Hambleton CE Primary School

Science

Whole School Curriculum Progression Map

Hambleton CE School Science Curriculum Intent

At Hambleton CE Primary School, our intent is to deliver a high-quality science education that develops pupils' curiosity, **creativity** and understanding of the world around them, in line with the National Curriculum for Science. We aim to inspire children to become confident, inquisitive scientists who ask questions, explore ideas, and develop a secure understanding of scientific concepts, processes and skills. A Hambleton pupil will leave our school observant, curious and caring about their environment. The scientific skills they have learnt will accompany them on their journey through life and enhance their sense of excitement and inquisitiveness about natural phenomena, enjoying the awe and wonder of the Earth that they live on.

Our science curriculum is planned and sequenced so that pupils build knowledge progressively and will enable them to:

- Develop **scientific knowledge and conceptual understanding** through the disciplines of biology, chemistry and physics, as outlined in the National Curriculum.
- Build a strong foundation in **working scientifically**, enabling them to ask relevant questions, plan and carry out investigations, observe closely, record results, and draw conclusions using scientific language.
- Understand the **nature, methods and processes of science**, recognising that scientific knowledge is built through evidence, enquiry and testing.
- Develop essential **scientific vocabulary**, which is explicitly taught and revisited to support pupils in explaining their thinking clearly and accurately.
- Recognise the **importance of science in everyday life**, including its impact on health, technology, the environment and future careers.

We intend for science learning to be inclusive, engaging and progressive, ensuring that knowledge and skills are built systematically from Early Years through to Key Stage 2. Thinking skills and 'Low Threshold High Ceiling' starters are planned to enable success for all, along with a real focus on well resourced, hands-on science.

Through practical investigations, discussion, and real-world contexts such as residential trips and visits, our curriculum encourages pupils to develop **resilience, critical thinking and curiosity**. By the end of primary school, pupils will be well-prepared for secondary science education, equipped not only with scientific knowledge but also with the confidence and enthusiasm to explore and question the world around them.

EYFS –see Development Matters 2021 for detailed examples of how to support learning in EYFS

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.

3-4 Years (Prior Knowledge)

- Use all their senses in hands on exploration of natural materials.
- Explore collections of materials with similar and/or different properties.
- Talk about what they see, using a wide vocabulary.
- Explore how things work.
- Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal.
- Begin to understand the need to respect and care for the natural environment and all living things.
- Explore and talk about different forces they can feel.

ELG: 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.

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Animals Including Humans (BIOLOGY)	**Pupils should be taught to:** • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals; • identify and name a variety of common animals that are carnivores, herbivores and omnivores; • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets); • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**Pupils should be taught to:** • 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.	**Pupils should be taught to:** • 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.	**Pupils should be taught to:** • 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.	**Pupils should be taught to:** • describe the changes as humans develop to old age.	**Pupils should be taught to:** • 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.
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, mouth, teeth, skin, 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.	• Being born and growing: **Young**, **offspring**, **live young**, reproduce, grow, **develop**, change, hatch, lay, fly, crawl, talk. • Young and adult names: e.g. lamb and sheep, kitten and cat, duckling and duck. • **Life cycle** stages: e.g. baby, toddler, child, teenager, **adult**; frogspawn, tadpole, froglet, frog, egg. • Survival and staying healthy: basic needs, survive, water, food, air, **exercise**, **diet**, **nutrition**, healthy, balanced diet, **hygiene**, **germs**. • Food groups: fruit and vegetables, proteins, dairy and alternatives, carbohydrates, oil and spreads, fat, salt, sugar. Previously introduced vocabulary: **water**.	• Food groups and **nutrients**: fibre, fats (**saturated and unsaturated**), vitamins, minerals, protein, carbohydrates, water. • Skeletons and muscles: skeleton, **muscles**, **tendons**, **joints**, protection, support, movement, organs, voluntary muscles, involuntary muscles, joint, 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.	• Digestive system: **digest**, digestion, mouth, tongue, teeth, saliva, salivary glands, **oesophagus**, **stomach**, acid, enzymes, 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: producers, decomposer, herbivore, carnivore, food web, predators, prey. Previously introduced vocabulary: **producer**, consumer, **prey**, **predator**, excretion, habitat.	• Process of reproduction: **gestation**, 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**.	• **Circulatory system:** circulation, **heart**, pulse, heartbeat, heart rate, lungs, breathing, **blood vessels**, liver, kidney, brain, blood, pump, transported, **oxygenated blood**, **deoxygenated blood**, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells. • Lifestyle: **drug**, **alcohol**, substances, smoking, disease, calorie, energy input, energy output. • Other: water transportation, nutrient transportation, waste products. Previously introduced vocabulary: carbon dioxide.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants (BIOLOGY)	**Pupils should be taught to:** • 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.	**Pupils should be taught to:** • 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.	**Pupils should be taught to:** • 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.			
Vocabulary Progression	• 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**, bud, blossom, **petal, stem**, trunk, branch**, root, seed, bulb**, soil. • Name some common types of plant: e.g. sunflower, daffodil.	• Growth of plants: **germination, reproduction, shoot, seed dispersal**, grow, food store, life cycle, die, wilt, seedling, sapling, deciduous, evergreen • Needs of plants: **sunlight, nutrition**, temperature, 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.	• Water transportation: transport, **evaporation, evaporate, nutrients**, absorb, anchor. • Life cycle of flowering plants: **pollination** (insect/wind), pollen, nectar, pollinator, seed formation, **seed dispersal** (animal/wind/water), reproduce, **fertilisation**, fertilise, **stamen**, anther, filament, **carpel (pistil)**, stigma, style, ovary, ovule, **sepal**, carbon dioxide. Previously introduced vocabulary: life cycle.			

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living Things and Their Habitats (BIOLOGY)		**Pupils should be taught to:** • explore and compare the differences between things that are living, dead, and things that have never been alive; • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other; • identify and name a variety of plants and animals in their habitats, including microhabitats; • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.		**Pupils should be taught to:** • 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.	**Pupils should be taught to:** • 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.	**Pupils should be taught to:** • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals; • give reasons for classifying plants and animals based on specific characteristics.
Vocabulary Progression		• 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, leaf litter, woodland, rainforest, sea shore, ocean, urban, local habitat. Previously introduced vocabulary: senses, **carnivore, herbivore, omnivore, seed, water**, names of materials.		• Living things: **organisms**, **specimen**, species, amphibians, mammals, reptiles, invertebrate, vertebrate • Grouping living things: **classification**, classification keys, classify, **characteristics**. • Names of invertebrate animals: snails and slugs, worms, spiders, insects. • Invertebrate body parts: e.g. wings, abdomen, antenna, segments • 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,	• **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.	• 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.

				names of common plants, photosynthesis.		

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Evolution and Inheritance (BIOLOGY)						**Pupils should be taught to:** • 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.
Vocabulary Progression						• **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**.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Seasonal Changes (BIOLOGY)	**Pupils should be taught to:** • observe changes across the 4 seasons; • observe and describe weather associated with the seasons and how day length varies.					
Vocabulary Progression	• **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, daytime, **daylight**.					

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces (PHYSICS)			Forces and Magnets **Pupils should be taught to:** • compare how things move on different surfaces; • notice that some forces need contact between 2 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 2 poles; • predict whether 2 magnets will attract or repel each other, depending on which poles are facing.		Forces **Pupils should be taught to:** • 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.	
Vocabulary Progression			• How things move: e.g. bounce, move, rub, roll, slide, movement, **surface**, distance, strength. • Types of **forces**: push, pull, contact force, non-contact force, **friction**. • **Magnets: magnetic, magnetic field**, magnetise, 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.		• Types of forces: **air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity**, opposing forces, driving force, accelerate, decelerate, brake. • **Mechanisms:** levers, pulleys, gears/cogs. • Measurements: **weight**, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow. • Other: **streamlined**, Earth. Previously introduced vocabulary: air, surface, friction,heat, moon.	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Light (PHYSICS)			**Pupils should be taught to:** • 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.			**Pupils should be taught to:** • recognise that light appears to travel in straight lines; • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye; • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes; • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Vocabulary Progression			• **Light** and seeing: **dark**, absence of light, **light source**, illuminate, visible, **shadow**, **translucent**, energy, block. • **Light sources**: e.g. candle, torch, fire, lantern, lightning, natural, man made, artificial • **Reflective light**: **reflect, reflection**, surface, **ray**, scatter, reverse, beam, angle, mirror, moon. • Sun safety: dangerous, glare, damage, UV light, UV rating, sunglasses, direct, protect. Previously introduced vocabulary: **opaque, transparent**, sunlight, sun.			• 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, shadows

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Sound (PHYSICS)				**Pupils should be taught to:** • identify how sounds are made, associating some of them with something vibrating; • recognise that vibrations from sounds travel through a medium to the ear; • find patterns between 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.		
Vocabulary Progression				• Parts of the ear: **eardrum**. • Making sound: **vibrate**, **vibration**, vocal cords, **particles**, air, molecules. • Measuring sound: **pitch, volume, amplitude, sound wave**, quiet, loud, high, low, travel, **distance**. • Other: **soundproof, absorb sound, insulate sound, medium**		

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and Space (PHYSICS)					**Pupils should be taught to:** • 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.	
Vocabulary Progression					• Solar system: **star, planet.** • Names of planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. • Shape: **spherical bodies, sphere.** • Movement: rotate, axis, orbit, satellite, gravity, gravitational force. • Theories: **geocentric model, heliocentric model, astronomer.** • Day length: sunrise, sunset, midday, time zone. Previously introduced vocabulary: **Sun, moon, shadow**, day, night, heat, **light, reflect.**	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electricity (PHYSICS)				**Pupils should be taught to:** • 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.		**Pupils should be taught to:** • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit; • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches; • use recognised symbols when representing a simple circuit in a diagram.
Vocabulary Progression				• **Electricity**: mains-powered, battery-powered, **mains electricity**, plug, **appliances**, devices. • Circuits: **electrical circuit**, simple series circuit, complete circuit, incomplete circuit. • Circuit parts: bulb, cell, wire, buzzer, switch (open/closed), motor, **battery**. • Materials: **electrical conductor, electrical insulator**. • Other: safety, danger. Previously introduced vocabulary: names of materials.		• 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.

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Materials (PHYSICS)	Everyday Materials **Pupils should be taught to:** • 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.	Use of Everyday Materials **Pupils should be taught to:** • 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.	Rocks **Pupils should be taught to:** • 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.	States of Matter **Pupils should be taught to:** • 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.	Properties and Changes of Materials **Pupils should be taught to:** • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets; • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution; • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating; • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic; • demonstrate that dissolving, mixing and changes of state are reversible changes; • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	

Vocabulary Progression	• Names of materials: e.g. wood, plastic, glass, metal, water, rock, paper, cardboard, rubber, fabric. • Properties of materials: **hard, soft, shiny, dull, stretchy, rough, smooth, bendy, not bendy, transparent, opaque, waterproof, not waterproof, absorbent, not absorbent**, sharp, stiff. • Other: **object**.	• Changing shape: squash, bend, twist, stretch. • **Properties of materials:** e.g. strong, flexible, light, hard-wearing, elastic. • Other: **suitability**, recycle, pollution.	• Types of rock: **sedimentary rock, igneous rock, metamorphic rock.** • Properties of rocks: **permeable**, semi-permeable, **impermeable**, durable, absorbent, particles • Names of rocks: e.g. marble, chalk, granite, sandstone, slate. • Formation of rocks and fossils: natural, cliffs, mountains, human-made, **magma**, **lava**, molten rock, **sediment**, **erosion, fossilisation**, layers, bone, fossil. • Soil: sandy, chalky, clay, peaty, loamy, topsoil, subsoil, bedrock, mineral, organic matter, compost. • Other: **palaeontology**. Previously introduced vocabulary: soil, **water**, air.	• **States of matter: solids, liquids, gases**, particles. • State change: **evaporate, condense, melt, freeze**, heat, cool, melting point, freezing point, boiling point, **water vapour**, steam • 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.	• Properties of **materials: thermal conductor/insulator**, magnetism, electrical resistance, **transparency**. • Mixtures and solutions: solubility, solution, dissolving, substance, soluble, insoluble. • Changes of materials: reversible change, physical change, irreversible change, chemical change, burning, new material, product, rusting, • Separating: sieving, filtering, evaporating, magnetic attraction. Previously introduced vocabulary: electrical **conductor/insulator**, bulb, **translucent**.	
WORKING SCIENTIFICALLY (DISCIPLINARY KNOWLEDGE)	I ask simple questions and recognise these questions can be answered in different ways. I observe closely, using simple equipment I can identify, and classify. I can perform a simple test.I gather data and record data to help me answer my questions. I use my observations and ideas to suggest answers to my questions.		I ask relevant questions and use different types of scientific enquiries to answer them. I can set up simple practical enquiries, comparative and fair tests. I use a range of equipment (including thermometers and dataloggers). I make systematic and careful observations and where appropriate, take accurate measurements using standard units. I gather, record and classify data in a variety of ways to help me answer my questions. I record my findings using simple scientific language, drawings, labelled diagrams, tables, keys and bar charts. I present my data in a variety of ways using e.g. Venn diagrams, bar charts, simple scatter graphs and keys. I use my results to draw simple conclusions/answer my questions and I make predictions for further questions.		I can plan different types of science enquiries to answer questions. I recognise and control variables where necessary. I can take measurements, using a range of scientific equipment with increasing accuracy and precision. I take repeat readings when appropriate. I record data and results of increasing complexity using e.g. scientific diagrams and labels, tables, classification keys, line graphs I present the data and results in suitable formats using e.g. line graphs, bar graphs, scatter graphs and classification keys. From my data and observations I draw valid conclusions (i.e. consistent with the evidence) including causal relationships. I identify scientific evidence to support or refute the ideas or arguments for my conclusion. I use my test results to make predictions to set up further enquiries e.g. comparative and fair tests.	

		I communicate what I have found out (report my findings) using straightforward scientific ideas and I report my findings using oral and written explanations and displays. I suggest improvements to the way I carried out the enquiry. I suggest further questions to investigate.	

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Scientists and Inventors (Suggested)	Charles Macintosh: In 1823, at his factory of fabric developments, Charles Macintosh invented a double textured fabric sandwiched around a layer of rubber. This was developed into the first patented waterproof jacket. George Saul Mottershead OBE (1894 – 1978): the founder of Chester Zoo in 1931. This zoo was unusual at the time as the animals did not live in cages, they lived in larger enclosures, as he hated animals behind bars.	Louis Pasteur 1822-1895 Jane Colden (1724 -1766): was one of the first female botanists to discover new species of plants.	Inge Lehmann (1888 – 1993): Danish seismologist and geophysicist. In 1936, she discovered that the Earth has a solid inner core inside a molten outer core. Lewis Latimer (1848-1928): inventor of the carbon filament lightbulb. He made it affordable and practical for the everyday household. Marie Curie (1867-1934): researched and allowed use of xrays for medical purposes.	Tom Lalampaa/Vanessa Nakate (1996 -): African conservation pioneer; climate justice activist. Garrett Augustus Morgan (1877 – 1963) was an African-American inventor. His most notable invention was a three position traffic light signal. Thomas Alva Edison (1847 – 1931): was an American inventor and businessman who has been described as America's greatest inventor. He invented the electric lightbulb. Washington Wentworth Sheffield (1827 – 1897): an American dental surgeon best known for inventing modern toothpaste in collapsible tubes.	Mae Jemison (1956-): NASA astronaut & engineer, first black woman in space. Katherine Johnson (1918-2020): US aeronautics contributions, NASA and worked on first flight to the moon. Felix Baumgartner (1969): Austrian skydiver, best known for jumping to Earth from a helium balloon from the stratosphere. Doing so, he set world records for skydiving an estimated 39 km. George Washington Carver (1864-1943): one of America's greatest agricultural researchers and educators. His innovations in the field of crop rotation are considered breakthroughs in resource conservation, by preserving soil and making farms more productive.	Arthur James Wilson (1858-1945): first deaf motorist and inventor of the car wing mirror. Charles Darwin (1809-1882): English naturalist, geologist and biologist, best known for his contributions to the science of evolution. Charles Richard Drew (1904-1950): American researcher, pioneered preservation of blood and used his knowledge to set up blood banks in WW2.