



SMC Intent, Implementation and Impact of Science

Intent

At St Margaret Clitherow (SMC) teaching of all subjects are firmly rooted in the overarching principles of our mission statement to develop a love of learning, develop our faith and grow as people. Through our ambitious and logically sequenced science education children, will be provided with a foundation for understanding of the world around them. Our science curriculum aims to develop a curiosity and excitement around science.

Children are taught substantive concepts linked to the three areas of science: Biology, Chemistry and Physics. Through engaging tasks and investigations, they build the disciplinary knowledge of; observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing; and researching using secondary sources. Children are taught key topic vocabulary and have opportunities to practise and embed this overtime.

Children are encouraged to understand how science can be used to explain what is occurring, predict how things will behave and analyse cause and effect. Children are provided with opportunities to engage with science using our school garden, the wider grounds including a field and wooded area including a bug habitat and through an enrichment science week.

Implementation

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout our school. Science teaching at SMC involves adapting and extending the curriculum to match all pupils' needs. Although staff are provided with a scheme of work and teaching sequence to follow, teachers plan to suit their children's interests, current events, their own teaching style, the use of any support staff and the resources available.

Science is taught consistently in standalone lessons, once a week for up to two hours, but is discretely taught in many different contexts throughout all areas of the curriculum. For example, through our guided reading/comprehension sessions and RSHE.

At SMC we promote independence for all students to take responsibility in their own learning, therefore we have implemented knowledge organisers which enables the student to articulate key scientific vocabulary clearly and precisely, assisting them in making their thinking clear, both. In addition, we have topic and self assessments. At SMC we ensure that all students are exposed to rich learning experiences that:

- Make links between science and other subjects.
- Build on our student's natural curiosity and develop a scientific approach to solving problems.
- Help our students acquire a growing understanding of the nature, processes and methods of scientific ideas.
- Help develop and extend our student's scientific concept of the world they live in.
- Develop the use of scientific language and vocabulary, recording and techniques.
- Encourages open-mindedness, self-assessment, resilience and developing the key scientific skills including: observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.

Impact

The impact and measure of this is to ensure all students including disadvantaged and SEN acquire the appropriate age-related knowledge linked to the science curriculum. Our aim for science is to increase the skills needed to navigate an ever-changing world of science and technology by immersing our students with scientific enquiry skills, key scientific knowledge. We aim to create a culture of high scientific aspirations, which will allow our students a platform to develop their scientific learning and careers, and to articulate their understanding of key scientific concepts.

Science Content Overview

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2	
	All about me/ Autumn	Winter Animals	Safe & Healthy	Growing	Around the World/Animals and Habitats, climate heroes	To The Rescue!	
EYFS	Understanding the World Science at Foundation Stage is covered in the ‘Understanding the World’ area of the EYFS Curriculum. It is introduced indirectly through activities that encourage every child: - to explore the natural world around them - show curiosity and ask questions - make observations using their senses and simple equipment - make direct comparisons - use equipment to measure - record their observations by drawing, taking photographs, using sorting rings or boxes and, in Reception, on simple tick sheets - use their observations to help them to answer their questions - talk about what they are doing and have found out - identify, sort and group. Children should also 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. Describe what they see, hear and feel whilst outside; recognise some environments that are different to the one in which they live; Understand the effect of changing seasons on the natural world around them and understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.						
Wow Moments	Autumn Walk, How I’ve grown! Life as babies, RSPB National Bird Watch Mental Health Week: Yoga Session, Spring Walk ,Gardening Living Eggs – hen/ducklings* Animals all around (bugs, pets, farm animals, zoo & wild animals), Climate problem solving – litter picking, water, recycling, Butterfly life Cycle.						
Year1	Science Focus						
		Animals including Humans	Animals including Humans - continued	Habitats	Everyday Materials	Plants	Plants continued
	Year 1 Programme of Study	Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals.	As in Autumn 1	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.	Distinguish between an object and the material from which it is made.	Identify and name a variety of common and wild garden plants, including deciduous and evergreen trees.	As in summer 1
		Identify and name a variety of common animals that are carnivores, herbivores and omnivores.		Identify and name a variety of plants and animals in their habitats, including micro-habitats.	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.	Identify and describe the basic structure of a variety of common flowering plants, including trees.	

	and mammals, including pets).			a variety of everyday materials on the basis of their simple physical properties.		
	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.					
KS1 Working Scientifically	Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: 1. Asking simple questions and recognising that they can be answered in different ways. 2. Observing closely, using simple equipment. 3. Performing simple tests. 4. Identifying and classifying. 5. Using their observations and ideas to suggest answers to questions. 6. Gathering and recording data to help in answering questions. 7. Using scientific language <i>Pupils should also use: simple scientific language, secondary sources (books, photographs, videos), grouping and classifying, simple comparative tests and notice patterns.</i>					
Vocabulary Progression	• Names of animal groups: fish, amphibians, reptiles, birds, mammals. • Animal diets: carnivore, herbivore, omnivore. • Human and animal body parts: e.g. body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills. • Human senses: sight, hearing, touch, smell, taste. • Exploring senses: loud, quiet, soft, rough. • Other: human, animal, pet. • Names of common plants: wild plant, garden plant, evergreen tree, deciduous tree, common flowering plant, weed, grass. • Name some features of plants: e.g. flower, vegetable, fruit, berry, leaf/leaves, blossom, petal, stem, trunk, branch, root, seed, bulb, soil. • Name some common types of plant • Seasons: spring, summer, autumn, winter, seasonal change. • Weather: e.g. sun, rain, snow, sleet, frost, ice, fog, cloud, hot/warm, cold, storm, wind, thunder, weather forecast. • Measuring weather: temperature, rainfall, wind direction, thermometer, rain gauge. • Day length: night, day, daylight. • Names of materials: wood, plastic, glass, metal, water, rock, paper, cardboard, rubber, fabric. • Properties of materials: hard, soft, shiny, dull, stretchy, rough, smooth, transparent, opaque, waterproof, not waterproof, absorbent, not absorbent, sharp, stiff. • Other: object					

	Science Focus						
		Animals including Living Things	Seasonal changes	Habitats	Everyday Materials	Plants	Seasonal changes
Year 2							
	Year 2 Programme of Study	Explore and compare the differences between things that are living, dead and things that have never been alive. 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	Observe changes across the four seasons. Introduced here to be carried out over the year. Observe and describe weather associated with the seasons and how day length varies.	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.	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.	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.	Observe changes across the four seasons. Review of changes through the seasons Observe and describe weather associated with the seasons and how day length varies.
	KS1 Working Scientifically	Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: 1. Asking simple questions and recognising that they can be answered in different ways. 2. Observing closely, using simple equipment. 3. Performing simple tests. 4. Identifying and classifying. 5. Using their observations and ideas to suggest answers to questions. 6. Gathering and recording data to help in answering questions. 7. Pupils should also use: simple scientific language, secondary sources (books, photographs, videos), grouping and classifying, simple comparative tests and notice patterns.					

- Growth of plants: germination, shoot, seed dispersal, grow, food store, life cycle, die, wilt, seedling, sapling.
- Needs of plants: sunlight, nutrition, light, healthy, space, air.
- Name different types of plant: e.g. bean plant, cactus.
- Names of different habitats: e.g. rainforest, desert.

Previously introduced vocabulary: water, temperature, warm, hot, cold, habitat.

- Living or dead: living, dead, never living, not living, alive, never been alive, healthy.
- Habitats including microhabitats: depend, shelter, safety, survive, suited, space, minibeast, air.
- Life processes: movement, sensitivity, growth, reproduction, nutrition, excretion, respiration.
- Food chains: food sources, food, producer, consumer, predator, prey.
- Names of habitats and microhabitats: e.g. under leaves, woodland, rainforest, sea shore, ocean, urban, local habitat.

Previously introduced vocabulary: senses, carnivore, herbivore, omnivore, seed, water, names of materials.

- Changing shape: squash, bend, twist, stretch.
- Properties of materials: e.g. strong, flexible, light, hard-wearing, elastic.
- Other: suitability, recycle, pollution.

Year 3	Science Focus	Animals, including humans (muscles & skeletons)	Rocks & Fossils	Magnets and Forces	Light & Shadow	Plants (including climate zones)	Plants continued
	Year 3 Programme of Study	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.	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.	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.	Light 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 a solid object. Find patterns in the way that the size of shadows change.	Identify and describe the functions of different parts of flowering plants, roots, stems, leaves and flowers. Explore the requirements of plants for light and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant. Investigate the way water is transported within plants. Explore the part flowers play in the life cycle of plants, including pollination, seed formation & seed dispersal.	Continue skills from Autumn 1 And recap any key skills missed.
	LKS2 Working Scientifically	Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: 1. Asking relevant questions and using different types of scientific enquiries to answer them. 2. Setting up simple practical enquiries, comparative and fair tests. 3. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. 4. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. 5. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. 6. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. 7. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. 8. Identifying differences, similarities or changes related to simple scientific ideas and processes. 9. Using straight forward scientific evidence to answer questions or to support their findings. <i>Pupils should also: read & spell scientific vocabulary, use secondary sources (books, photographs, videos), group and classify, observe changes over time & notice patterns.</i>					

•Growth of plants: germination, shoot, seed dispersal, grow, food store, life cycle, die, wilt, seedling, sapling.

Needs of plants: sunlight, nutrition, light, healthy, space, air.

Name different types of plant: e.g. bean plant, cactus.

Names of different habitats: e.g. rainforest, desert.

Previously introduced vocabulary: water, temperature, warm, hot, cold, habitat.

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- Food groups and nutrients: fibre, fats (saturated and unsaturated), vitamins, minerals.
- Skeletons and muscles: skeleton, muscles, tendons, joints, protection, support, organs, voluntary muscles, involuntary muscles, biceps, triceps, contract, relax, bone, cartilage, shell, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton.
- Names of human bones: e.g. skull, spine, backbone, vertebral column, ribcage, pelvis, clavicle, scapula, humerus, ulna, pelvis, radius, femur, tibia, fibula.
- Other: energy.

Previously introduced vocabulary: movement.

- How things move: move, movement, surface, distance, strength.
- Types of forces: push, pull, contact force, non-contact force, friction.
- Magnets: magnetic, magnetic field, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic poles (north pole, south pole), attract, repel, compass.
- Magnetic and non-magnetic materials: e.g. iron, nickel, cobalt.

Previously introduced vocabulary: metal, names of materials.

- Light and seeing: dark, absence of light, light source, illuminate, visible, shadow, translucent, energy, block.
- Light sources: e.g. candle, torch, fire, lantern, lightning.
- Reflective light: reflect, reflection, surface, ray, scatter, reverse, beam, angle, mirror, moon.
- Sun safety: dangerous, glare, damage, UV light, UV rating, sunglasses, direct.

Previously introduced vocabulary: opaque, transparent, sunlight, sun.

	Science Focus	<i>Animals including humans (Teeth & Digestion)</i>	<i>Electricity in our homes</i>	<i>Sound</i>	<i>States of Matter</i>	<i>Living Things and Their Habitats (Classification)</i>	<i>Living Things and Their Habitats (Classification)</i>
Year 4 Programme of Study		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.	Electricity 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.	Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sound 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 vibration that produced it. Recognise that sounds get fainter as the distance from the sound source increases.	Compare and group materials together according to whether they are solids, liquids or gases. Observe that some materials change state according to when they are heated or cooled and measure or research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Living things and their Habitats 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.	Living things and their Habitats 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.
LKS2 Working Scientifically		Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: 1. Asking relevant questions and using different types of scientific enquiries to answer them. 2. Setting up simple practical enquiries, comparative and fair tests. 3. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. 4. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. 5. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. 6. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. 7. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. 8. Identifying differences, similarities or changes related to simple scientific ideas and processes. 9. Using straight forward scientific evidence to answer questions or to support their findings. Pupils should also: read & spell scientific vocabulary, use secondary sources (books, photographs, videos), group and classify, observe changes over time & notice patterns.					

	Vocabulary Progression year 4	
		• Digestive system: digest, digestion, tongue, teeth, saliva, salivary glands, oesophagus, stomach, liver, pancreas, gall bladder, small intestine, duodenum, large intestine, rectum, anus, faeces, organ. • Types of teeth and dental care: molar, premolar, incisor, canine, wisdom teeth, tooth decay, plaque, enamel, baby (milk) teeth. • Food chains and animal diets: decomposer, food web. Previously introduced vocabulary: producer, consumer, prey, predator, excretion, habitat. • Living things: organisms, specimen, species. • Grouping living things: classification, classification keys, classify, characteristics. • Names of invertebrate animals: snails and slugs, worms, spiders, insects. • Invertebrate body parts: e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs. • Environmental changes: environment, environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, endangered species, extinct. Previously introduced vocabulary: carbon dioxide, fish, bird, mammal, amphibian, reptile, skeleton, bone, vertebrate, invertebrate, backbone, names for animal body parts, names of common plants, photosynthesis. • Parts of the ear: eardrum. • Making sound: vibration, vocal cords, particles. • Measuring sound: pitch, volume, amplitude, sound wave, quiet, loud, high, low, travel, distance. • Other: soundproof, absorb sound. • Electricity: mains-powered, battery-powered, mains electricity, plug, appliances, devices. • Circuits: circuit, simple series circuit, complete circuit, incomplete circuit. • Circuit parts: bulb, cell, wire, buzzer, switch, motor, battery. • Materials: electrical conductor, electrical insulator. • Other: safety. Previously introduced vocabulary: names of materials. • States of matter: solids, liquids, gases, particles. • State change: evaporate, condense, melt, freeze, heat, cool, melting point, freezing point, boiling point, water vapour. • Water cycle: precipitation, evaporation, condensation, ground run-off, collection, underground water, bodies of water (sea, river, stream), water droplets, hail. • Other: atmosphere. Previously introduced vocabulary: temperature, rain, cloud, snow, wind, sun, hot, cold, absorb, carbon dioxide

Year 5	Year 5						
	Science Focus	Materials & Properties	Forces	Earth & Moon	Space	Living Things & Their Habitats	Animals inc. Humans
	Year 5 Programme of Study	Compare and group together everyday materials on the basis of their properties including hardness, solubility, transparency, conductivity and response to magnets.	Explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and a falling object.	Describe the movement of the earth and other planets relative to the sun in the solar system.	Describe the Sun, Earth and Moon as spherical.	Describe the differences in the life cycles of a mammal and amphibian and a insect and a bird.	Describe the changes as humans develop to old age.
Give reasons based on evidence from comparative and fair tests for the particular uses of everyday materials, including metals, wood and plastic.		Identify the effects of air resistances, water resistance and friction that act between moving surfaces.	Describe the movement of the moon relative to the earth.	Name the planets in the solar system.	Describe the life process of reproduction in some plants and animals.		
Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.		Recognise that some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect	Describe the sun, earth and moon as approximately spherical bodies.	Distinguish between heliocentric and geocentric ideas of planetary movement.			
Demonstrate that dissolving, mixing and changes of state are reversible changes.			Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Support the idea that different places on Earth experience night and day at different times with evidence.			
Use knowledge of solids, liquids and gases to describe how mixtures might be separated including through filtering, sieving and evaporating.				Know some scientific figures connected with space exploration			
	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.					
	UKS2 Working Scientifically	Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: 1. Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. 2. Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. 3. Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 4. Using test results to make predictions to set up further comparative and fair tests. 5. 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. 6. Identifying scientific evidence that has been used to support or refute ideas or arguments. <i>Pupils should also: use, say, read & spell scientific vocabulary correctly, use wide range of secondary sources, group and classify, observe changes over different periods of time & notice patterns. Ask own questions and analyse functions, relationships and interactions more systematically. Recognise scientific ideas change & evolve over time.</i>					
	Vocabulary progression yr 5	• Process of reproduction: gestation, asexual reproduction, sexual reproduction, sperm, egg, cells, clone. • Changes and life cycle: embryo, foetus, uterus, prenatal, adolescence, puberty, menstruation, adulthood, menopause, life expectancy, old age, hormones, sweat. • Changing body parts: e.g. breasts, penis, larynx, ovaries, genitalia, pubic hair. Previously introduced vocabulary: reproduction, reproduce, types of animals and animal groups, fertilisation. • Reproduction: asexual reproduction, sexual reproduction, gestation, metamorphosis, gametes, tuber, runners/side branches, plantlet, cuttings, embryo, adolescent, penis, vagina, egg, pregnancy, gestation. Previously introduced vocabulary: life cycle, pollination, offspring, fertilise, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young. • Types of forces: air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force. • Mechanisms: levers, pulleys, gears/cogs. • Measurements: weight, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow. • Other: streamlined, Earth. Previously introduced vocabulary: air, heat, moon.					

		• Solar system: star, planet. • Names of planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. • Shape: spherical bodies, sphere. • Movement: rotate, axis, orbit, satellite. • Theories: geocentric model, heliocentric model, astronomer. • Day length: sunrise, sunset, midday, time zone. Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.
		• Properties of materials: thermal conductor/insulator, magnetism, electrical resistance, transparency. • Mixtures and solutions: dissolving, substance, soluble, insoluble. • Changes of materials: reversible change, physical change, irreversible change, chemical change, burning, new material, product. • Separating: sieving, filtering, magnetic attraction. Previously introduced vocabulary: electrical conductor/insulator, bulb, translucent.

Yr6	Science Focus	Electricity	Evolution & Inheritance	Classification	Light	Animals including Humans	Animals including humans continued
	Year 6 Programme of Study	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a 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.	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.	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 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 object that cast them.	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.	
	UKS2 Working Scientifically	Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: 1. Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. 2. Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. 3. Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. 4. Using test results to make predictions to set up further comparative and fair tests. 5. 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. 6. Identifying scientific evidence that has been used to support or refute ideas or arguments. <i>Pupils should also: use, say, read & spell scientific vocabulary correctly, use wide range of secondary sources, group and classify, observe changes over different periods of time & notice patterns. Ask own questions and analyse functions, relationships and interactions more systematically. Recognise scientific ideas change & evolve over time.</i>					

- Circulatory system: circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells.
- Lifestyle: drug, alcohol, smoking, disease, calorie, energy input, energy output.
- Other: water transportation, nutrient transportation, waste products.

Previously introduced vocabulary: carbon dioxide.

- Classifying: Carl Linnaeus, Linnaean system, flowering and non-flowering plants, variation.
- Microorganisms: bacteria, single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, microscope, decompose.
- Evolution and inheritance: evolve, adaptation, inherit, natural selection, adaptive traits, inherited traits, mutations, theory of evolution, ancestors, biological parent, chromosomes, genes, Charles Darwin.
- Other: selective breeding, artificial selection, breed, cross breeding, genetically modified food, cloning, DNA.

Previously introduced vocabulary: classification, offspring, characteristics, habitat, environment, adapt, variations, human, fossil, suited, cells, names of different habitats, names of animals and their body parts, species, sedimentary rock, lava, igneous rock, metamorphic rock, magma, heat, fossilisation.

- Reflection: periscope.
- Seeing light: visible spectrum, prism.
- How light travels: light waves, wavelength, straight line, refraction.

Previously introduced vocabulary: names and properties of materials, absorb.

- Flow and measure of electricity: voltage, amps, resistance, electrons, volts (V), current.
- Circuits: symbol, circuit diagram, component, function, filament.
- Variations: dimmer, brighter, louder, quieter.
- Types of electricity: natural electricity, human-made electricity, solar panels, power station.
- Other: positive, negative.

