

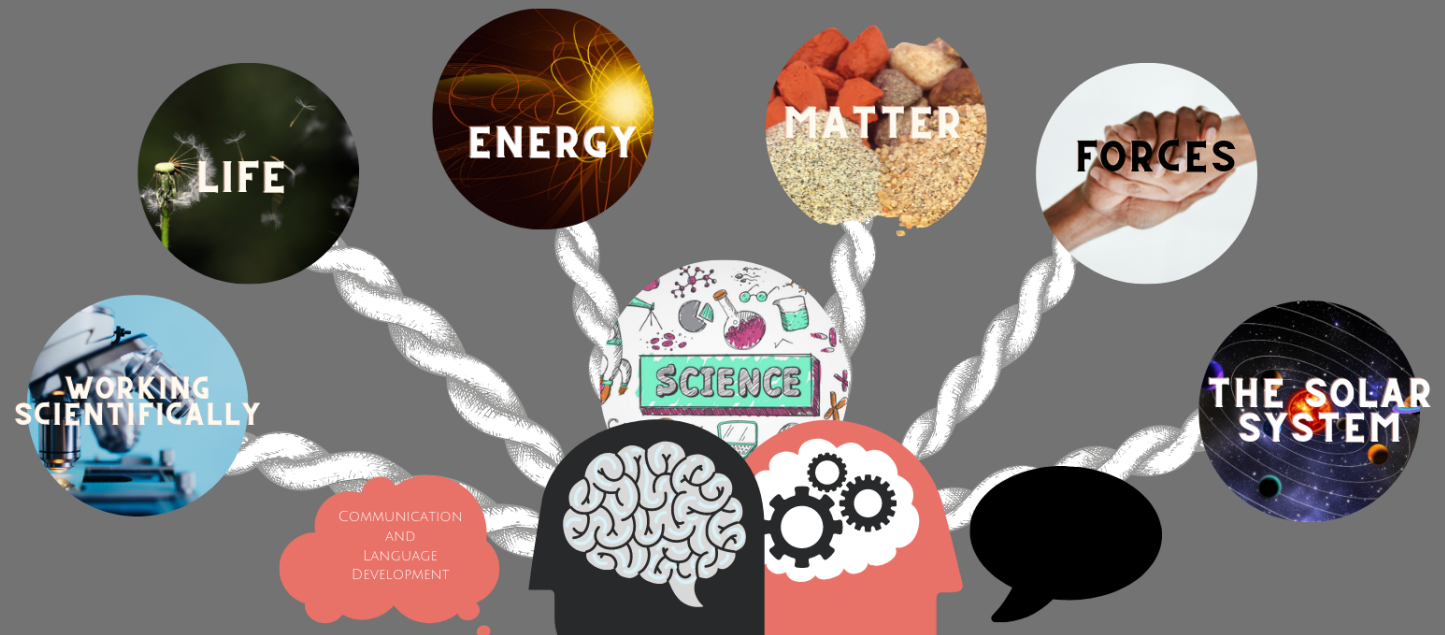


A curriculum planned with aspirations for pupils to leave North Wheatley C of E Primary with:

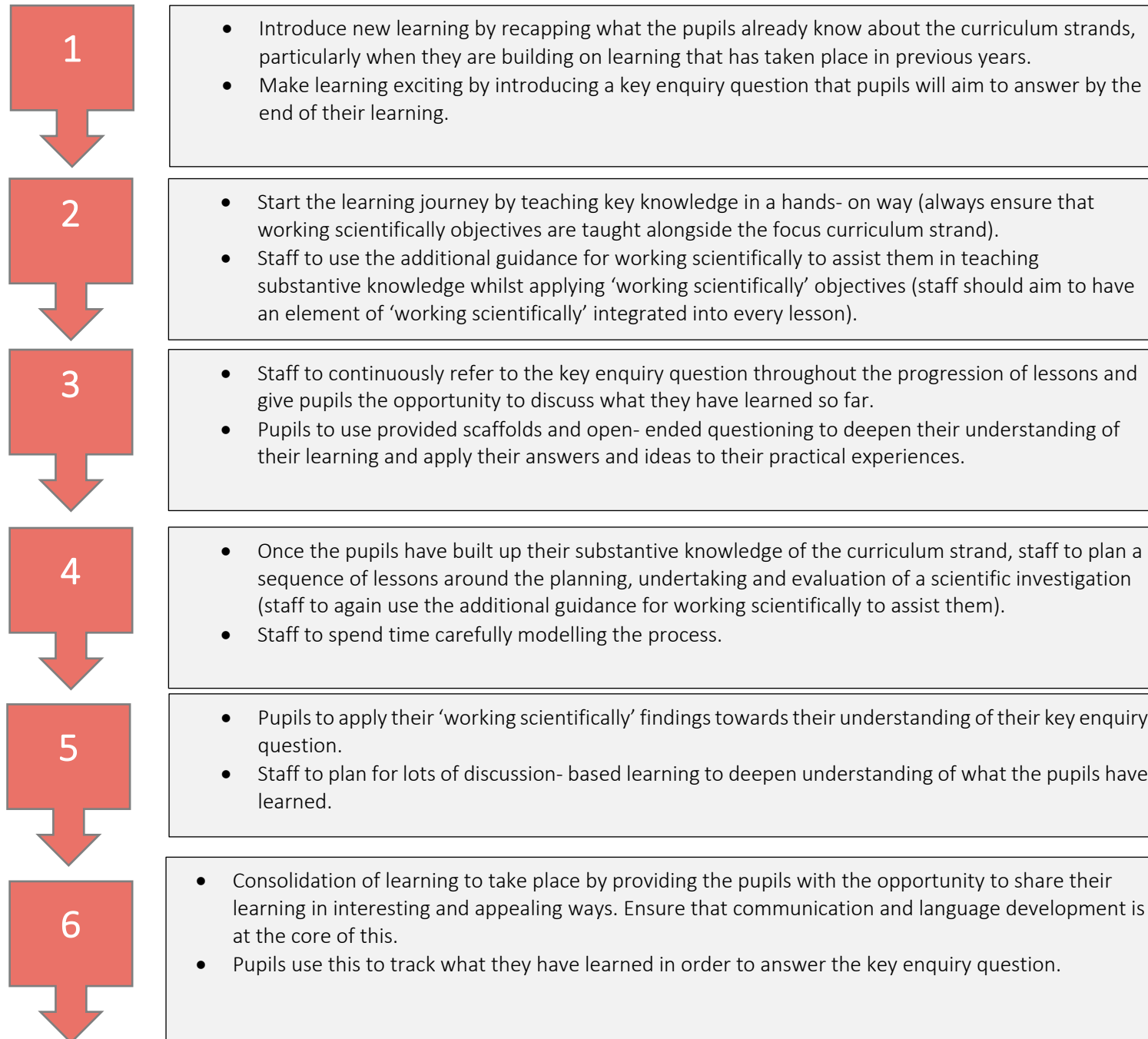
- The knowledge and skills to work scientifically by; asking questions, suggesting a line of enquiry and undertaking investigations.
- The ability to acquire scientific knowledge; use with a scientific mindset understanding the implications for today and in the future.
- The personal motivation to be excited about processes and methods of science and to be able to make connections between these and other knowledge.



SCIENCE KNOWLEDGE STRANDS



Subject Progression Framework



Working Scientifically

First-hand experience initiating investigations which explore, question, test and conclude.

Life

The Earth is made up of a variety of living things; plants, animals, and humans which need certain environments in which to survive and are constantly in a state of evolution

Matter

A substance which takes up a space and has mass can be in a liquid, gas or solid form. These states of materials have differing properties which may alter as the environment around it alters.

Energy

Energy is created through natural phenomenon as well as man-made reactions, this energy can be stored and used and how it reacts to its surroundings observed.

Forces

Any object whether it is moving or stopped is being acted upon by a force if the force increases or decreases then an object will speed up or slow down. These forces can be man-made or occur naturally

The Solar System

Within the solar system planets orbit the sun, each planet and its moons have different characteristics and atmospheric conditions

CURRICULUM STRANDS	WORKING SCIENTIFICALLY	Communication and Language Development
EYFS	See EYFS Tapestry Curriculum for Birth to Early Learning Goal Curriculum. The EYFS Tapestry feeds into the Key Stage One Curriculum.	
Key Vocabulary	Science, experiment, fair, find out, explain, reason, why , change	
KEY STAGE ONE	- Ask simple questions and recognise that they can be answered in different ways - Observe closely, using simple equipment - Perform simple tests - Identify and classify - Use their observations and ideas to suggest answers to questions - Gather and record data to help in answering questions	Integrate open ended questions throughout lessons to allow pupils with the opportunity to verbally communicate their answers/ ideas and the reasons for them. Introduce thought provoking questions, linked to specific curriculum strands to initiate in-depth discussions In pairs, groups and as a whole class .e.g. - Could a horse dig a hole to live in? - If a flower was watered with orange juice, would it turn orange? - Birds and bats both fly, but what is different about them? - If a table has been carved out of wood by a carpenter, is it natural or manmade? - If your nose is blocked up, can you still taste? Encourage discussion by providing pupils with scaffolds for sharing ideas and answers. For example: I think this: because: Ensure that opportunities for discussion is planned throughout the investigation process to ensure that pupils are able to discuss what is happening and apply this to their learned substantive knowledge.
Key Vocabulary	question, answer, observe, observing, equipment, identify, sort, group, compare, differences, similarities, describe, measurements, test, results, secondary sources record, diagram, chart	
LOWER KEY STAGE TWO	- Ask relevant questions and use different types of scientific enquiries to answer them - Set up simple practical enquiries, comparative and fair tests - Make systematic and careful observations and, where appropriate, take accurate measurements using standard units - Use a range of equipment, including thermometers and data loggers - Gather, record, classify and present data in a variety of ways to help in answering questions - Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - Use results to draw simple conclusions - Make predictions for new values - Suggest improvements and raise further questions - Identify differences, similarities or changes related to simple scientific ideas and processes - Use straightforward scientific evidence to answer questions or to support their findings.	Introduce thought provoking questions, linked to specific curriculum strands to initiate in-depth discussions In pairs, groups and as a whole class .e.g. - How would mammals survive without teeth? - If cars didn't exist would there be more animals? - Why can see lightening before we hear thunder? Encourage discussion by providing pupils with scaffolds for sharing ideas and answers. For example: I think this: because: Ensure that opportunities for discussion is planned throughout the investigation process to ensure that pupils are able to discuss what is happening and apply this to their learned substantive knowledge.
Key Vocabulary	oral and written explanations, conclusion, predictions, criteria, classify, changes, data, contrast, evidence, improve, secondary sources, guides, keys, construct, interpret research, relevant question, equipment, thermometer, data, gather, standard units, record, classify, present record, drawings, labelled diagrams, keys, bar charts, tables	

UPPER KEY STAGE TWO	- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - Use test results to make predictions to set up further comparative and fair tests - Report and presenting 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 - Identify scientific evidence that has been used to support or refute ideas or arguments	Introduce thought provoking questions, linked to specific curriculum strands to initiate in-depth discussions In pairs, groups and as a whole class .e.g. - What would happen if gravity worked in reverse? - If cars travelled at the speed of light, would their headlights still work? - What would happen to a 3V appliance, if you ran 5V through it? Ensure that opportunities for discussion is planned throughout the investigation process to ensure that pupils are able to discuss what is happening and apply this to their learned substantive knowledge. Provide written scaffolds to assist pupils in articulating their ideas.
Key Vocabulary	plan, variables, measurements, accuracy, precision, repeat readings, predictions, further comparative and fair test, identify, classify and describe, patterns, systematic, quantitative measurements report data, scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs report and present, conclusions, casual relationships, explanations, degree of trust, oral and written display and presentation evidence, support, refute, ideas or arguments, biology, physics, chemistry	

CURRICULUM STRANDS	LIFE	MATTER	ENERGY	FORCES	THE SOLAR SYSTEM
EYFS	See EYFS Tapestry Curriculum for Birth to Early Learning Goal Curriculum. The EYFS Tapestry feeds into the Key Stage One Curriculum.				
Key Vocabulary	Alive , Animal, Food, Unwell, Smell, Touch, Hear, Taste, See, Senses, Plant, Seed, Grow, Flower, Leaf, Weather, Seasons, Touch, Shiny, Hard, Rough,				
Year 1	Plants - 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 Animals, including humans - 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 Seasonal changes - Observe changes across the 4 seasons - Observe and describe weather associated with the seasons and how day length varies	Everyday materials - 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	Children explore early ideas about energy through exploration of matter/everyday materials and through everyday experiences at home and school.	Children explore early ideas of forces through explorative play (construction, Small world, outdoor etc.) and everyday experiences at home and school.	Children listen to and read stories about space and learn about some of the key figures in history (the first moon landing etc)
Key Vocabulary	Plants: Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem Animals including humans: Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak Seasonal Changes: Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	Everyday Materials: Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth			

Year 2	Living things in their habitat • 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 Plants • 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 Animals, including humans • 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	Use of everyday materials • 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	Children explore early ideas about energy through exploration of matter/everyday materials and through everyday experiences at home and school.	Children explore early ideas of forces through explorative play (construction, Small world, outdoor etc.) and everyday experiences at home and school.	Children listen to and read stories about space and learn about some of the key figures in history (the first moon landing etc etc)
Key Vocabulary	Living things and their habitats: Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert Plants: Seeds, Bulbs, Water, Light, Temperature, Growth Animals including humans: Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene	• Use of everyday materials: Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil			

Year 3	Plants - 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 Animals, including humans - 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	Rocks - 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	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 an opaque object - Find patterns in the way that the size of shadows change	Forces and magnets - 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	Children read non-fiction texts about space and begin to form their own questions.
Key Vocabulary	Plants: Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower Animals including humans: Movement, Muscles, Bones, Skull, Nutrition, Skeletons	Rocks: Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent	Light: Light, Shadows, Mirror, Reflective, Dark, Reflection	Forces and magnets: Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull	

Year 4	Living things in their habitat • 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 Animals including humans • 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	States of matter • 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	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 Sound • 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	Use science learning time to recap prior learning (from Y3) about forces and magnets. Ensure that pupils remain confident with key vocabulary and knowledge in preparation for Y5.	Children read non-fiction texts about space and begin to form their own questions.
Key vocabulary	• Living things and their habitats: Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats • Animals including humans: Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar	• States of Matter: Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating	• Electricity: Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators • Sound: Volume, Vibration, Wave, Pitch, Tone, Speaker		

Year 5	Living things in their habitat - 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 Animals including humans - Describe the changes as humans develop to old age	Properties and changes of materials - 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	Use science learning time to recap prior learning (from Y4) about electricity and sound. Ensure that pupils remain confident with key vocabulary and knowledge in preparation for Y6.	Forces - 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	Earth and Space - 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
Key Vocabulary	Living things and their habitat: Mammal, Reproduction, Insect, Amphibian, Bird, Offspring Animals including humans: Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty	Properties and changes of materials: Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing		Forces: Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	Earth and Space: Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation

Year 6	Living things in their habitat - 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 reason for classifying plants and animals based on specific characteristics Animals including humans - 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 human Evolution and inheritance - 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	Plan for time for pupils to recap prior learning to ensure that they remain confident with their understanding of what they have learned about 'matter' during previous years.	Electricity - 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 Light - 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	Plan for time for pupils to recap prior learning to ensure that they remain confident with their understanding of what they have learned about 'forces' during previous years.	Plan for time for pupils to recap prior learning to ensure that they remain confident with their understanding of what they have learned about 'The solar system' whilst in Y5.
Key vocabulary	Living things and their habitats: Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects Animals including humans: Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration Evolution and Inheritance: Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics		Electricity: Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell Light: Refraction, Reflection, Light, Spectrum, Rainbow, Colour		

Cohort attainment and progress tracker

(Entering=E, Beginning=B, Developing=D, Meeting=M, Exceeding=Exc, Greater Depth Standard=GDS)

Continuous dialogue reflecting yearly progress of learning and notes to feedforward for future planning.

Cohort's Achievement Each Term (%)							
		E	B	D	M	Exc	GDS
Year 1	Autumn						
	Spring						
	Summer						
Year 2	Autumn						
	Spring						
	Summer						
Year 3	Autumn						
	Spring						
	Summer						
Year 4	Autumn						
	Spring						
	Summer						
Year 5	Autumn						
	Spring						
	Summer						
Year 6	Autumn						
	Spring						
	Summer						

	Notes and feedforward (Individual pupils, group, class)	QA by Subject Leader
EYFS		
Year 1		
Year 2		
Year 3		
Year 4		
Year 5		
Year 6		

