

Science

	Investigation Scientists design and carry out investigations.	Biology Scientists have an understanding of life and living processes.	Chemistry Scientists have an understanding of materials and their properties.	Physics Scientists have an understanding of physical processes.	Vocabulary Scientists use appropriate scientific vocabulary.
N	Investigation <u>Disciplinary Knowledge</u> To talk about why things happen and how things work.	Biology <u>Disciplinary Knowledge</u> To comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. To talk about some of the things they have observed, such as plants, animals, natural and found objects. To show care and concern for living things and the environment. <u>Substantive Knowledge</u> To observe the effects of physical activity on their bodies.	Chemistry <u>Substantive Knowledge</u> To begin to be interested in and describe the texture of things.	Physics	Vocabulary wet, dry, fruit, vegetable, growth, decay, natural, living, observe, animal, plants, ingredients, freezing, melting, floating, sinking, shadows, see, feel, smell, hear, respecting, caring, explore, investigate, care, seeds, bulbs, findings, ideas, natural, force, attraction, repulsion, push, pull, explore
Rec	Investigation <u>Disciplinary Knowledge</u> To look closely at similarities, differences, patterns and change.	Biology <u>Disciplinary Knowledge</u> To show some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health. <u>Substantive Knowledge</u> To eat a healthy range of foodstuffs and understand a need for variety in food. To know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe. To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another.	Chemistry <u>Substantive Knowledge</u> To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another.	Physics	Vocabulary natural, environment, experiences, plants, animals, differences, patterns, nature, objects, materials, patterns, world, growth, decay, changes over time, plants, animals, exploration., rivers, reconstructions
Year 1	Investigation <u>Disciplinary Knowledge</u> 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	Biology <u>Disciplinary Knowledge</u> observe changes across the four seasons <u>Substantive Knowledge</u> identify and name a variety of common animals that are birds, fish, amphibians, reptiles, 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 and 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 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 weather associated with the seasons and how day length varies	Chemistry <u>Disciplinary Knowledge</u> compare and group together a variety of everyday materials on the basis of their simple physical properties. <u>Substantive Knowledge</u> 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	Physics	Vocabulary Questions, answers, equipment, gather, measure, record, results, sort, group, test, explore, observe, compare, describe, similar/ities, different/ces, beaker, pipette, syringe Body, head, neck, arms, elbows, legs, knees, face, ears, eyes, eyebrows, eyelashes, nose, hair, mouth, teeth, tongue, feet, toes, fingers, nails, ankle, calf, thigh, hips, waist, trunk, chest, shoulders, back, hands, wrist, tail, wing, claw, fin, scales, feathers, fur, beak, senses, hearing, seeing, touching, smelling, tasting, smooth, bright, dim, loud, quiet, high, low Names of: wild plants, garden plants, flowering plants, trees, leaf, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, vegetable Season, spring, summer, autumn, winter, weather, hot, warm, cool, cold, sunny, cloudy, windy, rainy, snowing, hailing, sleet, frost, fog, mist, icy, rainbow, thunder, lightning, storm, light, dark, day, night Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, waterproof, absorbent, tear, rough, smooth, shiny, dull, see through, not see through
Year 2	Investigation <u>Disciplinary Knowledge</u> 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	Biology <u>Substantive Knowledge</u> 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. 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. 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.	Chemistry <u>Disciplinary Knowledge</u> identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses <u>Substantive Knowledge</u> find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Physics	Vocabulary changes over time, notice patterns, secondary sources, hand lenses, egg timers, identify, classify, data, offspring, life cycles, grow, change, adults, basic needs, water, food, air survival, exercise, food types (fruit and veg, bread, rice, pasta, milk, dairy, foods high in fat and sugar, meat, fish, eggs, beans), hygiene Living, dead, never been alive, names of local habitats, pond, woodland, meadow, name micro habitats, under log, stony path, under bushes, suited, basic needs, depend, food, food chain, shelter seeds, bulbs, water, light, growth, healthy, shoot, seedling Suitable/unsuitable, use, object, material, property, wood, plastic, glass, metal water, rock, fabrics, hard, soft, stretchy, flexible, waterproof, absorbent, transparent, translucent, opaque, shape, change, twist, squash, bend, stretch, roll, squeeze
Year 3	Investigation <u>Disciplinary Knowledge</u> asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.	Biology <u>Disciplinary Knowledge</u> 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 <u>Substantive Knowledge</u> identify that humans and some animals have skeletons and muscles for support, protection and movement. 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.	Chemistry <u>Disciplinary Knowledge</u> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties <u>Substantive Knowledge</u> 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.	Physics <u>Disciplinary Knowledge</u> compare how things move on different surfaces predict whether two magnets will attract or repel each other, depending on which poles are facing. find patterns in the way that the size of shadows change. <u>Substantive Knowledge</u> 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 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	Vocabulary scientific enquiry changes over time, notice patterns, secondary sources, comparative tests, fair tests, careful, accurate, observations, equipment, gather, measure, record, data, evidence, results, keys, bar charts, table, results, conclusions, predictions, support, thermometers Nutrition, food types, carbohydrates, protein, vitamins and minerals, fat, sugar, fruits and veg, dietary fibre, water, balanced diet, skeleton, muscles, support, protection, movement, names of bones, vertebrate, invertebrate leaf, flower, blossom, petal, fruit, root, bulb, seed trunk, branch, stem, water, light, air, nutrients, soil, fertiliser, grow, healthy, transported, life cycle, pollination, seed formation, seed dispersal Rock, stone, pebble, boulder, soil, fossils, grains, crystals, texture, absorb water, let water through, marble, chalk, granite, sandstone, slate, sandy soil, clay soil, chalky soil, peat. Light, light source, darkness, reflect, reflective, mirror, shadow, block, direction, transparent, opaque, translucent Force, contact force, non contact force, magnetic force, magnet, strength, bar/ring/button/horseshoe magnets, attract, repel, magnetic material, metal, iron, steel, non magnetic, poles, north/south pole Electricity, appliance, device, mains, plug, electrical circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive/negative, connect, connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, motor, faster/slower, conductor, insulator, metal/non metal

Science

Year 4	<p>Disciplinary Knowledge</p> <p>asking relevant questions and using different types of scientific enquiries to answer them</p> <p>setting up simple practical enquiries, comparative and fair tests</p> <p>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>using straightforward scientific evidence to answer questions or to support their findings.</p>	<p>Disciplinary Knowledge</p> <p>recognise that living things can be grouped in a variety of ways</p> <p>recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>Substantive Knowledge</p> <p>compare and group materials together, according to whether they are solids, liquids or gases</p> <p>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)</p> <p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Disciplinary Knowledge</p> <p>find patterns between the pitch of a sound and features of the object that produced it</p> <p>find patterns between the volume of a sound and the strength of the vibrations that produced it</p>	<p>enquiry types increase, decrease, identify, classify, order, notice patterns, relationships, appearance, present results, data loggers</p> <p>Digestive system, nutrition, mouth, teeth, canine, incisor, molar, pre-molar, saliva, tongue, rip, tear, chew, grind, cut, oesophagus (gullet), stomach, small intestine, large intestine, rectum, anus, carnivore, herbivore, omnivore, producer, consumer, predator, prey, food chain</p> <p>Classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, names of them, human impact, positive, negative (impact).</p> <p>States of matter, solid, liquid, gas, air, oxygen, powder, granular/grain, crystals, change state, ice/water/steam, water vapour, heating, cooling, temperature, degrees celcius, melt, freeze, solidify, melting point, boil, boiling point, evaporation, condensation, water cycle, precipitation, transpiration</p> <p>Sound, sound source, noise, vibration, travel, solid, liquid, gas, pitch, tune, high, low, volume, loud, quiet, fainter, muffle, strength of vibrations, insulation, instrument, percussion, strings, bass, woodwind, tuned instrument</p>	
Year 5	<p>Disciplinary Knowledge</p> <p>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>using test results to make predictions to set up further comparative and fair tests</p> <p>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</p> <p>identifying scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Substantive Knowledge</p> <p>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>describe the life process of reproduction in some plants and animals.</p> <p>Describe the changes as humans develop from birth to old age.</p>	<p>Disciplinary Knowledge</p> <p>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</p> <p>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>	<p>Substantive Knowledge</p> <p>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>	<p>Disciplinary Knowledge</p> <p>describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>describe the movement of the Moon relative to the Earth</p> <p>describe the Sun, Earth and Moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.</p> <p>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>notice patterns, relationships, independent variable, dependent variable, controlled variable, accuracy, precision, degree of trust, classification keys, scatter graphs, line graphs, causal relationships, support/refute, data loggers</p> <p>Life cycle, reproduction, sexual, asexual, germination, pollination, seed formation, seed dispersal, pollen, stamen, stigma, plantlets, runners, mammal, amphibian, insect, bird, fish, reptile, eggs, live young</p> <p>Y4 plus rigid, hard, soft, stretchy, flexible, waterproof, absorbent, electrical/thermal conductivity, melting, dissolve, solution, insoluble, solute, solvent, particle, mixture, filtering, sieving, residue, reversible/non reversible changes, new material, burning, rusting, Fall, Earth, gravity, weight, mass, air resistance, water resistance, friction, moving surfaces, mechanisms, levers, pulleys, gears, force, transfers</p> <p>Earth, planets, sun, solar system, moon, celestial body, spherical, rotation, spin, night and day, names of planets, dwarf planet, orbit, geocentric model, heliocentric model, shadow clocks, sundials, astronomical clocks</p>
Year 6	<p>Disciplinary Knowledge</p> <p>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>using test results to make predictions to set up further comparative and fair tests</p> <p>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</p> <p>identifying scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Disciplinary Knowledge</p> <p>give reasons for classifying plants and animals based on specific characteristics.</p>	<p>Substantive Knowledge</p> <p>identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>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</p> <p>recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<p>Disciplinary Knowledge</p> <p>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</p>	<p>Substantive Knowledge</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p> <p>recognise that light appears to travel in straight lines</p> <p>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</p> <p>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</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<p>opinion/fact, confidently name scientific enquiry types</p> <p>Circulatory system, heart, blood, blood vessels, pumps, oxygen, carbon dioxide, lungs, nutrients, water, diet, exercise, drugs, lifestyle, evolution, suited/suitable, adapted, adaptation, offspring, reproduction, variation, inherit, inheritance, fossils</p> <p>Organism, micro-organism, fungus, mushrooms, classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, name some of these, arachnid, mollusc, insect, crustacean</p> <p>Light, light source, darkness, reflect, reflective, shadow, block, absorb, direction, transparent, opaque, translucent</p> <p>Electricity, appliance, device, electrical circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive, negative, terminal, connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, conductor, insulator, voltage, current, resistance,</p>

Science Non Negotiables			
Working Scientifically to run throughout topics	1 unit per year = discrete Working Scientifically. This must involve over-learning of previously taught knowledge	Relevant Scientists should be referenced where necessary	KS1 – Seasonal change to be threaded across the year

Nursery

Understanding the World- Nursery

Involves guiding children to begin to increase their knowledge and sense of the world around them and to enrich and widen their vocabulary.

Use senses in hands on exploration of natural materials in the local environment and collections of materials with similar and different properties. Begin to use new vocabulary to discuss their findings and ideas.

Talk about differences between materials and the changes they notice- eg making playdough/saltdough and the changes that occur when ingredients are combined, freezing water and melting ice, exploring floating and sinking, investigating shadows.

Talk about what they see, feel, smell, hear.

Science

Understand the key features of the life cycle of a plant and an animal- plant seeds/bulbs and care for growing plants. Observe growth and decay over time including observing changes that occur to fruit/vegetables over time. Refer to books/online to extend knowledge.
 Understand the importance of respecting and caring for the natural world and all living things.
 Explore and talk about different forces they can feel- eg. explore magnets and attraction and repulsion, push and pull, and begin to use new vocabulary related to exploration.
 Model and encourage observational and investigational skills using 'I wonder if...?'

Reception

Range 3 –

- Is curious and interested to explore new and familiar experiences in nature: grass, mud, puddles, plants and animal life.
- explores objects by linking together different approaches: shaking, hitting, looking, feeling, tasting, mouthing, pulling, turning and poking .
- remembers where objects belong
- matches parts of objects that fit together e.g. puts lid on teapot

Range 4

- notices detailed features of objects in their environment
- can talk about some of the things they have observed such as plants, animals, natural and found objects
- Enjoys playing with small world reconstructions building on first-hand experiences, e.g. visiting farms garages, train track, walking by a river or lake.

Range 5

- Comments and asks questions about aspects of their familiar world such as the place where they live of the natural world.
- Talks about why things happen and how things work
- Developing an understanding of growth, decay and changes over time
- Shows care and concern for living things and the environment.

Range 6

- Look closely at similarities, differences, patterns and changes in nature.
- Knows about similarities and differences in relation to places, objects, materials and living things.
- Talks about the features of their own immediate environment and how environments might vary from one another.
- Makes observations of animals, plants and explain why some things occur and talk about changes.

Statutory ELG: The Natural World

- 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.

<u>Autumn</u>	<u>Spring</u>	<u>Summer</u>
Forest school Small world reconstructions Growth/decay and changes over time	Forest school Can talk about their observations Looking after living things and the environment	Forest school Notice detailed features of objects in their environment Questioning about the familiar world Why things happen and how things work Understand the effect of behaviour on environment

Year 1

Topic 1	Key Discipline: Animals (including humans)	Key Vocabulary: senses, human, sight, touch, feel, hear, see, smell, taste, sound, carnivore, herbivore, omnivore, invertebrate, diet, amphibians, reptiles, mammals			
L1: Learn the changes that happen in Autumn.	L2: Learn the names of basic body parts.	L3: Learn which part of the body is associated with each sense.	L4: Learn how to perform a simple test.	L5: Learn the names of animals that are fish, amphibians and birds.	L6: Learn to name a variety of mammals, reptiles and invertebrates.
Topic 2	Key Discipline: Animals (including humans)	Key Vocabulary: senses, human, sight, touch, feel, hear, see, smell, taste, sound, carnivore, herbivore, omnivore, invertebrate, diet, amphibians, reptiles, mammals			
L1: Learn to name the seasons.	L2: Learn to name common omnivores, herbivores and carnivores.	L3: Learn the structure of a variety of common animals.	L4: Learn to gather data to help answer questions.	L5: Learn to compare the structure of a variety of common animals.	L6: Learn the changes that happen in Winter.
Topic 3	Key Discipline: Everyday Materials	Key Vocabulary: flexible, waterproof, fabric, properties, absorbent, tear, rough, smooth, shiny, dull, see through, material, elastic, stretchy, bendy			
L1: Learn to name a variety of different materials including wood, plastic and glass.	L2: Learn to name a variety of different materials including metal, water and rock.	L3: Learn to distinguish between an object and the material from which it is made.	L4: Learn to gather and record data to help answer questions.	L5: Learn to use observations and ideas to suggest answers to questions.	L6: Learn the changes that happen in Spring.

Science

Topic 4	Key Discipline: Everyday Materials	Key Vocabulary: flexible, waterproof, fabric, properties, absorbent, tear, rough, smooth, shiny, dull, see through, material, elastic, stretchy, bendy			
L1: Learn to describe properties of materials.	L2: Learn to identify and classify objects based on their properties.	L3: Learn to describe the simple properties of a variety of everyday materials.	L4: Learn to compare a variety of everyday materials on the basis of their simple physical properties.	L5: Learn to group a variety of everyday materials on the basis of their simple physical properties.	L6: Learn to perform a simple test to explore questions (e.g. What is the best material for an umbrella?)
Topic 5	Key Discipline: Plants	Key Vocabulary: support, energy, growth, equipment, warmth, deciduous, evergreen, oak, chestnut, holly, wild flowers, garden flowers			
L1: Learn to name a variety of common wild and garden plants.	L2: Learn to name a variety of deciduous and evergreen trees.	L3: Learn the structure of a flowering plant.	L4: Learn the basic function of parts of a flowering plant.	L5: Learn to observe closely.	L6: Learn the changes in Summer.
Topic 6	Key Discipline: Working Scientifically	Key Vocabulary: result, equipment, measure, temperature, liquid, distance, height, observe, method, prediction, gather, record, explore, compare, describe, similarities, differences, pipette			
L1: Learn to observe closely to answer questions.	L2: Learn to perform a simple investigation independently.	L3: Learn to ask simple scientific questions	L4: Learn to gather and record data to help in an investigation.	L5: Learn to recognise that simple questions can be answered in different ways.	L6: Learn to use observations and ideas to suggest answers to questions.
<u>Year 2</u>					
Topic 1	Key Discipline: Everyday Materials	Key Vocabulary: criteria, suitability, manufactured, properties, polystyrene, acrylic, Teflon, reversible, irreversible, invention, waterproof, rigid, flexible			
L1: Learn to identify and classify materials independently.	L2: Learn whether a material is natural or manufactured.	L3: Learn which materials change shape under force.	L4: Learn to compare reversible and irreversible changes.	L5: Learn to identify materials for different purposes.	L6: Learn about historical material inventions.
Topic 2	Key Discipline: Animals (Including Humans)	Key Vocabulary: never lived, movement, nutrition, toddler, elderly, life cycle, hygiene, health, diet, tadpole, froglet, survive, offspring			
L1: Learn to identify animals and their offspring.	L2: Learn to observe and record human growth.	L3: Learn what humans need to stay healthy.	L4: Learn what animals need to grow and survive.	L5: Learn the importance for humans of exercise, eating the right amounts of different types of food and hygiene.	L6: Learn to order the life cycle of a frog.
Topic 3	Key Discipline: Living things and their Habitats	Key Vocabulary: food chain, food source, predator, prey, suitability, herbivore, omnivore, carnivore			
L1: Learn the differences between things that are living, dead, and things that have never been alive.	L2: Learn to identify suitable habitats for animals.	L3: Learn how different habitats provide for the basic needs of different animals and plants.	L4: Learn to raise and answer questions about the local environment to identify and study a variety of plants and animals.	L5: Learn about plants and animals from a seaside habitat.	L6: Learn about plants and animals in an unfamiliar habitat.
Topic 4	Key Discipline: Living things and their Habitats/Plants	Key Vocabulary: bulb, roots, stem, dispersal, germinate, hydroponics, hypothesis, variables, food chain, food source, predator, prey, suitability, herbivore, omnivore, carnivore			
L1: Learn about micro-habitats.	L2: Learn to draw food chains for a habitat.	L3: Learn different sources of food.	L4: Learn to observe and describe seeds and bulbs.	L5: Learn how bean seeds grow into mature plants.	L6: Learn how cress seeds grow into mature plants.
Topic 5	Key Discipline: Plants	Key Vocabulary: bulb, roots, stem, dispersal, germinate, hydroponics, hypothesis, variables			
L1: Learn what plants need to grow.	L2: Learn to use observations and ideas to suggest answers to	L3: Learn the life cycle of a plant.	L4: Learn the parts of a plant, and the functions of these parts.	L5: Learn to describe seasonal changes.	L6: Learn about seasonal changes in daylight.

Science

	questions relating to what a plant needs to grow.				
Topic 6	Key Discipline: Working Scientifically	Key Vocabulary: data, classify, hypothesis, variables, beech, oak, ash, elm, elder, maple, birch, sycamore, holly, cherry, rowan, characteristics			
L1: Learn to ask and answer questions	L2: Learn to observe closely, using simple equipment	L3: Learn to identify and classify.	L4: Learn to perform a simple test independently.	L5: Learn to use observations and ideas to suggest answers to questions.	L6: Learn to gather and record data to help answer questions.
<u>Year 3</u>					
Topic 1	Key Discipline: Forces and Magnets	Key Vocabulary: force, friction, magnet, pole, attract, repel, magnetic			
L1: Learn to compare how different things move.	L2: Learn to record results from a fair test into how objects move across different surfaces.	L3: Learn whether two magnets will attract or repel each other, depending on which poles are facing.	L4: Learn to classify objects as magnetic and not magnetic.	L5: Learn to investigate the strength of different shaped magnets.	L6: Learn that magnetic forces can act at a distance.
Topic 2	Key Discipline: Animals including Humans	Key Vocabulary: observation, lifestyle, nutrition, muscles, nourishment, carnivore, herbivore, omnivore, vertebrate, invertebrate, skull, hip, pelvis, collarbone, jaw, rib cage, shoulder blade, kneecap, lung capacity, diaphragm, windpipe			
L1: Learn that animals, including humans, need the right types and amount of nutrition.	L2: Learn that humans and some other animals have skeletons and muscles for support and protection.	L3: Learn how muscles function in the human body.	L4: Learn to plan and carry out an investigation.	L5: Learn to gather the results of an investigation and make a conclusion.	L6: Learn the varying diets of animals.
Topic 3	Key Discipline: Plants	Key Vocabulary: pollination, requirements, chlorophyll, absorption, transportation, light energy, carbon dioxide, photosynthesis, pollen, nectar, seed dispersal			
L1: Learn the function of the roots of a plant.	L2: Learn the function of the stem of a plant including how water is transported in plants.	L3: Learn the function of the leaves of a plant.	L4: Learn the process of pollination.	L5: Learn the function of seeds	L6: Learn the requirements of plants for light and growth.
Topic 4	Key Discipline: Light	Key Vocabulary: natural light, artificial light, reflection, orbit, transparent, translucent, opaque, source			
L1: Learn that you need light in order to see things, and that darkness is the absence of light.	L2: Learn that light is reflected from surfaces.	L3: Learn how shadows are formed.	L4: Learn to recognise patterns in shadows.	L5: Learn the dangers of the sun.	L6: Learn what happens when light reflects off a mirror or other reflective surfaces.
Topic 5	Key Discipline: Rocks	Key Vocabulary:			
L1: Learn to group different rocks on the basis of their appearance.	L2: Learn to group rocks on the basis of their physical properties.	L3: Learn how some rocks are formed.	L4: Learn that soils are made from rocks and organic matter.	L5: Learn how fossils are formed.	L6: Learn about Mary Anning's contribution to palaeontology.
Topic 6	Key Discipline: Working Scientifically	Key Vocabulary: sedimentary, metamorphic, igneous, mineral, fossilisation, erosion, sediment, weathering, soil profile, top soil, sub soil, base rock			
L1: Learn to use results to draw simple conclusions, make predictions for new values and suggest improvements.	L2: Learn to set up a simple practical enquiry.	L3: Learn to use straightforward scientific evidence to answer questions or support findings.	L4: Learn to make systematic and careful observations and take accurate measurements.	L5: Learn to plan, set up, and carry out a simple practical enquiry.	L6: Learn to make circuits.
<u>Year 4</u>					

Science

Topic 1	Key Discipline: States of Matter	Key Vocabulary: evaporate, particle, melting point, boiling point, freezing point, degrees Celsius, freezing, melting, vibrating, water vapour, condensation, precipitation, carbon dioxide, energy			
L1: Learn to group materials together, according to whether they are solids, liquids or gasses.	L2: Learn that some materials change state when they are heated or cooled.	L3: Learn the temperature in degrees Celsius at which materials change state.	L4: Learn the part played by evaporation and condensation in the water cycle.	L5: Learn to use results to draw simple conclusions.	L6: Learn about a key scientist of my choosing.
Topic 2	Key Discipline: Electricity	Key Vocabulary: cell, buzzer, bulb, wires, crocodile clips, circuits, conductor, insulator, mains electricity, flow, circuit, components, appliance, bulb holder, paddle			
L1: Learn common appliances that run on electricity.	L2: Learn to construct a simple series electrical circuit, identifying and naming its basic parts.	L3: Learn whether or not a lamp will light in a simple series circuit.	L4: Learn some common conductors and insulators.	L5: Learn that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	L6: Learn to report on findings from enquiries, including oral and written explanations (How to make a switch)
Topic 3	Key Discipline: Animals (including Humans)	Key Vocabulary: intestines, gullet, anus, canine, molar, premolar, incisor, saliva, digest, producer, decay, fibre, fat, protein, vitamins, minerals, consumer, producer, prey, predator			
L1: Learn about the digestive system and compare with models or images.	L2: Learn the functions of the different parts of the digestive system.	L3: Learn the different types of teeth in humans and their simple functions.	L4: Learn to compare the teeth of different animals.	L5: Learn to interpret a variety of food chains, identifying producers, predators and prey.	L6: Learn to construct a variety of food chains, identifying producers, predators and prey.
Topic 4	Key Discipline: Working Scientifically	Key Vocabulary: enquire, fair test, systematic, dependant factor, independent factor, accurate, classify, interpret, conclusion, prediction, difference, hypothesis, method, variable			
L1: Learn to plan and set up a simple test.	L2: Learn to plan and carry out a fair test.	L3: Learn to ask relevant questions and use different types of scientific enquiry.	L4: Learn to draw and interpret a graph.	L5: Learn to use results to draw simple conclusions and make predictions for new values.	L6: Learn to use straightforward scientific evidence to answer questions or to support their findings.
Topic 5	Key Discipline: Living things and their Habitats	Key Vocabulary: Mrs Gren, movement, respiration, sensitivity, growth, reproduction, excretion, nutrition, criteria, classification key, environment, endangered species, protection			
L1: Learn to group plants in a variety of ways.	L2: Learn that living things can be grouped in a variety of ways.	L3: Learn to use classification keys to group a variety of living things in the local and wider environment.	L4: Learn to use classification keys to help identify and name a variety of things in our local and wider environment.	L5: Learn to raise and answer questions based on observations of animals and what you have found out about other animals that you have researched.	L6: Learn that environments can change and that this can sometimes pose dangers to living things.
Topic 6	Key Discipline: Sound	Key Vocabulary: vibration, pitch, sound wave, auditory, particle, sound source, ear drum, vibrate, cochlea, hammer, anvil, stirrup, auditory nerve, transmit, absorb, data logger			
L1: Learn how sounds are made, associating this with vibration.	L2: Learn how pitch changes.	L3: Learn how we hear sound.	L4: Learn that vibrations from sounds travel through a medium.	L5: Learn that sounds get fainter as the distance from the sound source increases.	L6: Learn about the work of Alexander Graham Bell
Year 5					
Topic 1	Key Discipline: Earth and Space	Key Vocabulary: eclipse, phase, axis, orbit, dwarf planet, rotate, Mercury, Uranus, Mars, Jupiter, Saturn, Neptune, Venus, sundial, lunar , spherical			
L1: Learn that the Sun, Earth and Moon are approximately spherical bodies.	L2: Learn to use the idea of the Earth's rotation to explain day and night.	L3: Learn to use data to draw conclusions about sunrise and sunset at different times of the year.	L4: Learn the movement of the Moon relative to the Earth.	L5: Learn the movement of Earth and other planets, relative to the sun in the solar system.	L6: Learn about the way that ideas about the solar system have developed. (Geocentric to Heliocentric)

Science

Topic 2	Key Discipline: Properties and Changes of Materials	Key Vocabulary: dissolving, filtering, sieving, thermal conductor, electrical conductor, insulation, conductivity, quantitative, solution, chemical reaction, reversible, irreversible, mixture, translucent, transparent, soluble, insoluble, properties			
L1: Learn to compare and group materials based on their properties.	L2: Learn that some materials will dissolve in liquid to form a solution and describe how to recover a substance.	L3: Learn how mixtures might be separated, including through filtering, sieving and evaporating.	L4: Learn to give reasons for particular uses of everyday materials, including metals, wood and plastic.	L5: Learn that dissolving, mixing and changes of state are reversible changes.	L6: Learn that some changes result in the formation of new materials, including changes associated with burning and the action of acid on bicarbonate of soda.
Topic 3	Key Discipline: Forces	Key Vocabulary: accelerate, Galileo, Isaac Newton, force meter, motion, gravity, up thrust, newtons, water resistance, air resistance, friction, repel			
L1: Learn that unsupported objects fall towards the Earth, because of the force of gravity acting between the Earth and the object.	L2: Learn the effects of air resistance.	L3: Learn the effects of friction.	L4: Learn the effects of water resistance.	L5: Learn to make a variety of parachutes and carry out fair tests to determine which designs are the most effective	L6: Learn that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
Topic 4	Key Discipline: Living things and their Habitat	Key Vocabulary: sexual, asexual, offspring, organism, fertilisation, ovules, genetics, embryo, adolescent, baby, sperm, ovum, cells, ovary, anther, style, stigma, stamen, pollination, carpel			
L1: Learn about sexual reproduction in flowering plants.	L2: Learn the process of asexual reproduction in plants.	L3: Learn how to grow new plants from different parts of the parent plant.	L4: Learn the fertilisation process in animals.	L5: Learn the differences in the life cycles of a mammal, amphibian, an insect and a bird.	L6: Learn about Jane Goodall
Topic 5	Key Discipline: Animals (including Humans)	Key Vocabulary: gestation, infancy, childhood, adulthood, adolescent, puberty, sperm, ovary, gamete, sex cell, dependency, independency, physical, emotional, psychological, social, foetus, life expectancy			
L1: Learn the stages of growth and development in humans.	L2: Learn to present and analyse data about growth in height of babies.	L3: Learn about the growth and development of babies and children.	L4: Learn about adolescence and puberty. (Delivered by school nurses)	L5: Learn the changes humans go through in old age.	L6: Learn to compare the gestation periods of different species of animal.
Topic 6	Key Discipline: Working Scientifically	Key Vocabulary: variables, accuracy, precision, classification, classify, systematic, quantitative, air test, conclusions, prediction, compare, support, arguments, density, conductor, insulator, refute			
L1: Learn to identify scientific evidence that has been used to support or refute ideas or arguments.	L2: Learn to use test results to make predictions to set up further comparative and fair tests.	L3: Learn to plan a scientific enquiry to answer questions, including recognising and controlling variables.	L4: Learn to report and present findings from enquiries including conclusions in an oral presentation.	L5: Learn to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	L6: Learn to record data and results of increasing complexity using scatter graphs.
Year 6					
Topic 1	Key Discipline: Living things and the Habitats	Key Vocabulary: micro-organism, classification, invertebrates, vertebrates, Carl Linnaeus, kingdom, Aristotle, Binomial Naming System, phylum, class, order, family, genus, species, Carbon Dioxide (CO ₂), reaction, fungus / fungi, bacteria			
L1: Learn how living things are classified into broad groups according to common, observable characteristics and based on similarities and	L2: Learn reasons for classifying plants and animals based on specific characteristics.	L3: Learn to make classification keys.	L4: Learn to complete an experiment to find out which food yeast likes the best.	L5: Learn to report and present findings from enquiries.	L6: Learn about the significance of the work of scientists such as Carl Linnaeus

Science

differences, including micro-organisms, plants and animals.					
Topic 2	Key Discipline: Animals (including Humans)	Key Vocabulary: nutrients, circulatory system, blood vessels, oxygen (O ₂), carbon dioxide (CO ₂), arteries, veins, blood cells, substance, tobacco, deoxygenated, chambers, contracts, valves, transportation, saliva, enzymes, stool, rectum, anus, bladder, pancreas			
L1: Learn the main parts of the human circulatory system.	L2: Learn the main parts of the heart.	L3: Learn to scientifically show what effect exercise has on the heart rate, making predictions and measuring heart rate accurately.	L4: Learn how water and nutrients are transported in humans.	L5: Learn the impact of diet and exercise on the way our bodies function.	L6: Learn the impact of drugs, alcohol and lifestyle on the way our bodies function.
Topic 3	Key Discipline: Electricity	Key Vocabulary: electrical circuit, complete circuit, circuit diagram, circuit symbol, component, current, voltage, cell, amps, positive, negative, terminal, conductor, insulator, series circuit, parallel circuit			
L1: Learn to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit.	L2: Learn to compare and give reasons for variations in how components function including the brightness of bulbs.	L3: Learn to compare and give reasons for variations in how components function including the loudness of buzzers.	L4: Learn to compare and give reasons for variations in how components function including the on/off position of switches.	L5: Learn to use recognised symbols when representing a simple circuit in a diagram	L6: Learn to design and make a set of traffic lights, a burglar alarm or some other useful circuit.
Topic 4	Key Discipline: Light	Key Vocabulary: absorb, reflect, light source, function, optical filter, transparent, opaque, translucent, reflective			
L1: Learn how light enables us to see.	L2: Learn the parts of the human eye and explain their functions.	L3: Learn what happens to a beam of light when it is reflected off surfaces.	L4: Learn about the light spectrum and how light makes us see colours.	L5: Learn to identify scientific evidence that has been used to support or refute ideas or arguments.	L6: Learn to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Topic 5	Key Discipline: Evolution and Inheritance	Key Vocabulary: ancestor, evolution, adaptation, characteristics, offspring, inheritance, variation, DNA, genes, genetics, adaptive traits, modification, replication, species			
L1: Learn that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	L2: Learn how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	L3: Learn how ideas about evolution developed over time.	L4: Learn to examine fossil evidence and explain how a living thing has evolved over time.	L5: Learn to identify adaptive traits in humans as a species and describe the known stages of human evolution.	L6: Learn how adaptations can result in both advantages and disadvantages and how human intervention affects evolution.
Topic 6	Key Discipline: Working Scientifically	Key Vocabulary: variables, accuracy, precision, classification, classify, systematic, quantitative, air test, conclusions, prediction, compare, support, arguments, density, conductor, insulator, refute, present, causal			
L1: Learn to plan a different type of scientific enquiry to answer questions, including recognising and controlling variables where necessary.	L2: Learn to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	L3: Learn to record data and results of increasing complexity using scientific diagrams and labels and classification keys.	L4: Learn to record data and results of increasing complexity using tables, scatter graphs, bar and line graphs.	L5: Learn to report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.	L6: Learn to identify scientific evidence that has been used to support or refute ideas or arguments.