions about what plants need to survive.</p> <p>Spot flowers, seeds, berries and fruits outside throughout the year. Identify similarities & differences.</p> <p>Carefully observe flowers to identify the pollen. Observe flowers being visited by pollinators e.g. bees and butterflies in the summer.</p> <p>Observe seeds being blown from the trees e.g. sycamore seeds. Research different types of seed dispersal.</p> <p>Draw and label a diagram of a flowering plant to show its parts, their role and the method of pollination.</p>	<p>Explore how different objects are more or less visible in different levels of lighting.</p> <p>Explore how objects with different surfaces (e.g. shiny vs matt) are more or less visible. Investigate the role of reflectors in road safety.</p> <p>Explore how shadows vary as the distance between a light source and an object or surface is changed. Record data in graphs or tables.</p> <p>Explore shadows which are connected to and disconnected from the object e.g. shadows of clouds and children in the playground.</p> <p>Investigate how shadows change throughout the day or choose suitable materials to make shadow puppets.</p> <p>Create artwork using shadows.</p>
<p>Subject Voc</p>	<p>Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, bicep, tricep, joints, support,</p>	<p>Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract,</p>	<p>Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil,</p>	<p>Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), leaf, root, stem, transport,</p>	<p>Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous</p>

		<p>protect, move, bone, skull, ribs, spine</p> <p>Compare, contrast, enquiry, similarities, differences, plan, record</p>	<p>repel, magnetic material, metal, iron, steel, poles, north pole, south pole</p> <p>Rank, order, predict, devise, explanation</p>	<p>peat, sandy/chalk/clay soil</p> <p>Observe, research, change, data, conclusion</p>	<p>water, nutrients</p> <p>Diagram, fair, accurate</p>	<p>Diagram, chart, table, explanation, drawing conclusions</p>
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	Autumn 1	Autumn 2	Spring	Summer	
<p></p> <p>Progression across Year 4</p>	<p>1→ We begin the year with a topic that is familiar to the children but building on knowledge from previous years and taking it to a deeper, more complex level. Children have access to the outdoor area during this term to have first hand experience of living things & food chains in our school grounds or local area.</p>	<p>2→ The Animals including Humans topic naturally follows on from Living Things & Their Habitats. Following on from classifying animals, children look at how they rely on each other for survival in food chains.</p>	<p>3→ States of Matter is covered in the second half of the year, as this is something new to the children and is not a topic they are revisiting from previous year groups.</p>	<p>4→ We finish the year with the two physics topics. Sound & electricity. Since the children have already studied states of matter, they can apply this knowledge to explore how sound & electricity move through solids, liquids & gases.</p>	<p>5→ We finish Year 4 with a topic of electricity. The working scientifically skills required are similar to those used during the Sound topic preceding it. This new Electricity knowledge can be built upon at the beginning of Year 5 when children study electrical conductors in their Materials topic.</p>

<p>Year 4</p> <p></p>	<p>NC Content</p>	<p><u>Living Things & Their Habitats</u></p> <p>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</p>	<p><u>Animals Including Humans</u></p> <p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains,</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</p>	<p><u>Sound</u></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</p>	<p><u>Electricity</u></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>
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		<p>environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p>	<p>identifying producers, predators and prey</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p>	<p>degrees Celsius (°C)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p>	<p>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> <p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Reporting on findings from enquiries, including oral and</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>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p>
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				Identifying differences, similarities or changes related to simple scientific ideas and processes	written explanations, displays or presentations of results and conclusions	
Specific content	<p>Compare and contrast the living things observed.</p> <p>Use classification keys to name unknown living things.</p> <p>Classify living things found in different habitats based on their features.</p> <p>Create a simple identification key based on observable features.</p> <p>Use fieldwork to explore human impact on the local environment e.g. litter, tree planting.</p> <p>Use secondary sources to find out about how environments may naturally change.</p> <p>Use secondary sources to find out about human impact, both positive and negative, on environments.</p>	<p>Create a model of the digestive system using household objects.</p> <p>Explore eating different types of food to identify which teeth are being used for cutting, tearing and grinding (chewing).</p> <p>Classify animals as herbivores, carnivores or omnivores according to the type of teeth they have in their skulls.</p> <p>Identify similarities & differences.</p> <p>Use food chains to identify producers, predators and prey within a habitat.</p> <p>Use diagrams or a model to describe the journey of food through the body explaining what happens in each part</p> <p>Record the teeth in their mouth (make a dental record).</p>	<p>Observe closely and classify a range of solids and liquids</p> <p>Explore making gases visible e.g. squeezing sponges underwater to see bubbles, and showing their effect e.g. using straws to blow objects, trees moving in the wind.</p> <p>Classify materials according to whether they are solids, liquids and gases.</p> <p>Observe a range of materials melting e.g. ice, chocolate, butter. Identify similarities & differences.</p> <p>Set up simple enquiries to test things such as how to melt ice quickly. Make predictions and record findings.</p> <p>Observe the changes when making cooking.</p> <p>Investigate the melting point of different materials e.g. ice, margarine, butter and chocolate.</p> <p>Explore freezing different liquids e.g. tomato ketchup, oil, shampoo.</p> <p>Use a thermometer to measure temperatures e.g. icy water (melting), tap water, hot water, boiling water (demonstration). Observe</p>	<p>Explore making sounds with a range of objects, such as musical instruments and other household objects.</p> <p>Explore how string telephones work.</p> <p>Explore altering the pitch or volume of objects, such as the length of a guitar string, amount of water in bottles, size of tuning forks.</p> <p>Measure sounds over different distances.</p> <p>Measure sounds through different insulation materials.</p> <p>Explain what happens when you strike a drum or pluck a string and use a diagram to show how sounds travel from an object to the ear</p> <p>Demonstrate how to increase or decrease pitch and volume.</p> <p>Report findings from various investigations, using formal explanations backed up with scientific evidence, diagrams, charts and tables.</p>	<p>Construct a range of circuits.</p> <p>Explore which materials can be used instead of wires to make a circuit.</p> <p>Classify the materials that were suitable/not suitable for wires - use the results to define conductors and insulators. Back up explanations with simple scientific evidence.</p> <p>Explore how to connect a range of different switches and investigate how they function in different ways.</p> <p>Choose switches to add to circuits to solve particular problems, such as a pressure switch for a burglar alarm.</p> <p>Apply their knowledge of conductors and insulators to design and make different types of switch.</p> <p>Make circuits that can be controlled as part of a DT project.</p> <p>Note: Children in Year 4 do not need to use standard symbols for electrical components, as this is taught in Year 6.</p>	

				<p>water evaporating and condensing e.g. on cups of icy water and hot water.</p> <p>Set up investigations to explore changing the rate of evaporation</p> <p>Find out about the water cycle.</p>		
	Subject Voc	<p>Environment, habitat, human impact, positive, negative, migrate, hibernate, natural cause</p> <p>Classification, classification keys, primary & secondary sources, change</p>	<p>Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain</p> <p>Diagram, record, model, explain, describe</p>	<p>Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle</p> <p>Enquiry, systematic observations, data logger, thermometer, equipment, fair, accurate, readings</p>	<p>Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation, increase, decrease</p> <p>Measure, alter, predict, change, effect, affect</p>	<p>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</p> <p>Measure, explore, trial, improve, effective</p>

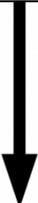
 Progression across Year 5		Autumn 1	Autumn 2	Spring	Summer	
		1 → We begin the year with a topic that is familiar to the children but building on knowledge from previous years and taking it to a deeper, more complex level. It also allows for the teaching of animal reproduction prior to puberty and SRE teaching later in Year 5.	2 → Within this topic is a lot of new content and therefore a longer period of time is required for sufficient learning, exploration and investigation to take place. This must also precede the topic of Forces, to give children the background knowledge to support investigations around friction, resistance etc.	3 → Forces precede Earth & Space to allow for teaching of concepts such as the impact of gravity. It also follows work on materials which gives children the background knowledge required to investigate the effects of friction, resistance etc.	4 → Earth and Space is covered after Forces to allow for teaching of concepts such as gravity to have taken place, for children to better understand orbits in the solar system	5 → Animals including Humans is covered last in Year 5 as there are objectives relating to human reproduction that are best placed nearer the end of the year to coincide with PSHE/RSE & Puberty teaching
Year 5	NC Content	<u>Living Things & Their Habitats</u>	<u>Properties & Changes of Materials</u>	<u>Forces</u> Explain that unsupported	<u>Earth & Space</u> Describe the movement of the	<u>Animals including Humans</u> Describe the changes as humans



			<p>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>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p>	<p>comparative and fair tests</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p>		
Specific content	<p>Present their understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game</p> <p>Identify patterns, similarities & differences in life cycles</p>	<p>Investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat.</p> <p>Create a chart or table grouping/comparing everyday materials by different properties</p>	<p>Investigate the effect of friction in a range of contexts e.g. trainers, bathmats, mats for a helter-skelter.</p> <p>Investigate the effects of water resistance in a range of contexts e.g. dropping shapes through water and pulling shapes, such as boats, along the surface of water.</p> <p>Investigate the effects of air resistance in a range of contexts e.g. parachutes,</p>	<p>Create a model e.g. role play or using balls to show the movement of the Earth around the Sun and the Moon around the Earth.</p> <p>Use diagrams and make a model to show why day and night occur.</p> <p>Make first-hand observations of how shadows caused by the Sun change through the day.</p>	<p>This needs to be taught alongside PSHE. The new statutory requirements for relationships and health education can be found here: statutory guidance on Physical health and mental wellbeing (primary and secondary).</p> <p>Other useful guidance includes: Joint briefing on teaching about puberty in KS2 from PHSE Association and Association for</p>	

	<p>Compare two or more animal life cycles they have studied - not humans as human changes and reproduction will be covered as part of PSHE/RSE/Animals including Humans topic later in the school year.</p> <p>Explain how a range of plants reproduce asexually e.g. strawberries</p> <p>Compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth.</p>	<p>Explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate.</p> <p>Investigate rates of dissolving by carrying out comparative and fair tests.</p> <p>Separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture.</p> <p>Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning.</p> <p>Carry out comparative and fair tests involving non-reversible changes.</p> <p>Research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton).</p>	<p>spinners, sails on boats.</p> <p>Explore how levers, pulleys and gears work e.g. in factories, machines, bikes</p> <p>Make a product that involves a lever, pulley or gear (as a class).</p> <p>Research how the work of scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p>	<p>Make a sundial.</p> <p>Research time zones.</p> <p>Consider the views of scientists in the past and evidence used to deduce shapes and movements of the Earth, Moon and planets before space travel, including flat Earth theorists.</p>	<p><u>Science Education</u></p> <p><u>Briefing on humans development and reproduction in the Primary Curriculum from PHSE</u></p> <p><u>Association and Association for Science Education.</u></p> <p>Can explain the changes that takes place in boys and girls during puberty</p> <p>Can explain how a baby changes physically as it grows, and also what it is able to do (could use line graphs for development over time)</p> <p>Can present information about the changes occurring during puberty as an information leaflet for other Y5 children or answers to 'problem page questions'</p>
Subject Voc	<p>Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings</p> <p>Compare, explain, identify, pattern, similarity, difference, relation, relationship, support, refute, argument</p>	<p>Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material</p> <p>Validity, evidence, relationship, prediction, repeat, record, identify, accurate, fair, present</p>	<p>Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears, heavier, lighter</p> <p>Observations, comparative, graphs, patterns, relationships, evidence, trust in results, repeat readings</p>	<p>Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets</p> <p>Model, example, represent, refute, support, theory, theorists, argue</p>	<p>Puberty - the vocabulary to describe sexual characteristics development. See PSHE guidance.</p> <p>Change, develop, present, developmental stages, plot, data, graph, expected</p>

 Progression across Year 6		Autumn 1	Autumn 2	Spring		Summer
		<p>1 → <i>Animals Including Humans</i> is studied at the beginning of the school year, as it is in many other year groups. This allows children to build upon learning from previous years and then take it to a deeper level. This ensures children are starting a new year with something that is familiar as they will revisit prior learning and then progress to the new content and vocabulary.</p>	<p>2 → <i>The Living Things and their Habitats</i> topic precedes <i>Evolution & Inheritance</i>, as although most of the content of <i>Evolution</i> is entirely new to children, there are some links to the animals' habitats affecting adaptation and inheritance.</p>	<p>3 → <i>The Evolution & Inheritance</i> topic is studied in the second half of the school year, due to the complexity of some of the concepts that children need to learn and understand. Most of the content of this topic is completely new to children, although it does build on some aspects of <i>Living Things & Their habitats</i>, so we ensure that they follow on from each other to make the transition as easy as possible. There are also links to the Autumn term <i>History</i> topic, where the children study the industrial revolution, and can now look at the impact this had on adaptation of animals (peppered moths).</p>	<p>4 → The two physics topics of <i>Light</i> and <i>Electricity</i> are studied one after the other in Year 6. This helps children with the transition of moving to high school where they begin to study <i>Biology</i>, <i>Chemistry</i> and <i>Physics</i> as separate entities.</p>	<p>5 → The <i>Electricity</i> topic is studied at the end of Year 6 to allow for a transition project prior to high school. This prepares them for <i>STEM</i>, <i>Science</i> and <i>DT</i> by participating in a project where they have to apply their scientific knowledge of electricity from year 4 to design, make and evaluate an electrical product.</p>
Year 6	NC Content	<p><u><i>Animals including Humans</i></u></p> <p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and</p>	<p><u><i>Living Things & Their Habitats</i></u></p> <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including</p>	<p><u><i>Evolution & Inheritance</i></u></p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth</p>	<p><u><i>Light</i></u></p> <p>Recognise that light appears to travel in straight lines</p> <p>Use the idea that light travels</p>	<p><u><i>Electricity</i></u></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>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> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Using test results to make predictions to set up further comparative and fair tests</p>	<p>microorganisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p>	<p>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> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p>	<p>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> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs, bar and line graphs</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</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>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p>
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<p>Specific content</p>	<p>Create a model for the circulatory system.</p> <p>Carry out a range of pulse rate investigations, take measurements, make predictions and set up further tests:</p> <p>fair test - effect of different activities on my pulse rate</p> <p>pattern seeking - exploring which groups of people may have higher or lower resting pulse rates</p> <p>observation over time - how long does it take my pulse rate to return to my resting pulse rate (recovery rate)</p> <p>pattern seeking - exploring recovery rate for different groups of people.</p> <p>Research the negative effects of drugs (e.g. tobacco) and the benefits of a healthy diet and regular exercise by asking an expert or using carefully selected secondary sources.</p>	<p>Learn about the formal classification system devised by Carl Linnaeus and why it is important.</p> <p>Use first-hand observation to identify characteristics shared by the animals in a group to classify them.</p> <p>Research the characteristics of animals that belong to a group.</p> <p>Use information about the characteristics of an unknown animal or plant to assign it to a group.</p> <p>Classify plants and animals, presenting this in a range of ways e.g. Venn diagrams, Carroll diagrams and keys.</p> <p>Create an imaginary animal which has features from one or more groups.</p>	<p>Design a new plant or animal to live in a particular habitat.</p> <p>Use diagrams models to demonstrate evolution e.g. 'Darwin's finches' bird beak activity.</p> <p>Find out about how the population of peppered moths changed during the industrial revolution.</p> <p>Make observations of fossils to identify living things that lived on Earth millions of years ago.</p> <p>Identify features in animals and plants that are passed onto offspring and explore this process by considering the artificial breeding of animals or plants e.g. dogs.</p> <p>Compare the ideas of Charles Darwin and Alfred Wallace on evolution. Identify ideas that support current arguments.</p> <p>Research the work of Mary Anning and how this provided evidence of evolution.</p>	<p>Explore different ways to demonstrate that light travels in straight lines e.g. shining a torch down a bent and straight hose pipe, shining a torch through different shaped holes in a card.</p> <p>Explore the uses of the behaviour of light, reflection and shadows, such as in periscope design, rear view mirrors and shadow puppets.</p> <p>Explain these processes using models or diagrams and graphs.</p> <p>Can predict and explain, with diagrams or models as appropriate, how the shape of shadows can be varied.</p>	<p>Explain how a circuit operates to achieve particular operations, such as to control the light from a torch with different brightnesses or make a motor go faster or slower.</p> <p>Make circuits to solve particular problems, such as a quiet and a loud burglar alarm.</p> <p>Carry out fair tests exploring changes in circuits.</p> <p>Make circuits that can be controlled as part of a DT project.</p> <p>Can communicate structures of circuits using circuit diagrams with recognised symbols</p> <p>Can devise ways to measure brightness of bulbs, speed of motors, volume of a buzzer during a fair test</p> <p>Can predict results and answer questions by drawing on evidence gathered</p>
<p>Subject Voc</p>	<p>Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle</p>	<p>Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering</p> <p>Group, classify, organise, system, support, refute,</p>	<p>Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, adaptation, habitat</p> <p>Compare, ideas, refute,</p>	<p>As for Year 3 vocabulary for Light, plus:</p> <p>straight lines, light rays, reflect, refract</p>	<p>Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage</p> <p>Note: Children do not need to understand what voltage is, but will use volts and voltage to describe different batteries. The words "cells"</p>

		Pattern seeking, research, benefit, consequence, expert, select, secondary sources, rate, observation over time, fair, accurate, variables	opinion, present, diagram, key	support, discuss, explain, describe, theory, theorists	Explain, enquiry, processes, labelled diagrams, key, annotate, predict, explain, varied	and "batteries" are now used interchangeably. Predict, draw upon evidence, gather, results, data, collect, measure, devise, fair, variables, components, communicate, problem solving
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SCIENCE CURRICULUM:

In Science, children should be exposed to the awe and wonder of the world around them to inspire their imagination and curiosity. They should be given the opportunity to ask questions that they can then investigate practically to begin to understand the impact Science has had on our past, present & future, as well as the opportunities that are available to them in the next stage of their education and career.

Therefore, the intent of our Science curriculum at Greenfields is to:

- Inspire a sense of curiosity and the ability to question what we see
- Foster the skills to investigate practically and explore cause and effect
- Encourage children to identify the implications of Science on our lives today and in the future
- Bring learning to life through memorable outdoor learning experiences

In Science, we assess the end points of the above in the following way:

	Inspiring curiosity & effective questioning	Investigation & Exploration	Implications for now & the future	Providing outdoor learning opportunities
Pre-School In pre-school, children begin to develop the foundation skills that feed into Science enquiry and investigation.	<ul style="list-style-type: none"> • Share their fascination with others. • Notice patterns and arrange things in patterns • Begin to understand simple questions such as 	<ul style="list-style-type: none"> • Explore and respond to different natural phenomena in their setting and on trips • 	<ul style="list-style-type: none"> • Explore materials with different properties 	<ul style="list-style-type: none"> • Explore natural materials, indoors and outside

These skills and opportunities form the basis for basic enquiry through practical investigation and observation	'who', 'what' and 'where'			
Nursery In Nursery, children's enquiry skills are developed further.	<ul style="list-style-type: none"> Begin to understand more complex 'why' questions e.g. "Why do you think the caterpillar got so fat?" 	<ul style="list-style-type: none"> Explore how things work through experiences provided for them in their learning environment Explore and talk about different forces they can feel 	<ul style="list-style-type: none"> Select shapes appropriately e.g. flat surfaces for building, triangular prism for a roof etc. 	<ul style="list-style-type: none"> Use all of their senses in hands-on exploration of natural materials.
Reception	<ul style="list-style-type: none"> Learn new vocabulary Articulate their ideas in well-thought out sentences 	<ul style="list-style-type: none"> Explore the natural world around them 	<ul style="list-style-type: none"> Recognise some environments that are different to the one in which they live 	<ul style="list-style-type: none"> Understand the effect of changing seasons on the natural world around them

Ready for KS1:

The Early Years Foundation Stage provides children with the opportunities to develop their basic questioning skills that they will continue to refine in KS1. They are starting to articulate their ideas in well-thought out sentences which will aid their observation and investigation in KS1 Science. Children are already noticing changes in their natural environment, which prepares them well for further observation in Year 1, such as of seasonal change. Children in EYFS have been encouraged to interact with the outdoors to foster the curiosity and independence required to be successful in KS1 Science lessons.

	Inspiring curiosity & effective questioning	Investigation & Exploration	Implications for now & the future	Providing outdoor learning opportunities
Year 1 - in the context of <ul style="list-style-type: none"> Seasonal Change Everyday Materials 	<p>Observe changes across the 4 seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies</p>	<p>Distinguish between an object and the material from which it is made</p> <p>Investigate and describe the basic structure of common flowering plants</p>	<p>Identify and name a variety of everyday materials</p> <p>Describe the simple physical properties of everyday materials we use</p> <p>Compare and group materials on the</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, including trees</p>

<ul style="list-style-type: none"> Plants Animals including Humans Working Scientifically 			basis of their properties & uses	
<p>Year 2 - in the context of</p> <ul style="list-style-type: none"> Living Things & their Habitats Uses of everyday materials Plants Animals including Humans Working Scientifically 	<p>Notice that animals, including humans, have offspring which grow into adults</p> <p>Observe and describe how seeds and bulbs grow into mature plants</p>	<p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</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>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>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>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>Identify and name a variety of plants and animals in their habitats, including microhabitats</p>

Working Scientifically in Year 1 & Year 2:

Children must be able to:

- Ask simple questions and recognise that they can be answered in different ways
- Gather and record data to help in answering questions

- Observe closely, using simple equipment
- Use their observations and ideas to suggest answers to questions
- Perform simple tests
- Identify & classify

Ready for LKS2: The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

	Inspiring curiosity & effective questioning	Investigation & Exploration	Implications for now & the future	Providing outdoor learning opportunities
<p>Year 3 - in the context of</p> <ul style="list-style-type: none"> • Forces & Magnets • Rocks • Light • Plants • Animals including Humans • Working Scientifically 	<p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p> <p>Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>Describe magnets as having 2 poles</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</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</p>	<p>Compare how things move on different surfaces</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p> <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</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</p>	<p>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>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>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p>	<p>Recognise that soils are made from rocks and organic matter</p> <p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>

	size of shadows change	to plant Investigate the way in which water is transported within plants Recognise that they need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces		
<p>Year 4 - in the context of</p> <ul style="list-style-type: none"> • Living things & their habitats • States of Matter • Sound • Electricity • Animals including Humans • Working Scientifically 	<p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</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 (°C)</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</p>	<p>Recognise that living things can be grouped in a variety of ways</p> <p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p> <p>Recognise that sounds get fainter as the distance from the sound source increases</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</p>	<p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p> <p>Identify common appliances that run on electricity</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors</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>

	that produced it Find patterns between the volume of a sound and the strength of the vibrations that produced it	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		
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Working Scientifically in Year 3 & Year 4:

Children need to:

- Ask relevant questions and using different types of scientific enquiries to answer them
- Set up simple practical enquiries, comparative and fair tests
- Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gather, recording, classifying and presenting data in a variety of ways to help in answering questions
- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identify differences, similarities or changes related to simple scientific ideas and processes
- Use straightforward scientific evidence to answer questions or to support their findings.

Ready for UKS2: The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

	Inspiring curiosity & effective questioning	Investigation & Exploration	Implications for now & the future	Providing outdoor learning opportunities
Year 5 - in the context of	Describe the life process of reproduction in some plants and	Describe the differences in the life cycles of a mammal, an amphibian, an	Compare and group together everyday materials on the basis of	Identify the effects of air resistance, water resistance and

<ul style="list-style-type: none"> ● Earth & Space ● Living things & their habitats ● Properties & changes of materials ● Animals including Humans ● Forces ● Working Scientifically 	<p>animals</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>Describe the movement of the Earth and 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> <p>Describe the changes as humans develop to old age</p>	<p>insect and a bird</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>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>their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</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>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>friction, that act between moving surfaces</p>
<p>Year 6 - in the context of</p> <ul style="list-style-type: none"> ● Living things & their habitats ● Evolution & Inheritance ● Light ● Electricity ● Animals including Humans 	<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>Describe the ways in which nutrients and water are transported within animals, including humans</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</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</p>	<p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</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>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>

<ul style="list-style-type: none"> Working Scientifically 	<p>normally offspring vary and are not identical to their parents</p>	<p>that cast them</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>		
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Working Scientifically in Year 5 & Year 6:

Children need to:

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Use test results to make predictions to set up further comparative and fair tests
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- Identify scientific evidence that has been used to support or refute ideas or arguments

Ready for KS3: The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.