Whole School Science Scheme

EYFS progression map from Nursery (3-4 years) to the end of Reception

Area of Learning: Understanding the World, Personal, Social and Emotional Development and Communication and Language
Educational Programme from the EYFS framework:
Understanding the World
Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.
Personal, Social and Emotional Development
Children's personal, social and emotional development (PSED) is crucial for children to lead healthy and happy lives, and is fundamental to their cognitive development. Underpinning their personal development are the important attachments that shape their social world. Strong, warm and supportive relationships with adults enable children to learn how to understand their own feelings and those of others. Children should be supported to manage emotions, develop a positive sense of self, set themselves simple goals, have confidence in their own abilities, to persist and wait for what they want and direct attention as necessary. Through adult modelling and guidance, they will learn how to look after their bodies, including healthy eating, and manage personal needs independently. Through supported interaction with other children they learn how to make good friendships, co-operate and resolve conflicts peaceably. These attributes will provide a secure platform from which children can achieve at school and in later life.
Communication and Language
The development of children's spoken language underpins all seven areas of learning and development. Children's back-and-forth interactions from an early age form the foundations for language and cognitive development. The number and quality of the conversations they have with adults and peers throughout the day in a language-rich environment is crucial. By commenting on what children are interested in or doing, and echoing back what they say with new vocabulary added, practitioners will build children's language effectively. Reading frequently to children, and engaging them actively in stories, non-fiction, rhymes and poems, and then providing them with extensive opportunities to use and embed new words in a range of contexts, will give children the opportunity to thrive. Through conversation, storytelling and role play, where children share their ideas with support and modelling from their teacher, and sensitive questioning that invites them to elaborate, children become comfortable using a rich range of vocabulary and language structures.

Concept: Natural World, Listening, Attention and Understanding, Speaking and Managing Self - SCIENCE

Nursery

Development Matters Pathway	**Ourselves**	**Animal Kingdom**	**Our Wonderful World**
Understanding the World *Use all their senses in hands-on exploration of natural materials*	• Explore a variety of natural autumn materials. • Investigate the different materials that the three little pigs use to build their houses.		• Share stories, 'Oliver's Vegetables' and 'Handa's Surprise'. Explore a variety of fruit and vegetables using our senses. (Cycle A) • Explore the non-fiction text 'Welcome to the Rock Pool'. Make and explore own rock pool. (Cycle B)
Explore collections of materials with similar and/or different properties	• Explore a variety of natural autumn materials. • Investigate a variety of objects that float or sink.		
Talk about the differences between materials and changes they notice	• Ask children to bring in Autumn leaves, observe and compare the colours and textures and talk about how they change. • Hairdryer experiment. Explore how the materials for the three little pigs' houses can withstand the	• Collect ice or snow and observe how it changes when it is inside. • Melt chocolate to make Easter nests.	

	force of the wind.		
Talk about what they see, using a wide vocabulary	• Talk about the outside Nursery environment using appropriate language.		
Plant seeds and care for growing plants			• Plant a bean and care for it. (Cycle A) • Plant a sunflower seed and care for it. (Cycle B)
Understand the key features of the life cycle of a plant and an animal		• Learn about the life cycle of a chick. (Cycle A) • Learn about the life cycle of a duck. (Cycle B)	• Learn about the life cycle of a bean and carry out a grow a bean in a bag investigation. (Cycle A) • Learn about the life cycle of a sunflower. Plant sunflower seeds and talk about the changes as it grows. (Cycle B)
Begin to understand the need to respect and care for the natural environment and all living things		• Learn how to care for and look after pets. (Cycle A) • Learn how to care for and look after a chick/duck.	• Share story 'Harry saves the Ocean' and talk about safe disposal of litter and how we can recycle to help the natural environment. (Cycle B) • Talk about the outside Nursery environment and how we need to care for and look after the plants.
Explore and talk about different forces they can feel	• Talk about the autumnal weather and how it can feel like it is pushing or pulling us e.g. wind blowing. • Explore a range of toys from the past and present, looking at how they work and move.		
Personal, Social and Emotional Development *Make healthy choices about food, drink, activity and toothbrushing.*		• Share the story, 'Handa's Surprise'. Link eating fruit to healthy eating. Sort healthy and unhealthy foods, linked to sugary snacks. Set teeth brushing challenge. (Cycle B)	• Share the story, 'I will never ever eat a tomato'. Link eating fruit to healthy eating. Sort healthy and unhealthy foods, linked to sugary snacks. Set teeth brushing challenge. (Cycle A)
Learning beyond the classroom:		• Visit from Pets at Home/pet dog/police dog. • Chick/Duckling hatching.	

Reception			
Development	**Our Community**	**Night and Day**	**Growing and Changing**

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Matters Pathway			
Understanding the World *Explore the natural world around them*	• Explore the woods surrounding Acklam to look for signs of Autumn. Collect leaves, twigs, conkers etc. • Investigate pumpkins and what is inside them. • Investigate a variety of objects that float or sink.	• Explore the outdoor classroom and go on a local area walks to look for signs of Winter/Spring. • Carry out an 'Is it soft?' investigation linked to making cuddle pets, explore and sort natural materials e.g. fur, feathers, wood etc. • Look at surface of the moon, make moon dust and explore how craters are made. • Share story 'A Tale of Two Feathers' and explore some nocturnal and diurnal animals.	• Display photographs and explore our environment to look for signs of Summer. • Scavenger hunt to collect natural things to match clues e.g. something wet, a leaf with one point etc. • Identify and the different parts of a plant by exploring cut up parts. Grow sunflowers from seeds.
Describe what they see, hear and feel while they are outside		• Make bird cakes to take home and put in the outdoor classroom. Observe the birds/animals that visit them. • Compare images of day and night and describe differences in the things we see.	• Observe plants and flowers growing around our school, describe and draw them. • Investigate and identify minibeasts living in the planters and grassy/muddy areas around our school.
Recognise some environments that are different to the one in which they live	• Look at images and share video clips of Harvest time on a farm in Autumn.	• Look at images of habitats around the world for example North and South Pole, deserts, rainforests, coral reef, grasslands and compare and describe differences to the habitats in Acklam.	• Share the story 'Town Mouse and Country Mouse'. Compare features of Middlesbrough to the countryside. • Explore a farm, notice the differences including sights, sounds and smells and ask questions to find out more.
Understand the effect of changing seasons on the natural world around them.	• Explore and describe the different shapes and colours of Autumn leaves. Make rubbings of them and identify the leaves to the correct trees. • Share the story 'Don't Hog the Hedge' learn what hibernation means and which animals hibernate. • Talk about the weather we experience in Autumn.	• Talk about the weather we experience in Winter and Spring. • Carry out an ice cube experiment; storing them in different places and observing the changes in state. • Learn about the life cycle of a frog by growing our own frogs from frogspawn.	• Talk about the weather we experience in Summer. • Learn about the life cycle of a butterfly by growing our own butterflies from caterpillars.
Personal, Social and Emotional Development *Know and talk about the different factors that support their overall health and wellbeing*		• Explore the importance of good routines including toothbrushing, sensible amounts of 'screen time, having a good sleep routine - give a short presentation to parents. • Carry out a 'clean teeth' investigation to measure the impact of eating and drinking sugary foods using eggs to represent our teeth.	• Explore the importance regular physical activity and healthy eating (linked to sports week). • Look at a skeleton, identify and label parts of the body.
Learning beyond the classroom	• Acklam woodland walk – signs of Autumn	• Bedtime routines presentation to parents • Growing frogs	• Farm Visit • Growing butterflies

		• Local area walk – signs of Winter and Spring	

Seasons and significant celebrations to be taught across the year in line with when they take place.

Progression steps within the concept		Plants	Animals including Humans	Everyday Materials	Seasonal Changes	States of Matter	Forces	Sounds
	Nursery	• I can plant seeds and know some ways to care for them.	• I know that a chick/duckling hatches from an egg. • I know that the natural environment around Acklam provides homes for different animals and that we must look after it. • I can name some foods that are good for my body. • I know some ways to look after my teeth.	• I can explore collections of natural and man-made materials with similar and different textures, firmness, and colours and sort them e.g. 'rough/smooth' 'hard/soft', colour names, 'bright/ dark'. • I can talk about what I am experiencing and how I have sorted the materials.	• I can explore and talk about things I see in the different seasons.	• I can notice changes in materials e.g. snow or chocolate melting.	• I can explore and talk about different forces that I can feel. • I can explore how things work such as wind-up toys, pulleys and pegs with boards.	• I can identify what is making some of the sounds that I hear.

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	Reception	• I can describe the plants that I see in the natural world around me in Acklam. • I can name some of the parts of a plant. • I know that the plants I find in places other than Acklam might be the same or different. • I can name some of the plants that I find in Acklam. • I can observe and draw pictures of plants in the natural world in Acklam.	• I can describe the animals that I see in the natural world in Acklam. • I know that the animals I find in places other than Acklam might be the same or different. • I can name some of the animals that I find in Acklam. • I can name some animals found in places other than Acklam. • I can observe and draw pictures of animals in the natural world in Acklam. • I know what hibernation means and can name some animals that hibernate. • I can name some nocturnal and diurnal animals. • I can name parts of my body. • I know how to look after my teeth. • I can talk about ways to stay healthy.	• I can begin to name some everyday materials. • I can continue to explore, sort and talk about the features of natural materials.	• I can describe some of the changes that take place over the seasons and what that looks like in Acklam e.g. weather, plants, animal behaviour etc. • I can describe the weather that I might experience in places other than Acklam. • I can talk about the effects of some weathers e.g. that puddles are formed by rain, that rainbows are formed by rain and sunshine.	• I can talk about changes in materials and describe the change that has taken place e.g. freezing or melting.		• I can describe the sounds, I hear day to day in Acklam, including their source, loudness, speed. • I can predict the causes of some sounds when I cannot see their source. • I can describe what sounds I might hear day to day in places other than Acklam.

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Early Learning Goal: **Understanding the World: The Natural World:** Children at the expected level of development will: • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	**Development Matters Pathway: Communication and Language:** **Nursery** • Use a wider range of vocabulary. • Understand 'why' questions, like: "why do you think the caterpillar is so fat?" **Reception** • Learn new vocabulary. • Use new vocabulary in different contexts. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.
Early Learning Goal: **Personal, Social and Emotional Development: Managing Self:** Children at the expected level of development will: • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.	**Early Learning Goal:** **Communication and Language: Listening, Attention and Understanding:** Children at the expected level of development will: • Make comments about what they have heard and ask questions to clarify their understanding. **Speaking:** Children at the expected level of development will: • Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.

Year 1				
	Everyday Materials	**Plants**	**Animals including humans**	**Seasonal Changes**
Vocabulary	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	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud flowering plant, wild tree, deciduous, evergreen (names of common plants and trees in the local area and those children may see regularly)	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, fish, bird, amphibian, mammal, reptile. Senses – touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue	Weather (sunny, rainy, windy, snowy etc.) Seasons (winter, summer, spring, autumn) Sun, sunrise, sunset, day length
Skills	Asking simple **questions** and recognising that they can be answered in different ways **Observing** closely, using simple equipment Performing simple **tests** **Identifying** and **classifying** **Using their observations** and ideas to suggest answers to questions Gathering and **recording** data to help in answering questions.			

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Knowledge and Understanding	• 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 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.	• 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)	• Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies.
Learning beyond the classroom		Outdoor Classroom		
ARE: Skills	Ask simple questions with support With support, can say whether to carry out a simple test, observe, research or ….. Can make observations using simple equipment Can perform a simple test Can record finding in a range of ways. Can begin to use simple scientific language Can record data Can use data and observations to answer questions			
ARE: Knowledge	• Can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock • Can identify and describe the simple physical properties of a variety of everyday materials • Can group everyday materials based on their properties. • Can name the material from which everyday objects are made. • Can distinguish between the object and the material from which it is made.	• Can name a variety of wild plants. • Can name a variety of garden plants • Can explain the difference between deciduous and evergreen trees. • Can name some evergreen trees • Can name some deciduous trees. • Can identify the features of flowering plants and trees. • Can explain the differences between living, non-living and have never lived things.	• Can identify a variety of animals in the groups: fish, reptiles, amphibians, birds mammals. • Can identify the simple features of animals from each group (include pets) • Can use the terms carnivore, herbivore and omnivore. • Can identify a range of animals from each group. • Can identify the basic parts of a human body. • Can draw and label the basic parts of the human body • Can name the 5 senses. • Can identify the body part associated with each of the senses.	• Can describe seasonal changes. • Can identify weather patterns related to each season. • Can describe what happens to the length of the day in each season.

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Year 2				
	Everyday Materials	**Plants**	**Animals including humans**	**Living Things and Habitats**
Vocabulary	wood, metal, plastic, glass, brick, rock, paper, cardboard hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud flowering plant, wild tree, deciduous, evergreen light, shade, sun, warm, cool, water, grow, healthy, bulb	Offspring, adults, babies, young, food, air, water, food, diet, healthy, unhealthy	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed habitats micro-habitats, food, source,
Skills	Asking simple **questions** and recognising that they can be answered in different ways **Observing** closely, using simple equipment Performing simple **tests** **Identifying** and **classifying** **Using their observations** and ideas to suggest answers to questions Gathering and **recording** data to help in answering questions.			
Knowledge and Understanding	• 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.	• 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.	• 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.	• 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.
Learning beyond the		Outdoor classroom		

classroom				
ARE: Skills	Ask simple questions with support With support, can say whether to carry out a simple test, observe, research or ….. Can make observations using simple equipment Can perform a simple test Can record finding in a range of ways. Can begin to use simple scientific language Can record data Can use data and observations to answer questions			
ARE: Knowledge	• Can explain that some solids made form different materials can be changed by twisting, bending, squashing and stretching. • Can identify which common materials can be used for a particular purpose. • Can compare different materials for different materials.	• Can describe how plants need water, light and a suitable temperature to grow and stay healthy. • Can describe how seeds and bulbs germinate and grow into mature plants • Can describe why light is not necessarily needed for germination.	• Can explain that animals and humans have off spring that grow into adults. • Can identify the basic needs of humans and animals for survival. • Can identify foods that are healthy and unhealthy for humans. • Can explain why exercise is good for humans. • Can explain the importance of hygiene for humans.	• Can explain the term habitat. • Can name a variety of different habitats. • Can identify a range of animals within a type of habitat. • Can explain how the animals are adapted to living in their habitat. • Can identify a range of plants within a type of habitat. • Can explain how animals obtain their food from plants and other animals. • Can name different sources of food for a range of animals.

Year 3					
	Light	**Forces and Magnets**	**Rocks**	**Plants**	**Animals including humans**
Vocabulary	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous	Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil, formation	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind, animal, water) *anther, stigma, stamen, style filament* light, shade, sun, warm, cool, water, grow, healthy, bulb Leaf, flower, petal, fruit, berry, root, seed, , stem, stalk, bud flowering plant,	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, diet, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine
Skills	Asking relevant **questions** and using different types of scientific enquiries to answer them				

	Using **straightforward scientific evidence** to answer questions or to support their findings. Setting up simple practical **enquiries**, comparative and **fair tests** Making systematic and careful **observations** and, where appropriate, taking accurate **measurements** using **standard units**, using a range of equipment. Gathering, recording, classifying and presenting **data** in a variety of ways to help in answering questions **Recording** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables **Reporting** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions **Using results** to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions **Identifying** differences, similarities or changes related to simple scientific ideas and processes Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge				
Knowledge and Understanding	• 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.	• 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.	• 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.	• 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.	• 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.
Learning beyond the classroom					
ARE: Skills	Can ask relevant questions when prompted. With support, can plan different types of scientific enquiries to answer questions. Can set up simple and practical enquiries, comparative and fair tests. Can make systematic and careful observations using a range of equipment. Can take accurate measurements using standard units, where appropriate				

	Can record findings using simple scientific language, drawings and labelled diagrams Can record findings using keys, bar charts, and tables Can gather, record, classify and present data in a variety of ways to help to answer questions Can report on findings from enquiries, including oral and written explanations, of results and conclusions Can report on findings from enquiries using displays or presentations Can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions				
ARE: Knowledge	• Can explain that they need light in order to see things and that dark is the absence of light • Can explain that light is reflected from surfaces • Can explain that shadows are formed when the light from a light source is blocked by a solid object. • Can find and explain patterns in the way that the size of shadows change	• Can explain that magnets attract or repel each other and attract some materials and not others. • Can identify magnetic and non-magnetic materials. • Can describe magnets as having two poles • Can predict whether two magnets will attract or repel each other, depending on which poles are facing • Can explain how things move on different surfaces • Can explain that forces move or stop, speed up or slow down or change the shape of objects. • Can identify a force as a push or pull.	• Can describe in simple terms how fossils are formed. • Can explain that soils are made from rocks and organic matter • Can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	• Can explain the conditions needed for plant growth. • Can explain that these vary from plant to plant. • Can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • Can explain the way in which water is transported within plants • Can explain the role of the flower in plant reproduction. • Can identify different methods of seed dispersal.	• Can explain that animals including humans, have skeletons for support and protection • Can explain that animals including humans, have muscles to help them move • Can explain that animals including humans, get nutrition from what they eat. • Can identify the major food groups in a human diet. • Can explain how the different groups help the body. • Can explain why a balanced diet is needed.

Year 4					
	Sound	**Electricity**	**States of Matter**	**Living things and their Habitats**	**Animals including humans**
Vocabulary	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	Electricity, electrical appliance/device, mains, plug, circuit, complete circuit, component, cell, battery, positive, negative, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol	Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate **fish, bird, amphibian, mammal, reptile.** insect, snail slug spider worm crustaceans Non-flowering vertebrates	Digestive system, digestion, **mouth**, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain Nutrition,

				non-vertebrates	nutrients, energy
Skills	Asking relevant **questions** and using different types of scientific enquiries to answer them Using **straightforward scientific evidence** to answer questions or to support their findings. Setting up simple practical **enquiries**, comparative and **fair tests** Making systematic and careful **observations** and, where appropriate, taking accurate **measurements** using **standard units**, using a range of equipment. Gathering, recording, classifying and presenting **data** in a variety of ways to help in answering questions **Recording** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables **Reporting** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions **Using results** to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions **Identifying** differences, similarities or changes related to simple scientific ideas and processes Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge				
Knowledge and Understanding	• 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.	• 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.	• 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 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.	• 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.
Learning beyond the classroom					

ARE: Skills	Can ask relevant questions when prompted. With support, can plan different types of scientific enquiries to answer questions. Can set up simple and practical enquiries, comparative and fair tests. Can make systematic and careful observations using a range of equipment. Can take accurate measurements using standard units, where appropriate Can record findings using simple scientific language, drawings and labelled diagrams Can record findings using keys, bar charts, and tables Can gather, record, classify and present data in a variety of ways to help to answer questions Can report on findings from enquiries, including oral and written explanations, of results and conclusions Can report on findings from enquiries using displays or presentations Can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions				
ARE: Knowledge	• Can identify how sounds are made. • Know that sound travels through a medium to the ear. • Can recognise that sounds get fainter as the distance from the sound source increases. • Can find patterns between the pitch of a sound and features of objects that produced it. • Can find patterns between the volume of a sound and the strength of the vibrations that produced it	• Can identify common appliances that run on electricity. • Can construct a simple series electrical circuit. • Can identifying and name its basic parts of a circuit: cells, wires, bulbs, switches and buzzers. • Can name some common conductors and insulators. • Know that metals are good conductors. • Recognises that a switch opens and closes a circuit. • Can identify possible reason for a lamp not lighting in a circuit.	• Know that materials are either solids, liquids or gasses. • Can explain how particles are arranged in solids, liquids and gasses. • Can compare and group materials together, according to whether they are solids, liquids or gases. • Knows that some materials change state when they are heated or cooled. • Can state the temperature at which this change of state happens in degrees Celsius (°C) • Can explain the processes of evaporating and condensing. • Can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	• Can group animals into vertebrates and invertebrates. • Can group vertebrates into fish, reptiles, mammals, birds amphibians. • Can group invertebrates into snails, slugs, worm, spiders, insects, crustaceans. • Can group plants into flowering and non- flowering. (ferns and mosses) • Can use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Can understand that environments can change and that this sometimes pose dangers to living things	• Can name the basic parts of the digestive system in humans. • Can describe the simple functions of the basic parts of the digestive system in humans

Year 5					
	Properties and Changes of	**Earth and Space**	**Forces and Magnets**	**Living things and their**	**Animals including humans**

Whole School Science Scheme

	Materials			**Habitats**	
Vocabulary	Insulator, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, opaque, transparent and translucent, reflective, non-reflective, flexible, rigid	Universe planets space orbit sphere spherical axis rotate(s) star phases Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune),	gravity air resistance water resistance lever gear pully up-thrust mechanisms contact force, non-contact force, magnetic force, push pull magnetism force friction twist	Life cycle reproduction complete metamorphosis incomplete metamorphosis flowering, non-flowering pollination, seed formation	Change life cycle reproduction life process puberty
Skills	Planning different types of scientific enquiries to answer **questions**, including recognising and controlling variables where necessary Taking **measurements**, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate **Recording** data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs **Using test results** to make predictions to set up further comparative and fair tests **Reporting** and **presenting** findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Identifying **scientific evidence** that has been used to support or refute ideas or arguments.				
Knowledge and Understanding	• 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	• 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.	• 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.	• 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 the changes as humans develop to old age.

	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.				
Learning beyond the classroom		Visit planetarium Life centre		Outdoor classroom	
ARE: Skills	With prompting, can plan different types of scientific enquiries to answer question, eg experiment, investigation, observation With prompting, can recognise and control variables where necessary: can say what to change, measure and keep the same Can select and use appropriate equipment to take readings Can take precise measurements using standard units Can take and process repeat readings Can record data using labelled diagrams, keys, tables and charts Can use line graphs to record data Can report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships With support, can present findings from enquiries orally and in writing With prompting, can identify that not all results may be trustworthy Can suggest how evidence can support conclusions Can suggest further comparative or fair tests				
ARE: Knowledge	• Can state the different properties that materials may possess. • Can compare and group together materials on the basis of their properties. • Can identify some materials that will dissolve in liquid to	• Can describe the movement of the Earth, and other planets, relative to the Sun in the solar system • Can name the planets of our solar system and their order form the sun • Can describe the movement	• Can explain that unsupported objects fall towards the Earth because of the force of gravity. • Can identify the effects of air resistance, water resistance and friction, that act between moving surfaces	• Can describe the life cycle of a mammal, bird, amphibian • Can identify similarities and differences in life cycles of 2 insects • Can state if a life cycle is complete or incomplete metamorphosis.	• Can explain how humans change over time.

	form a solution and some that will not. • Can describe how to recover a substance from a solution, including through filtering, sieving and evaporating • Can explain that some changes are reversible and some are not. • Can name some reversible and irreversible changes.	of the Moon relative to the Earth • Know that the earth sun and moon are spherical bodies. • Can describe how we get day and night using their knowledge of how the Earth rotates.	• Know that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	• Can explain the process of pollination.	

Year 6					
	Light	**Electricity**	**Evolution and Inheritance**	**Living things and their Habitats**	**Animals including humans**
Vocabulary	Light, plus straight lines, light rays Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect,	Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage	Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering micro-organism mollusc annelid crustacean arachnid	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle
Skills	Planning different types of scientific enquiries to answer **questions**, including recognising and controlling variables where necessary Taking **measurements**, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate **Recording** data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs **Using test results** to make predictions to set up further comparative and fair tests **Reporting** and **presenting** findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Identifying **scientific evidence** that has been used to support or refute ideas or arguments.				
Knowledge and Understanding	• 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	• 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	• 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	• 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	• 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

	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.	bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram.	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.	• Give reasons for classifying plants and animals based on specific characteristics.	function • Describe the ways in which nutrients and water are transported within animals, including humans.
Learning beyond the classroom					
ARE: Skills	With prompting, can plan different types of scientific enquiries to answer question, eg experiment, investigation, observation With prompting, can recognise and control variables where necessary: can say what to change, measure and keep the same Can select and use appropriate equipment to take readings Can take precise measurements using standard units Can take and process repeat readings Can record data using labelled diagrams, keys, tables and charts Can use line graphs to record data Can report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships With support, can present findings from enquiries orally and in writing With prompting, can identify that not all results may be trustworthy Can suggest how evidence can support conclusions Can suggest further comparative or fair tests				
ARE: Knowledge	• I recognise that light appears to travel in straight lines. • I can understand that objects can be seen because they give out or reflect light into the eye. • I know that as light travels in straight lines shadows have the same shape as the objects that cast them. • I can 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. • .	• I can use recognised symbols in a simple circuit diagram. • I can compare and give reasons for variations in how components function. • I can associate the brightness of a bulb or loudness of a buzzer with the number and voltage of cells used in the circuit.	• I can recognise that living things have changed over time. • I know that fossils provide information about living things that lived on Earth millions of years ago. • I k now that living things produce offspring of the same kind. • I know that offspring normally vary and are not identical to their parents. • I know that offspring can share some similar traits with their parents.	• Can give a number of characteristics that explain why an animal belongs to a particular group. • Can state the different groups in which plants and animals can be classified within.	• I can identify and name the main parts of the human circulatory system. • I can describe the functions of the heart, blood vessels and blood. • I can recognise the positive impact of diet, exercise on how my body functions. • I can recognise the negative impact some drugs can have on my body. • I understand the different effects positive/negative lifestyle can have on my body.

			• I can identify how a plant or animal is adapted to their environment. • I know adaptions can lead to evolution.		• I can describe the ways in which nutrients and water are transported within humans.