Mount Primary School
Science
Curriculum Design
Long Term Plan & Progression

Science Intent

At Mount Primary School, we follow the National Curriculum for Science. We teach science through stories and projects, so that learning is given purpose and relevance to the real world. Science is a very practical subject and so it gives learners the opportunity to work in a variety of ways, from designing and completing experiments to recording and analysing results. Children get ample opportunity to work scientifically, and record data using a variety of equipment as well as presenting their findings in a way chosen by themselves.

Science Implementation

The Early Years Foundation Stage (EYFS) and Key Stage One (KS1) are taught in discrete year groups. However, Lower Key Stage Two (LKS2) and Upper Key Stage Two (UKS2) are taught in mixed Year groups. Therefore, a two-year rolling programme has been designed to ensure full coverage of the curriculum.

Science Impact

Unit plans begin with a short activity to ensure key prior knowledge is embedded before teaching new knowledge. Each lesson also begins with a short activity to recaps on prior learning and ensure that links are made explicit to children and encourage 'sticky learning.' Children have opportunities to work scientifically within each unit; this allows children to apply and develop their understanding of a unit in a practical way.

Cycle 1

	Term 1	Term 2	Term 3
EYFS	All about me Animals Mini beasts and growing	Celebrations People who help us Under the Sea	Keeping Healthy Colour Traditional Tales
Year 1 and 2	Looking after plants (Plants Y1, Seasons Y1, Plants Y2)	Material world (Materials Y1, Materials Y2)	Staying Alive (Animals Y1, Animals Y2, Living things Y2)
Year 3 and 4	Nurturing Nature (Plants Y3, Living things Y4)	Archaeology (Rocks Y3, Animals Y3, Living things Y4)	Movie Magic (Light Y3, Sound Y4)
Year 4 and 5	Amazing Animals (Animals Y4, Animals Y5)	Its Electric! (Sound Y4, Electricity Y4)	Living Things (Living things Y4, Y5)
Year 5 and 6	Out of this world (Materials Y5, Earth and Space Y5)	Living, growing and changing (Living things Y5)	Engineering (Forces Y5, Materials Y5)

Cycle 2

	Term 1	Term 2	Term 3
EYFS	All about me Animals Mini beasts and growing	Celebrations People who help us Under the Sea	Keeping Healthy Colour Traditional Tales
Year 1 and 2	Animal Safari (Animals Y1, Living things Y2, Animals Y2)	Changing Materials (Materials Y1, Materials Y2)	How does your garden grow? (Plants Y1, Y2)
Year 3 and 4	The Amazing Human Body (Animals Y3, Animals Y4)	From the Amazon to Antarctica (States of matter Y4, Living things Y4, Animals Y4	How Stuff Works (Electricity Y4, Forces Y3
Year 4 and 5	Extraordinary Space (Space Y5, Forces Y5)	Properties of Materials (States of Matter Y4, Materials Y5)	Living and Changing (Living things Y4, Animals Y5)

Year 5 and 6	Bright Sparks (Materials Y5, Light Y6, Electricity Y6)	Following Darwin's Footsteps (Evolution and Inheritance Y6)	Healthy Body, Healthy Mind (Animals Y6,

Mixed Age Planning Objective Overview
EYFS, Year1/2, Year 3/ 4, Year 5/ 6

Cycle 1 First Year	EYFS	Year 1 and 2		Year 3 and 4		Year 5 and 6	
Term 1 (Autumn)	All about me	Material World		Nurturing Nature		Out of this world	
	Explore the world around them, making observations and drawing pictures of themselves and others. Know similarities and differences between the natural world around them. Work and play cooperatively and take turns with others.	MY1	-Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials incl wood, plastic, glass, metal, water and rock. -Describe the simple physical properties of a variety of materials. -Compare and group together a variety of everyday materials on the basis of their simple properties.	PY3	-Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. - 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	MY5	-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 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 this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
		MY2	-Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, rock, brick, paper and cardboard for particular uses.			E&S Y5	-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 Earth rotation to explain day and night due to the apparent movement of the sun across the sky.
				LY4	-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 environment.-Recognise that environments can change and that this can sometimes pose dangers to living things.		
Term 2 (Spring)	Under the sea	Looking after plants		Archaeology		Living, growing and changing	
	Explore the natural world around them, making observations and drawing pictures of animals and plants.	PY1	-Identify and describe the basic structure of a variety of common flowering plants, including trees.	RY3	-Compare and group together different kinds of rocks on the basis of their	LY5	Describe the differences in the lifecycles of a mammal, an amphibian, an insect and a bird.

	-I can identify animal habitats. -I can group fish based on my observations -I can make observations of the natural world. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. –I understand why things float or sink 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. - I can make observations of plants and animals	PY2	-Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.		appearance and simple physical properties. -Describe in simple terms how fossils are formed when things that have lived are trapped within a rock. -Recognise that soils are made from rocks and organic matter		Describe the life processes of reproduction in some plants and animals.
		SY1	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies			AY5	Describe the changes as humans develop from birth to old age.
				AY3	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.		
				AY4	-Identify the different types of teeth in **animals** and their simple functions. -Construct and interpret a variety of food chains, identifying producers, predators and prey.		
				LY4 repeated obj	-Recognise that environments can change and that this can sometimes pose dangers to living things. **This has been repeated to help consolidate.** -Explore and use classification keys to help group, identify and name a variety of living things in their local environment. **This has been repeated to help consolidate**		
Term 3 (Summer)	Colour ELG: I can explore the world around me, making observations of colour. -ELG: I can participate in discussions and offer my own ideas using scientific words. -ELG: I understand some important processes and changes in the world, including colour and how they change by mixing.	The Human Body and staying healthy.		Movie Magic		Engineering	
		AY1	-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. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Light Y3	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 our eyes. Recognise that shadows are formed when the light source is blocked by a solid object. Find patterns in the way the size of the shadows change.	FY5	-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.
	Keeping Healthy Manage their own basic hygiene and personal needs, including dressing, going	AY2	-Notice that animals, including humans, have offspring which grow into adults. -Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.			MY5	Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals wood and plastic.

	to the toilet and understanding the importance of healthy food choices. Show sensitivity to their own and to others' needs.	LY2	-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.	Sound Y4	To 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 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 sound gets fainter as the distance from the sound source increases.		

Cycle 2 Second Year	EYFS	Year 1 and 2		Year 3 and 4		Year 5 and 6	
Term 1 (Autumn)	Animals	Animal Safari		The Amazing Human Body		Bright Sparks	
	I can understand the similarities and differences *of animals* in this country and in other countries. I can recognise some environments that are different to the one in which they live. I can understand the effect of changing seasons on the natural world. I can engage in non-fiction books. I can revise and refine my fundamental movement skills.	AY1	-Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. **Repeat objective for consolidation.** -Identify and name a variety of common animals that are carnivores, herbivores and omnivores . **Repeat objective for consolidation.** -Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) - Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	AY3	-Identify that humans and some other animals have skeletons and muscles for support, protection and movement. -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. **Repeat objective for consolidation.**	MY5	Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. **Repeat objective for consolidation.**
		LY2	-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 microhabitats	AY4	-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.	LY6	Recognise that light travels 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 object that casts them.
						EY6	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 function, including the brightness of bulbs, the loudness of buzzers and the on/off potion of switches.

		AY2	Notice that animals, including humans, have offspring which grow into adults. **Repeat objective for consolidation.**				Use recognised symbols when representing a simple circuit in a diagram.
Term 2 (Spring)	Traditional Tales	Changing Materials		From the Amazon Rainforest to Antarctica.		Following Darwins Steps	
	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. 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. Offer explanations for why things might happen, making use of recently introduced vocabulary from stories	MY1	-Distinguish between an object and the material from which it is made. **Repeated from cycle 1 for consolidation.** -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.	SoM Y4	-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 (States of matter) -Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	E&I Y6	-Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. -Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. -Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
		MY2	-Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.			LY6	-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
	People who help us			LY4	Recognise that living things can be grouped in a variety of ways. **Repeat of obj for consolidation** Explore and use classification keys to help group, identify and name a variety of living things in their local environment. Recognise that environments can change and that this can sometimes pose dangers to living things **Repeat of obj for consolidation**		
	Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. Talk about the lives of the people around them and their roles in society.			AY4	Construct and interpret a variety of food chains, identifying producers, predators and prey. **Repeat of obj for consolidation**		
Term 3 (Summer)	Minibeasts and Growing	How does your garden grow?		How Stuff works		Healthy Body Healthy Mind	
	I can understand important changes and processes in the natural world. I can explore the natural world around me. Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. I can use my observations and skills to make a model.	PY1	-Name common plants and describe the basic structure of flowering plants, including deciduous and evergreen. -Identify and describe the basic structure of a variety of common flowering plants, including trees. **Revisit of objective to consolidate.**	EY4	-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.	A Y6	-Identify and name the main parts of the human circulatory system and describe the function of the heart, blood vessels and blood. **Repeat of obj for consolidation** -Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
		PY2	Observe and describe how seeds and bulbs grow into mature plants				

	Seasons Understand some important processes and changes in the natural world around them, including seasonal changes. (ELG Natural World) Describe their immediate environment using knowledge from observation, discussion and stories (ELG people and communities) Explore the natural world around them, making observations and drawing pictures of animals and plants (ELG Natural World) Know the similarities and differences between the natural world around drawing on experiences of what has been read in class. (ELG Natural world)			FY3	Compare how things move on different surfaces Notice that some forces need contact between two 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. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.		

Progression Map- National Curriculum statements in red are from other linked topics

Green- Biology **Red- Chemistry** **Blue- Physics**

Plants	Knowledge progression	Key Vocabulary
Birth to three	• Explore natural materials, indoors and outside.	
Nursery	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil, names of plants they grow

Reception	• Draw information from a simple map. (Reception – Living things and their habitats) • Explore the natural world around them. (Reception – Living things and their habitats) • Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats) • Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats) • Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes)	tree, bush, herb, names of plants they see (Reception - Living things and their habitats)
KS1	• 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. • 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. • Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)	leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area, names of garden and wild flowering plants in the local area light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling names of plants in local habitats and micro-habitats (Y2 - Living things and their habitats)
Year 3/ 4	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • 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. • Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transpor classification, classification keys (Y4 - Living things and their habitats)
Year 5/ 6	• Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)	life cycle, reproduce, sexual,

	• 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. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)	fertilises, asexual, plantlets, runners, tubers, cuttings (Y5 - Living things and their habitats) flowering, non-flowering, mosses, ferns, conifers (Y6 - Living things and their habitats)
Key Stage 3	• Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms.	

Living things and their habitats	**Key knowledge**	**Key Vocabulary**
Birth to three	• Explore natural materials, indoors and outside. .	
Nursery	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Begin to understand the need to respect and care for the natural environment and all living things.	natural, plant, animal, leaves, seeds, conkers, acorns, twigs, bark, shells, feathers, pebbles, stones, same, different, pattern plant, leaf, stem, branch, root, bark, flower, petal, seed, berry, fruit, vegetable, bulb, plant, hole, dig, water, weed, grow, shoot, die, dead, soil (Nursery - Plants)

Reception	• Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live.	plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment (e.g. beach, forest)
KS1	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) • Observe changes across the four seasons. (Y1 - Seasonal change)	names of garden and wild flowering plants in the local area (Y1 - Plants) head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group (Y1 - Animals, including humans) weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length (Y1 - Seasonal changes)

KS1	• 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 microhabitats. • 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. • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)	living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling (Y2 - Plants) offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, cat/kitten, caterpillar/butterfly) (Y2 - Animals, including humans)
Year 3	• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (e.g. wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport

Year 4	• 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 environment. • Recognise that environments can change and that this can sometimes pose dangers to living things. • Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)	classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate herbivore, carnivore, omnivore, producer, predator, prey (Y4 - Animals, including humans)
Year 5 /6	• 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. • 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. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance) • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance)	life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers
Key Stage 3	• Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. • Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms. • Differences between species.	

Animals, including humans	Key Knowledge	Key Vocabulary
Birth to three	• Explore natural materials, indoors and outside. • Make connections between the features of their family and other families. • Notice differences between people.	
Nursery	• Use all their senses in hands-on exploration of natural materials. • Begin to make sense of their own life-story and family's history. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	egg, chick, bird, caterpillar, cocoon, chrysalis, butterfly, frog spawn, tadpole, froglet, frog, grow, change, die, names of animals and their young, fur, feathers, scales, tail, wings, beak, claws, paws, hooves, swim, walk, run, jump, fly, patterns, spots, stripes, grow, change, baby, toddler, child, adult, old person, smell, taste, touch, feel, hear, see, blind, deaf
Reception	• Talk about members of their immediate family and community. • Name and describe people who are familiar to them. • Recognise some environments that are different to the one in which they live.	names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice, hair (e.g. black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (e.g. blue, brown, green, grey), skin (e.g. black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt,

		uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman
KS1	• 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. • Notice that animals, including humans, have offspring which grow into adults. • 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. • 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. (Y2 - Living things and their habitats)	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy) living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival (Y2 - Living things and their habitats)
Year 3/ 4	• 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 other animals have skeletons and muscles for support, protection and movement.	nutrition, nutrients, carbohydrates, sugars,

	• 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.	protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey
Year 5/ 6	• Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • 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. • 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. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)	puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy life cycle, foetus, baby, child, adolescent, adult, reproduce, sexual, sperm, fertilises, egg, live young (Y5 - Living things and their habitats) heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle
Key Stage 3	• Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. • The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. • The effects of recreational drugs (including substance misuse) on behaviour, health and life processes. • The structure and functions of the gas exchange system in humans, including adaptations to function. • The mechanism of breathing to move air in and out of the lungs. • The impact of exercise, asthma and smoking on the human gas exchange system.	

Evolution and Inheritance	Key knowledge	Key Vocabulary
Year 5/ 6	• 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. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution
Key Stage 3	• Heredity as the process by which genetic information is transmitted from one generation to the next. • A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. • The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. • Changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.	

Seasonal Changes	Key Knowledge	Key Vocabulary
Nursery	• Understand the key features of the life cycle of a plant and an animal. (Nursery – Plants & Animals, excluding humans)	
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them.	
KS1	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	

Materials	Key Knowledge	Key Vocabulary
Birth to 3	• Explore materials with different properties. • Explore natural materials, indoors and outside.	
Nursery	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice.	mix, stir, cook, hot, oven, microwave, change, burn, melt, hard, runny, set, freeze, freezer, cold, blended, hard, soft, bendy, stiff, wobbly, wood, plastic, paper, card, fabric
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back
KS1	• 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. • 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.	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 opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching
Year 3/4	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • 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. (Y3 - Forces and magnets)	rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay) (Y3 - Rocks) magnetic force, magnet, attract, magnetic material, metal, iron, steel (Y3 - Forces and magnets)
	• 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. • Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity)	solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle electrical conductor, electrical insulator, metal, non-metal (Y4 - Electricity)

Year 5/ 6	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • 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. • 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. • 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.	thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material
Key Stage 3	• Chemical reactions as the rearrangement of atoms • Representing chemical reactions using formulae and using equations • Combustion, thermal decomposition, oxidation and displacement reactions • Defining acids and alkalis in terms of neutralisation reactions • The pH scale for measuring acidity/alkalinity; and indicators	

Rocks	**Key Knowledge**	**Key Vocabulary**
KS1	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)	
Year 3/ 4	• 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.	rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)

Light	**Key Knowledge**	**Key Vocabulary**

Birth to three	• Repeat actions that have an effect.	
Nursery	• Explore how things work. • Talk about the differences in materials and changes they notice.	light, torch, bulb, lamp, spotlight, shiny, bright, brighter, brightest, Sun, shine, glow, mirror
Reception	• Describe what they see, hear and feel whilst outside.	Sun, sunny, light, shadow, shady, clouds, torch, see-through, not see-through, source, light source
KS1	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)	senses, see, eyes (Y1 - Animals, including humans) shiny, dull, see-through, not see-through (Y1 - Materials)
		opaque, transparent, translucent, reflective, non-reflective (Y2 - Uses of everyday materials)
Year 3/ 4	• 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.	light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous
Year 5/ 6	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials) • 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.	straight lines, light rays

Key Stage 3	• The similarities and differences between light waves and waves in matter. • Light waves travelling through a vacuum; speed of light. • The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. • Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye. • Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras. • Colours and the different frequencies of light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.

Forces	Key Knowledge	Key Vocabulary
Birth to three	• Repeat actions that have an effect.	
Nursery	• Explore how things work. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.	object, float, sink, water, up, down, top, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, turn, spin, smooth, rough, fast, slow
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, fast, slow, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce
Year 1		
Year 2	• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)	flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching (Y2 - Uses

		of everyday materials)
Year 3	• Compare how things move on different surfaces. • Notice that some forces need contact between two 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole
Year 4		
Year 5	• 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.	force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears
Year 6		object, float, sink, water, up, down, top, bottom, push, pull, magnet, spring, squash, bend, twist, stretch, turn, spin, smooth, rough, fast, slow
Key Stage 3	• Magnetic fields by plotting with compass, representation by field lines. • Earth's magnetism, compass and navigation. • Forces as pushes or pulls, arising from the interaction between two objects. • Using force arrows in diagrams, adding forces in one dimension, balanced and unbalanced forces. • Moment as the turning effect of a force. • Forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water. • Forces measured in Newtons, measurements of stretch or compression as force is changed.	

Sound	Key Knowledge	Key Vocabulary
Birth to three	• Repeat actions that have an effect.	
Nursery	• Explore how things work.	sound, noise, loud, quiet, high, low, music, bang, blow, pluck, soft, hard, fast, slow, names of instruments
Reception	• Describe what they see, hear and feel whilst outside.	sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud, quiet, soft, volume, crackle, thunder, hum, buzz, roar
Year 1	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)	senses, hear, ear (Y1 - Animals, including humans)
Year 2		
Year 3		
Year 4	• 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.	sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation
Year 5		
Year 6		

Key Stage 3	• Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. • Frequencies of sound waves, measured in Hertz (Hz); echoes, reflection and absorption of sound. • Sound needs a medium to travel, the speed of sound in air, in water, in solids. • Sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal. • Auditory range of humans and animals. • Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound. • Waves transferring information for conversion to electrical signals by microphone.

Electricity	Key Knowledge	Key Vocabulary
Year 4	• 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.	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
Year 5		
Year 6	• 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 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.	circuit diagram, circuit symbol, voltage

Key Stage 3	• Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge. • Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current. • Differences in resistance between conducting and insulating components (quantitative). • Static electricity.

Earth and Space	Key Knowledge	Key Vocabulary
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float
Year 1	• Observe changes across the four seasons. (Y1 – Seasonal changes) • Observe and describe weather associated with the seasons and how day length varies. (Y1 – Seasonal changes)	
Year 2		
Year 3		light, light source, Sun, sunlight, dangerous (Y3 - Light)
Year 4		
Year 5	• 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.	Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit
Year 6		
Key Stage 3	• Gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only). • Our Sun as a star, other stars in our galaxy, other galaxies. • The seasons and the Earth's tilt, day length at different times of year, in different hemispheres. • The light year as a unit of astronomical distance.	