

Science – Long Term Plan

Our whole-school Curriculum Development Leader for science is **Gregory Iszchak**

EYFS

Topic name	Learning question/s	Main EYFS	Objectives to be covered	Key vocabulary	Curriculum themes	Enrichments
Floating and sinking	Why do some things float?	Understanding the world	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Float Sink Buoyant Object Test	Engineering - why boats are built from certain materials	Build boats from different materials Pre-teach misconceptions that are likely to arise in KS1
Seasonal changes	Why does my school look different throughout the year?	Understanding the world	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.	Spring Summer Autumn Winter Weather related vocabulary Hot and cold	Environment Our school, our town	Welly Wednesday walks to observe changes Pre-teach misconceptions that are likely to arise in KS1
Growing	Where do babies chicks come from? Where do babies chicks come from?	Understanding the world	Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural	Baby Parent Egg Chick	Celebrating differences World of Work - related to farming	Talking about how we are all different, have different families Hatching chicks

	Where do trees come from?		world around them and contrasting environments, drawing on their experiences and what has been read in class	Chicken Hen Hatch Offspring Parent Plants Trees Seed Trunk Soil	Our school, our town Environment	Welly Wednesday walks to observe plants in our school Planting plants
Magnetism	What objects are magnetic?	Understanding the world	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Attract Magnetic Material related vocabulary Metal	Engineering	Experimenting with magnets Address misconceptions that are likely to arise in Y3

Year 1

Topic name	Learning question/s	NC focus	Objectives to be covered	Key vocabulary	Curriculum themes	Enrichments
Enquiry across year 1			Asks questions Can look at things close up Can sort things into groups and say why they have put them in their groups Can collect information	See Science sentence stems in Teaching and Learning appendices		
Materials	Which materials are best for different objects?	<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 	Distinguishes between an object and the material from which it is made Identifies, names and describes the physical properties of a variety of	Material Wood Metal Plastic Cotton Fabric	Environment - recycling	Identifying and classifying properties by their materials

		<p>materials, including wood, plastic, glass, metal, water, and rock</p> <ul style="list-style-type: none"> • 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>everyday materials, including wood, plastic, glass, metal, water and rock.</p> <p>Compares and groups together a variety of everyday materials on the basis of their simple physical properties</p>	<p>Stone Paper Properties Waterproof Non-waterproof Hard Soft Rough Smooth</p>		
My body	What can my body do?	<ul style="list-style-type: none"> • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. 	Identifies, names, draws and labels the basic parts of the human body and says which part is associated with each sense	<p>Body Human Senses Organs Sight Hearing Touch Flavour Smell Skeleton Skin Skull Ribs</p>	<p>Environment - impact of pollution World of Work - related jobs Mental health and well-being - impact of a healthy lifestyle</p>	Exploration with senses
Animals including humans	What is a living thing?	<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 	<p>Names a variety of common animals, including fish, amphibians, reptiles, birds and mammals, including knowing whether they are carnivores, herbivores or omnivores</p> <p>Describes and compares the structure of a variety of</p>	<p>Mammal Bird Reptiles Fish Amphibian Carnivore Herbivore Omnivore Characteristics</p>	<p>Environment WoW - zookeepers, vets, etc.</p>	Identify and classify animals by terms such as vertebrates and invertebrates, herbivore, carnivore and omnivore. Sorting and re-sorting of animals based on the

		carnivores, herbivores and omnivores · describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	common animals (fish, amphibians, reptiles, birds and mammals, including pets)	Pets Wild Alive Rodent		new characteristic covered each lesson
Seasonal changes	How does the weather change across the seasons?	· observe changes across the four seasons · observe and describe weather associated with the seasons and how day length varies.	Observes and describes the changes across the four seasons Observes and describes the weather associated with the seasons and how the day length varies	Seasons Spring Summer Autumn Winter Change Weather Day Night Length Month Year Meteorologist	Environment - features of each season WoW - meteorologists Mental health - how the seasons affect our emotions	Walk in the woods - taking close up photos Sorting features of weather etc. into Venn diagrams
Plants	What is the difference between deciduous and evergreen trees?	· identify and name a variety of common wild and garden plants, including deciduous and evergreen trees · identify and describe the basic structure of a variety of common flowering plants, including trees.	Identifies and describes the basic structure of a variety of common flowering plants, including trees Identifies and names a variety of common wild and garden plants, including deciduous and evergreen trees	Plants Grow Soil Roots Seeds Stem Stalk Petal Water Sun Heat Deciduous Evergreen	Our School, Our Town – plants and trees on our site Environment	Identifying plants and trees around the school

Year 2

Topic name	Learning question/s	NC focus	Objectives to be covered	Key vocabulary	Curriculum themes	Enrichments
Enquiry across year 2			<p>Asks their own questions about what they notice and knows that questions can have different answers</p> <p>Uses different types of scientific enquiry to gather and record data including observing changes over time; noticing similarities, differences and patterns; grouping and classifying; and carrying out simple comparative tests</p> <p>Chooses and uses scientific equipment appropriately</p> <p>Uses secondary sources e.g. information texts to answer questions</p> <p>Uses appropriate scientific language from the national curriculum to communicate their ideas in a variety of ways e.g. to explain what they did and what they found out</p>	See Science sentence stems in Teaching and Learning appendices		
Materials	Which materials are best? (a deliberately open question to provoke thought and	· identify and compare the suitability of a variety of everyday	Uses their knowledge and understanding of the properties of materials, to distinguish objects from	materials properties of materials absorbent Not absorbent	Environment - reusable materials and	Fair testing - children make walls from a variety of materials to see which will be able

	discussion about purpose)	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.	materials, identify and group everyday materials (including wood, metal, plastic, glass, brick, rock, paper and cardboard), and compare their suitability for different uses Explains how the shapes of solid objects made from some materials can be changed by squashing, bending twisting and stretching	waterproof Not waterproof strong weak Not having much strength or power hard soft stretchy stiff shiny dull rough smooth bendy Not bendy opaque transparent	multi-purpose materials World of Work - manufacturing	to resist strong winds the most effectively
Animals including humans	Whose job is it to keep us healthy?	· find out about and describe the basic needs of animals, including humans, for survival (water, food and air) · describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. · notice that animals, including humans, have offspring which grow into adults	Meets all year 1 objectives for this strand Knows the basic needs of animals, including humans, for survival (water, food, air) Knows that animals, including humans, have offspring which grow into adults and can describe the main changes that occur Describes the importance of exercise, a balanced diet and hygiene for humans	Grow Baby Adult Meat Sugars Fats Carbohydrates Dairy Vegetables Food groups Healthy Hygiene Exercise Mammals Birds Fish Amphibians Reptiles Human Pulse	Mental health and well-being - the importance of eating healthily and exercising	Observation over time/fair test - children do daily activity (how many star jumps can you do in 30 seconds? for example) and record how many and how long they take to recover. They do this at the start of every lesson then analyse findings at the end. They do not record heart rate as year 6 do

Living things and their habitats	Can a city be a habitat?	<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 • 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>Identifies whether things are alive, dead or have never lived</p> <p>Names a variety of plants and animals and describes how they are suited to different habitats, explaining how the habitat provides for their basic needs and how different species depend on each other</p> <p>Groups animals according to what they eat (including identifying and naming different sources of food), describing how animals obtain their food from plants and other animals, using the idea of a simple food chain</p>	<p>Dead</p> <p>Non-living</p> <p>Habitat</p> <p>Living</p> <p>Micro-habitat</p> <p>Food chain</p> <p>Food source</p> <p>Characteristics</p> <p>Environment</p> <p>Similarities</p> <p>Differences</p> <p>Species</p> <p>Woodland</p> <p>City</p> <p>Rural</p>	<p>Environment - what beings need to survive in different environments</p> <p>World of Work - environmental conservation</p> <p>Our school</p> <p>our town - exploring our grounds as a habitat</p>	<p>Recap things humans need to survive</p>
Plants	What changes have occurred to my bean plant?	<ul style="list-style-type: none"> • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants 	<p>Observes and describes how seeds and bulbs grow into mature plants</p> <p>Finds out and describes how plants need water, light and</p>	<p>Seeds</p> <p>Bulb</p> <p>Sunlight</p> <p>Germination</p> <p>Nutrition</p> <p>Reproduce</p>	<p>Environment - the role of plants (oxygen etc.)</p> <p>World of Work - jobs</p>	<p>Beans planted in different locations with observations made over time</p>

		need water, light and a suitable temperature to grow and stay healthy.	a suitable temperature to grow and stay healthy.	Absorb	relating to plants and agriculture	
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Year 3

Topic name	Learning question/s	NC focus	Objectives to be covered	Key vocabulary	Curriculum themes	Enrichments
Enquiry across year 3			Asks relevant questions and uses different types of scientific enquiries to answer them Sets up simple practical enquiries Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Identifies differences, similarities or changes related to simple scientific ideas and processes Uses straightforward scientific evidence to answer questions or to support their findings	See Science sentence stems in Teaching and Learning appendices		
Magnetism	How can we tell if a material is magnetic or not?	<ul style="list-style-type: none"> • compare how things move on different surfaces • notice that some forces need 	Compares how things move on different surfaces, recognising that most forces need contact between objects	force push pull Measure Gravity	World of Work and Engineering - the use of magnetism in	Classifying and grouping magnetic and non-magnetic objects

		<p>contact between two objects, but magnetic forces can act at a distance</p> <ul style="list-style-type: none"> • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing 	<p>Understands that magnetic forces can act at distance and compares the strength of different magnets; knows magnets have two poles and will attract or repel each other depending on the poles which are facing each other</p> <p>Groups materials on the basis of whether they are attracted to a magnet, identifying some magnetic materials and understanding why magnets may be useful in everyday life</p>	<p>magnet magnetic/magnetism attract repel north south</p>	<p>engineering and related jobs</p>	
Light and shadow	How can you change the size of a shadow?	<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 	<p>Understands that they need light in order to see things but that light from the sun can be dangerous so they should protect their eyes; darkness is the absence of light</p>	<p>Light Shadow Materials Translucent Opaque Transparent Light source Dark Torch</p>	<p>World of Work - jobs linked to lighting such as theatre, film and television jobs as well as electricians and light fitters</p>	<p>Fair testing how shadows can be made into different sizes by varying the height and distance of the light source as</p>

		<ul style="list-style-type: none"> • 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 a solid object • find patterns in the way that the size of shadows change. 	Explains that shadows are formed when the light from a source is blocked by a solid object, and explains patterns in the way that the size of shadows changes			well as the shape of the object.
Rocks	Why do Luton's parks become waterlogged?	<ul style="list-style-type: none"> -compare and group together different kinds of rocks on the basis of their appearance and simple physical properties -recognise that soils are made from rocks and organic matter. -describe in simple terms how fossils are formed when things that have lived are trapped within rock 	Knows that soils are made from rocks and organic matter; and compares and groups different types of rocks and soils on the basis of their appearance and simple physical properties Describes in simple terms how fossils are formed when things that have lived are trapped within rock	Petrologist Fossils Soil Fossilisation Acid Water Hardness Sandstone Limestone Chalk Granite Slate Marble	World of Work - geologists and petrologists Environment and Our school, our town - exploring how the make up of Luton leads to water logging	Identifying and classifying grouping different rocks including those from our school and down
Plants	How do plants adapt to different environments?	<ul style="list-style-type: none"> • identify and describe the functions of different parts of 	Describes the functions of different parts of flowering plants: roots, stem/trunk, leaves and	Pollen Pollination Fertilisation Germination	Environment - function of plants within an environment	Children recap but are not retaught KS1 objectives.

		<p>flowering plants: roots, stem/trunk, leaves and flowers</p> <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. 	<p>flowers; and know how water is transported within plants</p> <p>Knows the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p> <p>Knows what plants need to be healthy (air, light, water, nutrients from the soil and room to grow) and knows how this may vary from plant to plant</p>	<p>Dispersal</p> <p>Stigma</p> <p>Anther</p> <p>Water transportation</p> <p>Stem</p> <p>Roots</p> <p>Leaves</p> <p>Flower</p> <p>Petal</p> <p>Reproduction</p>	<p>World of Work - gardening and farming related jobs</p>	<p>Children's focus is now on lifecycles of plants and how they transport water.</p> <p>Investigations should focus on putting the same plant in different environments and carrying out observations over time.</p>
<p>Animals including humans</p>	<p>What are the major bones in the human body?</p>	<ul style="list-style-type: none"> • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • identify that humans and some 	<p>Knows that animals, including humans, need the right types and amount of nutrition, which they get from what they eat; unlike plants, they cannot make their own food</p> <p>Know how the skeleton and muscles in humans and some animals</p>	<p>Diet</p> <p>Protein</p> <p>Carbohydrates</p> <p>Dairy</p> <p>Energy</p> <p>Skeleton</p> <p>Muscles</p> <p>Function</p> <p>Protection</p> <p>Organs</p> <p>Vertebrates</p> <p>Invertebrates</p>	<p>Mental health and well-being - importance of healthy diet</p>	<p>Fair testing whether body parts are related to athletic ability</p> <p>Write up of investigation</p>

		other animals have skeletons and muscles for support, protection and movement.	supports, protects and helps them move	Cardiac		
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Year 4

Topic name	Learning question/s	NC focus	Objectives to be covered	Key vocabulary	Curriculum themes	Enrichments
Enquiry across year 4			<p>Makes systematic and careful observations, taking accurate measurements using a range of equipment, including thermometers and data loggers</p> <p>Sets up simple comparative and fair tests</p> <p>Gathers, records, classifies and presents data in a variety of ways to help in answering questions</p> <p>Reports on findings from enquiries, including oral</p>	See Science sentence stems in Teaching and Learning appendices		

			<p>and written explanations, displays or presentations of results and conclusions</p> <p>Uses results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p>			
Animals including humans	How do humans digest food?	<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. <p>(Food chains is contained within this topic, however it would fit in well when learning about living things and their habitats)</p>	<p>Describes the functions of the basic part of the human digestive system, including the different types of teeth.</p> <p>Constructs and interprets a variety of food chains, identifying producers, predators and prey</p>	<p>Dead</p> <p>Non-living</p> <p>Living</p> <p>Food</p> <p>Food source</p> <p>Oesophagus</p> <p>Stomach</p> <p>Small intestines</p> <p>Large intestine</p>	Mental health and well-being - dental care, looking after our bodies	Observation over time - studying how food dissolves in different substances

Electricity	What are insulators and conductors?	<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 	<p>Identifies appliances that run on electricity, and recognises some common conductors and insulators</p> <p>Constructs a simple series electric circuit, identifying the basic components: cells, wires, bulbs, switches and buzzers.</p> <p>Identifies whether or not a bulb will light in a simple circuit, based on whether it is part of a complete loop with a battery, including recognising the effect of a switch on the circuit.</p>	<p>Conductor</p> <p>Insulator</p> <p>Light Bulb</p> <p>Circuit</p> <p>Wire</p> <p>Battery</p> <p>Switch</p> <p>Electricity</p> <p>Current</p> <p>Buzzer</p> <p>Positive</p> <p>Negative</p> <p>Cell</p> <p>Power</p>	<p>Engineering - how electricity is used</p> <p>Our school, our town - links to local engineering companies</p> <p>World of Work - as above</p> <p>Environment - renewable energy and electric cars</p>	<p>Identifying and classifying grouping which materials are insulators and which are conductors</p>
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		with being good conductors.				
States of matter	What are changes of state and why do they take place?	<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 associate the rate of evaporation with temperature. 	<p>Compare and group materials according to whether they are solids, liquids or gases, recognising that some change state at different temperatures</p> <p>Identifies the part played by evaporation and condensation in the water cycle, relating the rate of evaporation with the temperature</p>	<p>Matter</p> <p>Solids</p> <p>Liquids</p> <p>Gas</p> <p>Water vapour</p> <p>Evaporation</p> <p>Melting</p> <p>Freezing (point)</p> <p>Precipitation</p> <p>Condensation</p> <p>Water cycle</p> <p>Particles</p> <p>Molecules</p>	World of Work and engineering - knowing what temperatures changes of states occur at	Fair testing
Sound	What is sound?	<ul style="list-style-type: none"> • identify how sounds are made, associating some of them with something vibrating 	Identifies how sounds are made and recognises that vibrations from sounds travel through a medium to the ear	<p>Pitch</p> <p>Volume</p> <p>Sound waves</p> <p>Vibration</p> <p>Materials</p> <p>Conductors</p>	World of Work and Engineering - sound engineers Environment - noise pollution	Fair testing how sound travels through materials and how pitch is altered

		<ul style="list-style-type: none"> • 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. 	Makes connections between the pitch and volume or sounds in relation to the object that produced them, its position and the strength of the vibrations	Insulators	linked to the airport	
Living things and habitats	What is an ecosystem? (links to biomes in year 5)	<ul style="list-style-type: none"> • recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider 	Groups and identifies living things in a variety of ways, including using classification keys Recognises that environments can change and that this can pose dangers to living things	Habitat Organism Classify Classification Mammals Insects Vertebrates Invertebrates Amphibians Reptiles Environment Sustain(ability)	Our School, Our Town - habitats and ecosystems where we live Environment - how can we protect our local environment? World of Work - using renewable	Classifying and sorting animals by their types, etc. Make a guide to local animals and plants

		environment • recognise that environments can change and that this can sometimes pose dangers to living things.		Food chains Ecosystem Forest Grassland Desert Tundra Aquatic Fresh water Marine	energies, conservationism, the damage of drilling, mining, etc.	
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Year 5

Topic name	Learning question/s	NC focus	Objectives to be covered	Key vocabulary	Curriculum themes	Enrichments
Enquiry across year 5			Plans different, appropriate types of scientific enquiries to answer questions Takes measurements, using a range of scientific equipment, with increasing accuracy and precision Records results of using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Reports and presents findings from enquiries, including conclusions and, causal relationships in oral and written forms Uses results to make further predictions and	See Science sentence stems in Teaching and Learning appendices		

			suggest follow-up investigations			
Forces	What are forces?	<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 a greater effect. 	<p>Understands that objects fall towards the Earth (centre) because of the force of gravity</p> <p>Identifies the effects of air resistance, water resistance and friction, and recognises how mechanisms, such as levers, pulleys and gears, allow a smaller force to have a greater effect</p>	<p>Forces</p> <p>Gravity</p> <p>Weight</p> <p>Mass</p> <p>Pulley</p> <p>Lever</p> <p>Gear</p> <p>Upthrust</p>	<p>Environment - links to air and noise pollution</p> <p>Our school, our town and engineering - design of air travel</p>	<p>Children investigate effects of air resistance by creating parachutes where materials, size, weight of load, etc. are changed.</p>
Earth and space	Why are the days getting shorter in the winter?	<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 	<p>Describes the movement of the Earth, and other planets, relative to the Sun in the solar system; and describes the movement of the Moon relative to the Earth.</p> <p>Uses the idea of the Earth's rotation to</p>	<p>Orbit</p> <p>Rotation</p> <p>Year</p> <p>Day</p> <p>Leap year</p> <p>Names of the planets</p> <p>Shadows</p>	<p>World of Work - careers linked to space travel</p>	<p>Inflatable planetarium and moon diary for home learning</p>

		<p>Moon relative to the Earth</p> <ul style="list-style-type: none"> 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>explain day and night and the apparent movement of the sun across the sky</p>			
<p>Properties and changes of materials (and changes of state)</p>	<p>How can mixtures be separated?</p>	<ul style="list-style-type: none"> compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets understand that some materials will dissolve in liquid to form a 	<p>Groups materials according to properties (including conductivity) and relates their properties to their use in everyday products. Recognises when changes are reversible or irreversible, including understanding dissolving. Uses knowledge of solids, liquids and gases to decide how mixtures, including dissolved materials, might be separated, including through filtering, sieving and evaporating.</p>	<p>Dissolving Filtration Separate Reversible Irreversible Conductor Soluble Hardness Transparent Translucent Opaque</p>	<p>Engineering and the environment - sustainability</p>	<p>Decanting river water (not real) Sorting materials by their properties Fair test how long sugar takes to dissolve</p>

		<p>solution, and describe how to recover a substance from a solution</p> <ul style="list-style-type: none">· 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· demonstrate that dissolving, mixing and changes of state are reversible changes <p>explain that some changes result in the formation of new materials, and that this kind of change is not</p>				
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		usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda				
Animals including humans		• describe the changes as humans develop to old age.	Describes the changes as humans develop to old age.	Foetus Womb Premature Sperm Eggs Embryo Puberty	Mental health and well-being – understanding the changes our bodies go through	
Living things and their habitats	How do lifecycles compare across the animal kingdom?	• 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	Describes the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describes the life process of reproduction in some plants and animals.	Reproduction Mammal Amphibian Asexual Dissect Plants Sprouts Offspring Tubers Stems Root Gestation Life cycle Bulb	Mental health and well-being – understanding the changes our bodies go through World of Work and environment - understanding how plants reproduce and the importance of bees	Focus on reproductive cycles of animals and plants, not humans

Year 6

Topic name	Learning question/s	NC focus	Objectives to be covered	Key vocabulary	Curriculum themes	Enrichments
Enquiry across year 6			<p>Recognises and controls variables where necessary when performing investigations</p> <p>Identifies when it is necessary to take repeat measurements</p> <p>Records results of increasing complexity in a range of ways, including detailed diagrams, bar, scatter and line graphs.</p> <p>When reporting findings, comments on the degree of trust that can be placed in the results</p> <p>Identifies scientific evidence that has been used to support or refute ideas or arguments</p>	See Science sentence stems in Teaching and Learning appendices		
Electricity	What happens in a circuit when we change the components?	<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 	<p>Compares and gives reasons for variations in how components function, including the brightness of bulbs, the volume of buzzers and the on/off position of switches</p> <p>Uses recognised symbols when representing a</p>	<p>Battery</p> <p>Bulb</p> <p>Buzzer</p> <p>Cell</p> <p>Circuit</p> <p>Conductor</p> <p>Current</p> <p>Electrons</p> <p>Electricity</p>	<p>Environment – renewable energy and eco-schools</p> <p>Engineering – the use of electricity</p>	<p>Creating circuits, fair testing</p> <p>brightness of bulbs</p>

		<ul style="list-style-type: none"> • 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 • use recognised symbols when representing a simple circuit in a diagram. 	simple circuit in a diagram.	Filament Electric motor Switch Voltage		
Living things and their habitats	How do we classify living things?	<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 microorganisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics. 	Knows ways in which living things are classified based on similarities and differences, including microorganisms, plants and animals.	Classify Classification Organism Characteristics Taxonomy Species Mould Linnaeus classification system Similarities Differences Vertebrates invertebrates	World of Work – related jobs Environment – how and why to protect it Celebrating diversity – Libbie Hyman – female scientist	Observation over time – mould

Light	How do we see light?	<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 same shape as the objects that cast them. 	<p>Uses the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light.</p> <p>Uses the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>Transparent Translucent Opaque Light source Light Ray Spectrum Angle of incidence Angle of reflection Reflection Refraction Luminous Non-luminous Prism Shadow</p>	<p>World or Work and Engineering - Light engineering Environment - saving electricity</p>	<p>Fair testing - light travelling in straight lines Using prisms to investigate colour Periscopes to investigate reflections</p>
Animals including humans	What happens to the circulatory system during exercise?	<ul style="list-style-type: none"> · identify and name the main parts of the human circulatory 	<p>Describes the functions of the heart, blood vessels and blood; and the ways in which nutrients</p>	<p>circulatory system circulation heart blood vessels blood</p>	<p>Well-being and mental health - benefits of exercise</p>	<p>Making blood Fair testing heartrates</p>

		<p>system, and describe the functions of the heart, blood vessels and blood</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>and water are transported</p> <p>Recognises the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p>	<p>artery</p> <p>vein</p> <p>lung</p> <p>pulmonary</p> <p>oxygen</p> <p>alcohol</p> <p>drugs</p> <p>tobacco</p> <p>platelets</p> <p>plasma</p> <p>red blood cells</p> <p>white blood cells</p> <p>antibodies</p>	<p>WoW - medical and health professionals who monitor BPMs as part of their jobs</p>	
Evolution and inheritance	How do fossils provide evidence of evolution?	<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 	<p>Identifies how animals and plants are adapted to suit their environment and that adaptation may lead to evolution.</p> <p>Recognises 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>Fossils</p> <p>Inhabit</p> <p>Offspring</p> <p>Identical</p> <p>Adapted</p> <p>Environment</p> <p>Evolution</p> <p>Inheritance</p> <p>Variation</p> <p>Adaptation</p> <p>Habitat</p> <p>Behavioural</p> <p>Physical</p> <p>Characteristics</p> <p>Genetic</p> <p>Mutation</p>	<p>World of World</p> <p>-</p> <p>palaeontologists</p> <p>- women in STEM</p>	<p>Making beaks to learn about evolution and natural selection</p>

		and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.				
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