

KT Federation Curriculum Progression

Science

<p>Intent – what do we want to achieve?</p>	<p>In the KT Federation, we recognise the importance of Science in every aspect of daily life. Our intent is to ensure that children are taught science through a balance of understanding scientific concepts, thinking/working scientifically and being able to apply skills. Because many Science concepts are abstract, we aim to sequence learning carefully starting in the early years when children are introduced to a wide-ranging vocabulary that sorts and describes the natural world. This will provide the ‘seeds’ for developing scientific concepts that will be built on in later years. A good Science curriculum also provides the foundation for a range of valuable careers that are essential for economic, environmental and social development. Therefore, we want our children to love science. We want them to have no limits to what their ambitions are and grow up wanting to be astronauts, forensic scientists, inventors or microbiologists.</p>
<p>Implementation – how will we achieve this?</p>	<p>Learning begins in the EYFS through hands on experiences and through the planning and teaching of ‘Understanding the World.’ Children find out about objects, materials and living things using all of their senses looking at similarities, differences, patterns and change with staff encouraging curiosity and explorative play. Children are motivated to ask questions about why things happen and how things work. Our children are encouraged to use their natural environment around them to explore and enjoy spending time outdoors exploring mini-beasts and their habitats, observing the changing seasons, plants and animals. Children regularly participate in cookery and baking sessions which allows them to experience changes in state as ingredients are mixed, heated and cooled.</p> <p>Through KS1 and KS2 we ensure that all learning covers the requirements of the National Curriculum. Science is taught through our topics with knowledge, key vocabulary and skills being taught progressively with ‘flashbacks’ to prior learning highlighted. Each year will build upon the learning from prior year groups therefore developing depth of understanding and progression of skills. We want our children to:</p> <ul style="list-style-type: none"> • Ask questions and to understand the uses of and implications of science, today and for the future. • Develop their interest and enjoyment of science by building on their natural curiosity. • Develop their use of appropriate scientific vocabulary. • Develop children’s ability to ask questions, undertake fair tests, accurately record their findings and analyse their results. • Develop their skills of prediction, hypothesis, experimentation, investigation, observation, measurement, interpretation and communication. <p>Whole school events, such as ‘Science Week’, are planned in to the academic calendar, as well as visits/visitors that will engage and make learning memorable</p> <p>Making our Science curriculum tangible, our onsite Forest Schools will give a greater depth of understanding by giving children a respect for natural sciences. Children will experience first-hand changes to the natural environment during the seasons. For example: developing observational and investigative skills such as watching minibeads within their environments, growing and studying plants in our KS1 ‘Growing’ topic and looking at seasonal changes in our YR ‘Jolly Farmers’ topic.</p>

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Impact – what will be the impact on learning?

As our children learn science, they also learn about its uses and importance to society and their own lives. The contribution science has made in the past is highlighted in our topics - for example, by eradicating smallpox and discovering penicillin, which forms part of our LKS2 topic 'What's Going on Inside?' when children look at the life and works of Edward Jenner. Our children also understand the continuing importance of science in solving global challenges such as climate change, food availability, controlling disease and access to water. An example of this is the focus on plastic pollution in our UKS2 topic 'Is there a Solution to Pollution?'

Science is assessed during lessons and children are encouraged to self and peer assess against the lesson's learning objectives and success criteria. Evidence for this can be seen in STEM books, through written and pictorial work and photographic evidence of science practical investigations and fieldwork. Teachers also assess individual progress at the end of each topic using a science knowledge and skills record.

All staff are actively encouraged to seek CPD opportunities to improve practice.

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Cycle 1 - EYFS			
EYFS framework - intent	Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children’s personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children’s vocabulary will support later reading comprehension		
Topic	Biology	Chemistry	Physics
	<ul style="list-style-type: none"> • 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. • After close observation, draw pictures of the natural world, including animals and plants. • Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside. • Teach children about a range of contrasting environments within both their local and national region. • Model the vocabulary needed to name specific natural features of the world. • Share non-fiction texts that offer an insight into contrasting environments. • Listen to how children communicate their understanding of their own environment and 	<ul style="list-style-type: none"> • Observe and interact with natural processes, such as ice melting, light travelling through transparent material, an object casting a shadow, a magnet attracting an object. 	<ul style="list-style-type: none"> • Observe and interact with natural processes, such as 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.

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	<p>contrasting environments through conversation and in play</p>		
<p>Scientific Enquiry (also linked to CofETL)</p>	<p>Provide children with have frequent opportunities for outdoor play and exploration.</p> <ul style="list-style-type: none"> • 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. • Encourage focused observation of the natural world. • Listen to children describing and commenting on things they have seen whilst outside, including plants and animals. • Encourage positive interaction with the outside world, offering children a chance to take supported risks, appropriate to themselves and the environment within which they are in 		
<p>Development Matters</p>	<p>Explore the natural world around them. Describe what they see, hear and feel whilst outside.</p>		

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	Recognise some environments that are different from the one in which they live. Understand the effect of changing seasons on the natural world around them.		
Vocabulary	Science, experiment, investigation, test, why, senses, world, plants (leaf, stem, root, flower, seeds), animals, humans, materials, see through, push/pull (linked to magnets), natural, change, grow, decay, rot, environment		
ELG The Natural World	<ul style="list-style-type: none"> - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. 		
Cycle 1 – Year 1 & 2			
	Autumn	Spring	Summer
Threads	Biology	Physics/Chemistry	Physics
Topic	Let's Go Wild!	Once Upon A Time	Where in the World
Knowledge	<p>Animals, including humans (Y1) Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. <p>Living things and their habitats (Y2)</p>	<p>Everyday materials (Y1) Pupils should be taught to:</p> <ul style="list-style-type: none"> • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties. 	<p>Seasonal changes (Y1) Pupils should be taught to:</p> <ul style="list-style-type: none"> • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies. <p>Uses of everyday materials (Y2) Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

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	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and name a variety of plants and animals in their habitats, including micro-habitats • 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. 		
Vocabulary	<p>Amphibians, birds, fish, mammals, reptiles, carnivore, herbivore, omnivore, sight, hearing, touch, taste, smell, body</p> <hr/> <p>Life processes, food chain, food sources, habitat, micro-habitat, depend, survive</p>	<p>Object, material, hard, soft, stretchy, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, not absorbent, transparent, opaque</p>	<p>Seasons, autumn, winter, summer, spring, weather, daylight, days, months, year, temperature</p> <hr/> <p>Materials, suitability, properties, wood, metal, plastic, glass, brick, rock, paper, cardboard, squash, bend, twist, stretch</p>
Opportunities for Experiments	<ul style="list-style-type: none"> • Real life plant comparisons • Autumn sense walk. 	<ul style="list-style-type: none"> • Car friction experiment. 	<ul style="list-style-type: none"> • Rain water collection. • Long experiment: photograph in each season under same tree comparison. • What's the best material for an item.
Skills	<p><u>Working Scientifically</u></p> <p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions 		

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FLASHBACK –Links to previous learning	EYFS curriculum – Biology, Chemistry, Physics and Scientific Enquiry Development Matters and ELG The Natural World		
Enrichment - Sparkling Starts/Marvellous Middles/Fantastic Finishes/Visits & Visitors	Autumn sense walk		Seasonal walks
Assessment Opportunities			
Cycle 1 – Year 3 & 4			
	Autumn	Spring	Summer
Threads	Physics	Chemistry / Physics	Physics
Topic	Rocks, Shocks, Shakes and Wild Weather	From Snozzcumbers to Perfect Potions	Dress to Impress
Knowledge	<p>Rocks (Y3) Pupils should be taught to:</p> <ul style="list-style-type: none"> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter <p>Light (Y3) Pupils should be taught to:</p>	<p>States of matter (Y4) Pupils should be taught to:</p> <ul style="list-style-type: none"> compare and group materials together, according to whether they are solids, liquids or gases observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) identify the part played by evaporation and condensation in the water cycle and 	<p>Forces and magnets (Y3)</p> <ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between 2 objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others 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

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	<ul style="list-style-type: none"> 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 recognise that light from the sun can be dangerous and that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by an opaque object find patterns in the way that the size of shadows change 	<p>associate the rate of evaporation with temperature</p> <p>Sound (Y4) Pupils should be taught to:</p> <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases 	<ul style="list-style-type: none"> describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing <p>Electricity (Y4) Pupils should be taught to:</p> <ul style="list-style-type: none"> identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors
<p>Vocabulary</p>	<p>Igneous, sedimentary, metamorphic, magma, lava, sediment, permeable, impermeable, fossilisation, palaeontology, erosion</p> <hr/> <p>Light, light source, dark, reflect, reflection, ray, pupil, retina, shadow, opaque, translucent, transparent</p>	<p>Vibration, sound wave, volume, amplitude, pitch, ear, particles, distance, soundproof, absorb sound, vacuum, eardrum</p> <hr/> <p>States of matter, solids, liquids, gases, water vapour, melt, freeze, evaporate, condense, precipitation</p>	<p>Magnet, magnetic, magnetic field, poles, repel, attract, forces, friction, surface</p> <hr/> <p>Electricity, generate, renewable, non-renewable, appliance, battery, circuit</p>

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<p>Opportunities for Experiments</p>	<p><u>Rocks, Fossils and Soils:</u></p> <ul style="list-style-type: none"> • Properties of rocks investigation <p><u>Light:</u></p> <ul style="list-style-type: none"> • Changing and making shadows • Reflective light investigation • Transparency of materials investigation 	<p><u>States of Matter:</u></p> <ul style="list-style-type: none"> • Melting and freezing of chocolate – reversible reactions • Proof of evaporation and condensation – reversible reactions • Water Cycle: Mini Water Worlds <p><u>Sound:</u></p> <ul style="list-style-type: none"> • Proof of sound vibrations • Distance and sound investigation 	<p><u>Forces and Magnets:</u></p> <ul style="list-style-type: none"> • Investigating the strength of magnets • Surfaces and friction investigation • Magnetic materials investigation <p><u>Electricity:</u></p> <ul style="list-style-type: none"> • Insulators and conductors investigation
<p>Skills</p>	<p><u>Working Scientifically</u></p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. 		
<p>FLASHBACK –Links to previous learning</p>	<p>Y1 – Seasonal changes Y2 – Uses of Everyday Materials</p>	<p>Y1 – Everyday Materials Y2- Uses of Everyday Materials</p>	<p>Y1 – Everyday Materials Y2- Uses of Everyday Materials</p>

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Enrichment - Sparkling Starts/Marvellous Middles/Fantastic Finishes/Visits & Visitors		<p>Sparkling Start: Potions Workshop - Potions and creature making, creative/messy exploration, biscuit design and decoration</p> <p>Marvelous Middle: Science Day – Melting/freezing chocolate, other changes of state related to foods or Roald Dahl 'Revolting Recipes' Feast – dress up and cooking</p>	<p>Fantastic Finish: Recycled Materials Fashion Show</p>
Assessment Opportunities			
Cycle 1 – Year 5 & 6			
	Autumn	Spring	Summer
Threads	Chemistry/Physics	Biology	Chemistry/Physics
Topic	How has the conflicts of World War Two shaped British History? - WW2	How should we unravel the past? - Ancient Egypt	Can chocolate transform the world? - Mayan
Knowledge	<p>Light (Y6) Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • 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 • use the idea that light travels in straight lines to explain why shadows have the 	<p>Animals including humans (Y6) Pupils should be taught to:</p> <ul style="list-style-type: none"> • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Describe the ways in which nutrients and water are transported within animals, including humans. 	<p>Properties and changes of materials (Y5) Pupils should be taught to:</p> <ul style="list-style-type: none"> • Compare and group together everyday materials on the basis of their properties- linked to chocolate • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

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	<p>same shape as the objects that cast them</p> <p>Properties and changes of materials (Y5) Pupils should be taught to:</p> <ul style="list-style-type: none"> • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • demonstrate that dissolving, mixing and changes of state are reversible changes • 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>Earth and Space (Y5) Pupils should be taught to:</p> <ul style="list-style-type: none"> • Describe the movement of the Earth and other planets relative to the sun in the solar system • Describe the movement of the moon relative to the Earth • Describe the sun, Earth and moon as approximately spherical bodies • Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky
<p>Vocabulary</p>	<p>Light, light source, reflection, incident ray, reflected ray, law of reflection, waves, angle of reflection, angle of incidence, refraction, visible spectrum, prism, shadow, transparent, translucent, opaque</p> <hr/> <p>Materials, solids, liquids, gases, melting, freezing, evaporating, condensing, particles, dissolving, sieving, filtering, soluble, reversible, irreversible</p>	<p>Circulatory system, heart, blood vessels, oxygenated blood, deoxygenated blood, arteries, capillaries, plasma, red blood cells, white blood cells, platelets, nutrients</p>	<p>Materials, solids, liquids, gases, melting, freezing, evaporating, condensing, particles, dissolving, sieving, filtering, soluble, reversible, irreversible, fair test</p> <hr/> <p>Sun, star, moon, planet, sphere, spherical bodies, satellite, orbit, axis, rotate, geocentric model, heliocentric model, astronomer,</p>

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Opportunities for Experiments	<ul style="list-style-type: none"> • Bicarbonate of soda/lemon juice • Prisms investigation 		<ul style="list-style-type: none"> • Practical demonstration of the size and distance between the planets. • Egg drop challenge • Separating mixtures investigations
Skills	<p><u>Working Scientifically</u></p> <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments 		
FLASHBACK –Links to previous learning	Y1 – Seasonal changes Y3 – Light Y1 – Everyday Materials Y2- Uses of Everyday Materials Y4 – States of Matter	Y1 – Animals, including Humans Y2 – Animals, including Humans Y3 – Animals, including humans Y4 – Animals, including humans	Y1 – Everyday Materials Y2- Uses of Everyday Materials Y3 – Forces and magnets Y4 – Electricity, States of Matter
Enrichment - Sparkling Starts/Marvellous Middles/Fantastic Finishes/Visits & Visitors		Science workshops delivered by A level students from St Thomas More School	Marv. Middle – Create chocolate bars.

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Assessment Opportunities			
Cycle 2 - EYFS			
EYFS framework - intent	<p>Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children’s personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children’s vocabulary will support later reading comprehension</p>		
Topic	Biology	Chemistry	Physics
	<ul style="list-style-type: none"> • 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. • After close observation, draw pictures of the natural world, including animals and plants. • Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside. • Teach children about a range of contrasting environments within both their local and national region. • Model the vocabulary needed to name specific natural features of the world. • Share non-fiction texts that offer an insight into contrasting environments. 	<ul style="list-style-type: none"> • Observe and interact with natural processes, such as ice melting, light travelling through transparent material, an object casting a shadow, a magnet attracting an object. 	<ul style="list-style-type: none"> • Observe and interact with natural processes, such as 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

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	<ul style="list-style-type: none"> • Listen to how children communicate their understanding of their own environment and contrasting environments through conversation and in play 		
Scientific Enquiry (also linked to CofETL)	<p>Provide children with have frequent opportunities for outdoor play and exploration.</p> <ul style="list-style-type: none"> • 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. • Encourage focused observation of the natural world. • Listen to children describing and commenting on things they have seen whilst outside, including plants and animals. • Encourage positive interaction with the outside world, offering children a chance to take supported risks, appropriate to themselves and the environment within which they are in 		
Development Matters	<p>Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different from the one in which they live. Understand the effect of changing seasons on the natural world around them.</p>		
Vocabulary	<p>Science, experiment, investigation, test, why, senses, world, plants (leaf, stem, root, flower, seeds), animals, humans, materials, see through, push/pull (linked to magnets), natural, change, grow, decay, rot, environment</p>		
ELG The Natural World	<ul style="list-style-type: none"> - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. 		
Cycle 2 – Year 1 & 2			
	Autumn	Spring	Summer
Topic	Castles	Growing	Under the Sea
Knowledge	<p>Animals, including humans (Y2) Pupils should be taught to:</p> <ul style="list-style-type: none"> • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) 	<p>Plants (Y1) Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees 	<p>Animals, including humans (Y2) Pupils should be taught to:</p> <ul style="list-style-type: none"> • find out about and describe the basic needs of animals, including humans, for survival (water, food and air)

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	<ul style="list-style-type: none"> describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 	<ul style="list-style-type: none"> identify and describe the basic structure of a variety of common flowering plants, including trees. <p>Plants (Y2) Pupils should be taught to:</p> <ul style="list-style-type: none"> observe and describe how seeds and bulbs grow into mature plants find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. <p>Animals, including humans (Y2) Pupils should be taught to:</p> <ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults 	<p>Living things and their habitats (Y2) Pupils should be taught to:</p> <ul style="list-style-type: none"> explore and compare the differences between things that are living, dead, and things that have never been alive identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other identify and name a variety of plants and animals in their habitats, including micro-habitats
Vocabulary	Adult, child, healthy, diet, disease, exercise, germs, hygiene, nutrition, pulse, survive, food, water, air, fruits, vegetables, carbohydrates, protein, dairy	<p>Wild plant, garden plant, weed, deciduous, evergreen, roots, stem, leaves, flowers, petals, fruit, seed, bulb</p> <hr/> <p>Grow, germination, shoot, seed dispersal, life cycle, sunlight, water, temperature, nutrition,</p> <hr/> <p>Life cycle, develop, offspring, adult, young, live young, baby, toddler, child, teenager,</p>	<p>Adult, child, healthy, diet, disease, exercise, germs, hygiene, nutrition, pulse, survive, food, water, air, fruits, vegetables, carbohydrates, protein, dairy</p> <hr/> <p>Life processes, food chain, food sources, habitat, micro-habitat, living, dead, never living</p>
Opportunities for Experiments	<ul style="list-style-type: none"> Effects of exercise on the body. 	<ul style="list-style-type: none"> Sunflower growing, no water, no light observations. 	<ul style="list-style-type: none"> Exploring school grounds identifying things that are living, dead and things that have never lived.
Skills	<p><u>Working Scientifically</u></p> <p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p>		

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	<ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions 		
FLASHBACK –Links to previous learning	EYFS curriculum – Biology, Chemistry, Physics and Scientific Enquiry Development Matters and ELG The Natural World		
Enrichment - Sparkling Starts/Marvellous Middles/Fantastic Finishes/Visits & Visitors		Marvellous middle: Chilli farm Fabulous Finish Tour of the Village to find signs of Spring.	Stunning Start: Real Fish to draw and explore. Visit to River.
Assessment Opportunities			
Cycle 2 – Year 3 & 4			
	Autumn	Spring	Summer
Threads	Biology	Biology	Biology
Topic	What’s Going on Inside?	Around the World in 80 Days	Invasion!
Knowledge	Animals, including humans (Y3) Pupils should be taught to: <ul style="list-style-type: none"> • identify that animals, including humans, need the right types and amount of nutrition, and that they 	Living things and their habitats (Y4) Pupils should be taught to: <ul style="list-style-type: none"> • recognise that living things can be grouped in a variety of ways 	Plants (Y3) Pupils should be taught to: <ul style="list-style-type: none"> • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

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	<p>cannot make their own food; they get nutrition from what they eat</p> <ul style="list-style-type: none"> identify that humans and some other animals have skeletons and muscles for support, protection and movement <p>Animals, including humans (Y4) Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the simple functions of the basic parts of the digestive system in humans identify the different types of teeth in humans and their simple functions construct and interpret a variety of food chains, identifying producers, predators and prey 	<ul style="list-style-type: none"> explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment recognise that environments can change and that this can sometimes pose dangers to living things 	<ul style="list-style-type: none"> explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal
Vocabulary	<p>Healthy, nutrients, energy, saturated fats, unsaturated fats, vertebrate, invertebrate, muscle, tendon, joints, carbohydrate, protein, fibre, vitamins, minerals</p> <hr/> <p>Digest, oesophagus, stomach, small intestine, large intestine, rectum, herbivore, carnivore, omnivore, producer, predator, prey, incisor, molar, premolar, canine</p>	<p>Organism, life processes, respiration, sensitivity, reproduction, excretion, nutrition, habitat, environment, endangered species, extinct, classification, vertebrates, invertebrates, specimen, characteristics</p>	<p>Roots, stem, leaves, flowers, nutrients, evaporation, fertilisation, petal, stamen, carpel/pistil, sepal, pollination, pollinator, germination, seed dispersal</p>
Opportunities for Experiments	<p><u>Animals, including humans:</u></p> <ul style="list-style-type: none"> Egg shell experiment – Tooth Decay 	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> Invertebrate hunt 	<p><u>Plants:</u></p> <ul style="list-style-type: none"> Investigating factors that affect plant growth and life

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	<ul style="list-style-type: none"> • Skeleton jumping investigation – Does height/length of limbs effect distance that can be jumped. 		
Skills	<p><u>Working Scientifically</u></p> <p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. 		
FLASHBACK –Links to previous learning	Y1 – Animals, including Humans Y2 – Animals, including Humans	Y2 – Living Things and their Habitats	Y1 – Plants Y2 – Plants
Enrichment - Sparkling Starts/Marvellous Middles/Fantastic Finishes/Visits & Visitors	Sparkling Start: The journey of poo (making intestines) Marvellous Middle: Visit from a dentist Fantastic Finish: Good gut food		
Assessment Opportunities			

*Our vision is to work in partnership with families to unlock the potential of every individual.
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Cycle 2 – Year 5 & 6			
	Autumn	Spring	Summer
Thread	Biology/Physics	Biology	Physics
Topic	What makes us and our community marvellous?	What is the solution to pollution?	What puts the game in gaming? - Ancient Greeks
Knowledge	<p>Animals, including humans (Y5) Pupils should be taught to:</p> <ul style="list-style-type: none"> Describe the changes as humans develop to old age <p>Animals, including humans (Y6) Pupils should be taught to:</p> <ul style="list-style-type: none"> Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans <p>Evolution and Inheritance (Y6) Pupils should be taught to:</p> <ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents 	<p>Living Things and their Habitats (Y5) Pupils should be taught to:</p> <ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals <p>Living Things and their Habitats (Y6) Pupils should be taught to:</p> <ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 	<p>Forces (Y5) Pupils should be taught to:</p> <ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have greater effect. <p>Electricity (Y6) Pupils should be taught to:</p> <ul style="list-style-type: none"> associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components

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	<ul style="list-style-type: none"> Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution 		<p>function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <ul style="list-style-type: none"> use recognised symbols when representing a simple circuit in a diagram.
Vocabulary	<p>Life cycle, fertilisation, prenatal, gestation, reproduce, asexual reproduction, sexual reproduction, infancy, childhood, adolescence, early/late adulthood, puberty, menstruation, life expectancy</p> <hr/> <p>Diet, exercise, healthy lifestyle, drugs, alcohol, nutrients, plasma, red blood cells, white blood cells, platelets</p> <hr/> <p>Offspring, inheritance, variations, characteristics, adaptation, habitat, environment, evolution, natural selection, fossil, adaptive traits, inherited traits</p>	<p>Asexual reproduction, fertilise, gestation, life cycle, metamorphosis, pollination, reproduction, sexual reproduction</p> <hr/> <p>Characteristics, classify, classification, taxonomist, key, microorganisms, microscope, species, bacteria</p>	<p>Forces, gravity, Earth's gravitational pull, weight, mass, friction, air resistance, water resistance, buoyancy, streamlined, mechanism, upthrust, pulley, lever, gear</p> <p>Circuit, symbol, cell/battery, current, amps, voltage, resistance, electrons, diagram, series circuit, parallel circuit</p>
Opportunities for Experiments	<ul style="list-style-type: none"> Effect of exercise investigation 		<ul style="list-style-type: none"> Electrical circuits practical experiments Mechanisms- making automaton boxes using levers and gears Experiments related to gravity, air and water resistance
Skills	<p><u>Working Scientifically</u></p> <p>During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 		

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	<ul style="list-style-type: none"> • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments 		
FLASHBACK –Links to previous learning	Y2 – Uses of Everyday Materials Y3 - Rocks Y1 – Animals, including Humans Y2 – Animals, including Humans Y3 – Animals, including humans Y4 – Animals, including humans	Y2 – Living Things and their Habitats Y4 – Living Things and their Habitats	Y1 – Everyday Materials Y2- Uses of Everyday Materials Y3 – Forces and magnets Y4 – Electricity
Enrichment - Sparkling Starts/Marvellous Middles/Fantastic Finishes/Visits & Visitors			
Assessment Opportunities			