Newnham St Peter's C of E Primary School

Science Progression map

	Pre-school	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Working Scientifically							
Questioning 	Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"	Explore the natural world around them and ask questions.	Ask simple questions and recognise that they can be answered in different ways.		Ask relevant questions, using range of scientific enquiries to answer them. Use straightforward scientific evidence to answer questions or support findings.		Plan a range of scientific enquiries to answer questions, recognising and controlling variables where necessary.	
Observing 	Use all their senses in hands-on exploration of natural materials.	Make observations about what they see, using a wide vocabulary Begin to draw what they notice.	Observe closely, using simple equipment.		Make systematic, careful observations, taking accurate measurements. Use a range of equipment, including thermometers and data loggers.		Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	
Experimenting 	Explore how things work.	Explore how things work.	Perform simple tests.		Set up simple practical enquiries, comparative and fair tests.		Use test results to make predictions to set up further comparative and fair tests.	
Classifying 	Explore collections of materials with similar and/or different properties.	Explore collections of materials with similar and/or different properties.	Identify and classify.		Gather, record, classify and present data in a variety of ways to help in answering questions.		Record data and results of increasing complexity using scientific diagrams and labels, ***classification keys,*** tables, scatter graphs, bar and line graphs.	
Applying 	Explore and talk about similarities and differences in the natural world.	Develop an understanding of growth, decay and changes over time. Discuss how we care for the world around us.	Use their observations and ideas to suggest answers to questions.		Use results to draw simple conclusions, make predictions, suggest improvements raise further questions. Identify differences, similarities or changes related to scientific ideas processes.		Identify scientific evidence that has been used to support or refute ideas or arguments.	
Recording 	Talk about what they notice.	Begin to record simple observations, such as the weather.	Gather and record data to help in answering questions.		Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Report on findings from enquiries, oral and written explanations, displays or presentations of results and conclusions.		Report and present findings from enquiries, including conclusions, causal relationships and explanation of and degree of trust in results, in or and written forms such as displays and other presentations.	

	Plants							
Knowledge content	Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant.	Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant.	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 & describe how seeds & bulbs grow into mature plants. Find out & describe how plants need water, light and a suitable temperature to grow and stay healthy.	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.	Recognise that living things can be grouped in a variety of ways. *(See Living things and their habitats)*	Describe the life process of reproduction in some plants. *(See Living things and their habitats.)*	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. *(See Living things and their habitats.)* Give reasons for classifying plants and animals based on specific characteristics. *(See Living things and their habitats.)*
Vocabulary	seed, plant, grow, water	seed, plant, grow, water	deciduous, evergreen trees, leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, berry,	seeds, bulbs, water, light, temperature, growth, light, shade, sun, healthy	air, light, water, nutrients, soil, reproduction, transportation, dispersal, flower pollination, pollen,			

			branches, stem, bud		insect/ wind pollination, seed formation, seed dispersal			
	Animals, including humans							
Knowledge content	Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things.	Understand the key features of the life cycle of an animal. Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - having a good sleep routine	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. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	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.	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.	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.	Describe the changes as humans develop to old age.	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		baby, adult, life cycle, grow, change, birth, death, life	mammals, birds, reptiles, amphibians, fish, carnivore, omnivore, herbivore & examples of each.	offspring, survival, reproduction, growth, child, young/old stages (e.g. chick/hen,	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water,	digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients,	foetus, embryo, womb, gestation, baby, toddler, teenager, elderly,	heart, pulse, rate, pumps, blood, blood vessels, lungs, Veins, arteries, valve, oxygenated,

			Examples of body parts - Head, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, hooves **senses – touch, sight, smell, taste, hearing**, fingers (skin), eyes, nose, ear and tongue	baby/child/adult, caterpillar/butterfly), **exercise, heartbeat, breathing, hygiene,** food types (e.g. meat, fish, vegetables, bread, rice, pasta)	**skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints**	**large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain**	**growth, puberty, development**	**deoxygenated, respiration, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle**
	Materials and states of matter							
Knowledge content	Talk about the differences between materials and changes they notice.	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter, such as ice melting, a boat floating on water or materials changing through cooking.	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	Identify & compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper & 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.	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. *(See Rocks)* Describe in simple terms how fossils are formed when things that have lived are trapped within rock. *(See Rocks)* Notice that some forces need contact between two objects, but magnetic forces can act at a distance. *(See Forces and magnets)*	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.	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.	

			basis of their simple physical properties.				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		material, float, melt, freeze, ice, change, hard, soft, cold, warm, hot	material, wood, plastic, glass, paper, water, metal, rock, paper, cardboard, rubber, wool, hard, bendy, rough, soft, smooth, waterproof, absorbent, stiff	Names of materials (Y1) Properties of materials – as for Y1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid, shape, push, pull, twist, squash, bend, stretch		solid, liquid, gas, evaporation, state, condensation, particles, melting, temperature, freezing, heating, water cycle	thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, hardness, magnetic, conductivity, filtering, evaporation, dissolving, mixing	
Seasonal changes								
Knowledge content		Understand the effect of changing seasons on the natural world around them. Understand some important processes and changes in	Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies.				Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun	

		the natural world around them, including the seasons and changing states of matter.					across the sky. *(See Earth and space.)*	
Vocabulary		spring, summer, autumn, winter, hot, cold, warm, weather	weather (sunny, rainy, windy, snowy etc.) seasons, winter, summer, spring, autumn sun, sunrise, sunset, moon, night, light, dark					

	Living things and their habitats							
Knowledge content		Begin to understand the need to respect and care for the natural	Identify and name a variety of common wild and garden plants,	Explore & compare the differences between things that are living,	Explore the part that flowers play in the life cycle of flowering	Recognise that living things can be grouped in a variety of ways.	Describe the differences in the life cycles of a mammal, an amphibian, an	Describe how living things are classified into broad groups according to

		environment and all living things. Begin to understand the concepts of growth, change and decay with natural materials. Recognise some environments that are different to the one in which they live	including deciduous and evergreen trees. *(See Plants.)* Identify and describe the basic structure of a variety of common flowering plants, including trees. *(See Plants.)* Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. *(See Animals including humans.)* Identify and name a variety of common animals that are carnivores, herbivores and omnivores. *(See Animals including humans.)* Describe and compare the structure of a variety of common animals *(See Animals, including humans.)*	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, including pollination, seed formation and seed dispersal. *(See Plants.)*	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.	insect and a bird. Describe the life process of reproduction in some plants and animals.	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		growth, decay, care		living, dead, suitable habitat, energy, food chain, predator, prey,		classification, classification key, vertebrate, fish, amphibian, reptile, bird, mammal,	life cycle, reproduce, reproduction, sexual, sperm, fertilise, egg, larvae, chrysalis,	vertebrate, fish, amphibian, reptile, bird, mammal, invertebrate,

				Example of habitats e.g. woodland, pond, desert Examples of micro-habitats e.g. bushes, logs etc.		**invertebrate**, snail, slug, worm, insect, **environment, habitat,** human impact	**pupa, live young, bulb, asexual, metamorphosis**	**micro-organism, fungi, flowering, non-flowering** Examples of each
	Rocks							
Knowledge content			Distinguish between an object and the material from which it is made. *(See Everyday materials.)* Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. *(See Everyday materials)* Describe the simple physical properties of a variety of everyday materials. *(See Everyday materials.)* Compare and group together a variety of everyday materials on the basis of their	Identify & compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. *(See Uses of everyday materials,)*	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.			Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. *(See Evolution and inheritance.)*

			simple physical properties. *(See Everyday materials.)*					
Vocabulary					rock, fossils, marble, sandstone, granite, pebble, boudler, layers, pumice, crystals, absorbent, hard, soft, texture, chalk, slate, peat, soil, sandy/chalk/clay			
	Light & Sound							
Knowledge content		Observe and investigate natural processes, such as a sound causing a vibration, light travelling through transparent material or an object casting a shadow.	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. *(See Animals, including humans.)* Identify, name, draw and label the basic		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	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		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

			parts of the human body and say which part of the body is associated with each sense. *(See Animals, including humans.)*		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.	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.		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		Light, dark, sound, loud, quiet, shadow			light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous	sound, source, volume, vibration, travel, wave, pitch (high/low), tone, faint, quiet, loud		As Y3 plus straight lines, light rays
	Forces and Magnets							
Knowledge content	Explore and talk about different forces they can feel.	Explore and talk about different forces they can feel. Observe and discuss natural processes, such as a magnet attracting an object.		Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. *(See Uses of everyday materials.)*	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		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,	

					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.		that act between moving surfaces. Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	
Vocabulary		Magnet, push, pull			force, push, pull, twist, contact/ non-contact force, magnetic, magnet, strength, attract, repel, metal, iron, steel, poles, north/south pole		air resistance, water resistance, friction, gravity, Newton, gears, pulleys, levers, mechanism	
	Electricity							
Knowledge content						Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells,		Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.

						wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.		Compare and 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						electricity, electrical appliance/device, circuit, component, cell, battery, series, connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator		Circuit, complete circuit, cell, bulb, battery, buzzer, motor, switch, voltage, volts, amp, insulator, conductor
	Earth and Space							
Knowledge content			Observe changes across the four seasons. *(See Seasonal changes.)*				Describe the movement of the Earth and other planets relative to the	

			Observe and describe weather associated with the seasons and how day length varies. *(See Seasonal changes)*				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							Earth, Sun, Moon, Mercury, Venus, Mars, Jupiter, Uranus, Neptune, Axis, Rotation, Orbit, Day, Night, Phases of the Moon, star, constellation, planets, solar system, satellite, comet	

	Evolution and inheritance							
Knowledge content				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. *(See Living things and their habitats.)*	Describe in simple terms how fossils are formed when things that have lived are trapped within rock. *(See Rocks)*	Recognise that environments can change and that this can sometimes pose dangers to living things. *(See Living things and their habitats.)*		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								offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, genetics

Vocabulary in **bold** = essential vocabulary

Knowledge content in red = objectives from a different unit that supports learning in that unit.