

# Science progression of knowledge & vocabulary



## **EYFS**

	Knowledge and Understanding the world	Key questions/ provocations
Is developing an understanding of growth, decay and changes over time Shows care and concern for living things and the		<ul> <li>Sand and water - textures</li> <li>Toy cars, play-dough (pushes and pulls)</li> <li>Use the local area for exploring both the built and the natural environment. town, village, countryside, forest school</li> <li>Provide opportunities to observe things closely through a variety of means, including magnifiers and photographs. Mini-beast hunts. Bird-spotting</li> <li>Provide play maps and small world equipment for children to create their own environments.</li> <li>Teach skills and knowledge in the context of practical activities, e.g. learning about the characteristics of liquids and solids by involving children in melting chocolate or cooking eggs</li> </ul>
40-60 Months	Looks closely at similarities and differences in relation to places, objects, materials and living things	<ul> <li>How can I attract more birds to our playground?</li> <li>Where do fruits and vegetables come from?</li> <li>How have I changed since I was a baby?</li> <li>Spring babies – why do chickens lay eggs?</li> <li>Why do boats float?</li> <li>Why do Seagulls live by the sea?</li> </ul>
	Talks about the features of his/her own immediate environment and how environments might vary from one to another Knows about similarities and differences in relation to places, objects, materials and living things Makes observations of animals and plants and explains why some things occur, and talk about changes	Give opportunities to record findings by, e.g. drawing, writing, making a model or photographing.     Provide stories that help children to make sense of different environments.     Provide stimuli and resources for children to create simple maps and plans, paintings, drawings and models of observations of known and imaginary landscapes.  Why do seagulls live by the sea?  Where did all the flowers go? (Changes in the seasons)  How does a caterpillar change into a butterfly?
ELG Exceeding	Describes some actions which people in his/her own community do that help to maintain the area he/she lives in Knows that the living environment and living things are influenced by human activity  Knows the properties of some materials and can suggest some of the purposes they are used for Demonstrates familiarity with basic scientific concepts such as floating, sinking, experimenting	Give opportunities to design practical, attractive environments, for example, taking care of the flowerbeds or organising equipment outdoors.  Solve problems (make some curtains to keep Baby bears bedroom dark at night-time, I can make a boat that floats)



**Year 1**Year 1 – *Knowledge and Understanding* 

	Seasonal Changes	Materials	Plants	Animals inc. Humans
Year 1	Observe changes across the four seasons.  Observe and describe weather associated with the seasons and how day length varies.	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 & group together a variety of everyday materials on the basis of their simple physical	Identify & name a variety of common wild & garden plants, including deciduous & evergreen trees.  Identify and describe the basic structure of a variety of common flowering plants, including trees.	Group animals according to what they eat  Identify, name, draw & 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 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).
Vocab	Light & dark, bright, light, dark, black, night, day, reflective strip, reflect, torch, warning light, Sun, candle, lamp, darker, darkest, brighter, brightest, brightness, shine, spring, summer, autumn, winter.	properties.  Materials, materials, natural, man-made, manufactured, object, change, bake, bend, twist, stretch, squash, heat, cool, freeze, melt, boil, new material Pushes & pulls, push, pull, movement, twist, spin, swing, slide, swerve, hop, jump, turn, fast, slow, faster, slower, go further, safe, danger, be careful, pushing, pushed, pulling, pulled, moving	Plants & animals in the local environment, reproduce, produce young, produce new plants, animals, plants, shoot, within, under, next to, fruit, earth, soil, seeds Growing plants, plant, plants, branch, root, stem, trunk, flower, leaf, leaves, seeds, seedlings, weed, grow, growing, living, alive, not living, not alive, dead, healthy	Ourselves, sense, eye, ear, nose, mouth, hand, foot, feet, senses, arm, leg, head, neck, knee, wing, beak, see, hear, smell, touch, feel, alive, living, not alive, human, animal, tall, tallest, taller, like, similar to, different, difference, same, body, bodies, change, short, shorter, shortest, grow, move, adult, young Sound & hearing, sound, sounds, high, low, loud, quiet, shake, rattle, blow, pluck, tap, scrape, ring, silence, direction, louder, loudest, quieter, quietest, noise, soft, further away, nearer, hear, ear, faint, fainter, volume
		Year 1 - Suggested	Linked Texts (Reading Across the Curriculum)	
	Tree: Seasons Come, Seasons Go (Patricia Hegarty and Britta Teckentrup), One Year with Kipper (Mick Inkpen), After the Storm (Nick Butterworth)	The Great Paper Caper (Oliver Jeffers), Who Sank the Boat (Pamela Allen), The Story of Cinderella(Walt Disney)	RSPB: My First Book of Garden Birds (Mike Unwin and Sarah Whittley), Snail Trail (Ruth Brown), Superworm (Julia Donaldson & Axel Scheffler)	A Little Guide to Wild Flowers (Charlotte Voake), The Things That I LOVE about TREES (Chris Butterworth), Harry's Hazelnut (Ruth Parsons)



**Year 2**Year 2 – *Knowledge and Understanding* 

		Materials	Plants	Animals inc. Humans	Living Things & their Habitats
		Identify & compare the suitability of a variety of everyday materials, including wood, metal, plastics, glass, brick, rock, paper and cardboard for particular uses.	Observe and describe how seeds and bulbs grow into mature plants.  Describe how plants need water,	Understand that animals, including humans, have offspring which grow into adults.	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.
Year 2		Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	light and a suitable temperature to grow and stay healthy, and describe the impact of changing these	Describe the basic needs of animals, including humans, for survival (water, food and air).	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
	2			Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	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
	Vocab	Names of materials, Sorting & using materials, metal, plastic, wood, paper, glass, clay, rock, fabric, sand, hard, soft, rough, smooth, shiny, dull, bendy, waterproof, strong, weak, group, object, sort, stretchy, magnetic, not magnetic, lets light through, transparent, properties, opaque,  Forces & movement, force, movement, direction, distance, further, furthest, fast, faster, fastest, slow, slower, slowest, higher, highest, speed up, slow down, change direction, change shape, twist, squeeze, stretch, pull, push, twist	Light, shade, sun, warm, cool, water, grow, healthy, germinate,	Health & growth, grow, growth, move, have young, reproduce, feed, diet, variety, germ, healthy, unhealthy, medicines, safety, exercise, taste, sweet, salty, sour, food, adult, young, parent, baby, Offspring, , germinate	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats, eg. pond, woodland, names of micro-habitats eg. logs, bushes etc Variation, feathers, fur, coat, beak, legs, animals, plants, branch, trunk, colour, group, leaves, moves, grows, feeds, humans, variety, similar, different, similarities, longer, longest, taller, tallest, shorter, shortest, We all, Most
			Year 2 - Suggested Linked	Texts (Reading Across the Curric	ulum)
		The Tin Forest (Helen Ward), Traction Man (Mini Grey), Three Little Pigs (Lesley Sims)	Handa's Surprise (Eileen Brown), Once There Were Giants (Martin Waddell and Penny Dale), Tadpole's Promise (Jeanne Willis and Tony Ross	The Gruffalo (Julia Donaldson), Meerkat Mail (Emily Gravett), No Place Like Home (Jonathon Emmett)	Jack and the Beanstalk(Richard Walker), Ten Seeds (Ruth Brown), A Seed Is Sleepy (Dianna Aston)



**Year 3**Year 3 – *Knowledge and Understanding* 

	Light	Forces and Magnets	Rocks	Plants	Animals inc. Humans
Year 3	Recognise that they need light in order to see things and that dark is the absence of light.  Notice that light is reflected from surfaces.  Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.  Recognise that shadows are formed when the light from a light source is blocked by a solid object.  Find patterns in the way that the size of shadows change.	Compare how things move on different surfaces.  Notice that some forces need contact between two objects, but magnetic forces can act at a distance.  Observe how magnets attract or repel each other and attract some materials and not others.  Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.  Describe magnets as having two poles.  Predict whether two magnets will attract or repel each other, depending on which poles are facing.	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.	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.  Invest the way in which water is transported within plants  Explore the part of the flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	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 animals have skeletons and muscles for support, protection and movement.
Vocab	Light & shadows, light, dark, shadow, transparent, opaque, direction, light travels, translucent, shortest, longest, highest, object, material, light source, sun, night, day	Magnets & springs, magnet, spring, metal, iron, copper, aluminium, steel, brass, attract, repel, magnetic, non-magnetic, attraction, repulsion, force, elastic, pull towards, push away from, stretch, squash, compress	Rocks & soils, rock, slate, granite, sandstone, chalk, soil, clay, sand, limestone, quartz, marble, stone, pebble, texture, absorbent, characteristic, surface	Helping plants grow well, plants, light, warmth, water, leaves, roots, stem, grow, growth, height	Moving & growing, skeleton, bone, bones, ribs, spine, skull, vertebrate, contract, relax, contraction, joint, move, muscles, muscle
			Famous Scientists		
	James Clerk Maxwell (Visible and Invisible Waves of Light)	William Gilbert (Theories on Magnetism), Andre Marie Ampere (Founder of Electro-Magnetism)	Mary Anning (Discovery of Fossils), Inge Lehmann (Earth's Mantle)	Jan Ingenhousz(Photosynthesis), Joseph Banks (Botanist)	Adelle Davis (20th Century Nutritionist), Marie Curie (Radiation / X-Rays)
		Year 3 - Suggested Linked Te	exts (Reading Across the Curric	ulum)	



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**Year 4**Year 4 – *Knowledge and Understanding* 

	Sound	States of Matter	Living Things and their Habitats	Electricity	Animals inc. Humans
	Identify how sounds are made, associating some of them with something vibrating.	Compare and group materials together, according to whether they are solids, liquids or gases.	Recognise that living things can be grouped in a variety of ways.	Identify common appliances that run on electricity  Construct a simple electrical circuit, identifying	Describe the simple functions of the basic parts of the digestive system in humans.
Year 4	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.	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.  Identify the part played by	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	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	Identify the different types of teeth in humans and their simple functions.  Construct and interpret a variety of food chains, identifying producers,
	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.	evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	sometimes pose dangers to living things.	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.	predators and prey.
Voca	Changing Sounds, sounds, pitch, loudness, vibrate, vibration, muffle, tuning, quiet, soft, noise, sound, source, loud, high, low, vibrating, soundproof	Solids, liquids & separating materials, solid, liquid, melt, freeze, solidify, dissolve, solution, filter, undissolved, dissolved, separate, sieve, mix  Changing State, evaporate, evaporation, condense, condensation, change of state, state, gas, conditions, solidify, freezing, melting	Keeping warm, warm, warmth, cold, temperature, thermometer, degrees, Celsius, conductor, insulator, thermal, thermal conductor, thermal insulator, conduct, insulate, measure, room temperature	Using electricity, electricity, bulb, bulb holder, buzzer, battery, battery holder, switch, connection, wire, mains, crocodile clip, break, dim, bright, light, plug, socket, brighter	Teeth & eating, feed, feeding, growth, activity, food groups, vegetables, meat, fish, cereals, sugars, fats, fruits, starches, tooth, teeth, incisor, molar, canine, diet, healthy, unhealthy, root, decay, food, balanced diet
			Famous Scientists		



Aristotle (Sound Waves), Gailileo Galilei (Frequency and Pitch of Sound Waves), Alexander Graham Bell (Invented the Telephone)	Anders Celcius (Celcius Temperature Scale), Daniel Fahrenheit (Fahrenheit Temperature Scale / Invention of the Thermometer)	Cindy Looy (Environmental Change and Extinction), Jaques Cousteau (Marine Biologist)	Thomas Eddison (First Working Lightbulb), Joseph Swan (Incadesecant Light Bulb)	Ivan Pavlov (Digestive System Mechanisms), Joseph Lister (Discovered Antiseptics)
Year 4 - Suggested Linked Texts (Reading Across the Curriculum)				
Horrid Henry Rocks (Francesca Simon), Moonbird (Joyce Dunbar) The Pied Piper of Hamelin (Natalia Vasquez)	Charlie and the Chocolate Factory (Roald Dahl), Once Upon a Raindrop: The Story of Water (James Carter), Sticks (Diane Alber)	The Vanishing Rainforest (Richard Platt), The Morning I Met a Whale (MichaelMorpurgo), Journey to the River Sea (Eva Ibbotson)	Until I Met Dudley (Roger McGough), Oscar and the Bird: A Book about Electricity (Geoff Waring), Electrical Wizard: How Nikola Tesla Lit Up the World (Elizabeth Rusch)	Human Body Odyssey (Werner Holzwarth), Crocodiles Don't Brush Their Teeth (Colin Fancy), Wolves (Emily Gravett)

Year 5 – Knowledge and Understanding

	Forces and magnets	Earth and Space	Materials Materials	Living Things and their Habitats
	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling	and the other planets, relative to the Sun e of gravity acting and the other planets, relative to the Sun (electrical and thermal), and response to magnets.		Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.  Describe the life process of reproduction in
	object.	Describe the movement of the Moon relative to the Earth.	Recognise that some materials will dissolve in liquid to form a solution and describe hot to recover a substance from a solution	some plants and animals.
Year 5	resistance, water resistance and friction that act between moving surfaces.	riction that act between moving approximately spherical bodies. be separated, including through filtering, sieving and evaporating.		Animals including humans Describe the changes as humans develop to old age
	Recognise that some mechanisms, including levers,  Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.  Give reasons, base particular uses of explain day and night and the apparent movement of the sun across the sky.		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.	
Voca			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.	
	Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	Earth, Sun & Moon, Earth, Sun, Moon, sphere, revolve, orbit, spin, rotate, axis, sunrise, sunset, north, south, east, west, light source, shadow	Gases Around Us, gas, gases, air, oxygen, carbon dioxide, helium, natural gas, carbon monoxide, evaporate, evaporation, condense, condensation, change of state, liquid, solid, properties, material More About Dissolving, dissolve, dissolving, undissolved, solution, mixture, evaporate, condense, pure, separate, clear, cloudy, filter, solid Reversible & Irreversible Changes, reversible, irreversible, change, melting, freezing, evaporating, condensing, filtering, separating, burning, insoluble,	Life Cycles, reproduce, reproduction, stamen, stigma, sepal, petal, ovary, pollen, style, germinate, germination, fertilise, fertilisation, pollinate, pollination, disperse, dispersal, life cycle, babyhood, childhood, adolescence, adulthood



		Famous Scientists	
Galileo Galilei (Gravity and Acceleration), Isaac Newton (Gravitation), Archimedes of Syracuse(Levers)	Claudius Ptolemy and Nicolaus Copernicus (Heliocentric vs Geocentric Universe), Neil Armstrong (First man on the Moon), Helen Sharman (First British astronaut), Tim Peake (First British ESA astronaut)	Spencer Silver, Arthur Fry and Alan Amron (Post-It Notes) Ruth Benerito (Wrinkle-Free Cotton)	David Attenborough (Naturalist and Nature Documentary Broadcaster), James Brodie of Brodie (Reproduction of Plants) Thomas Young Theory of Light), Ibn al- Haytham (Light and our Eyes)
	Year 5 - Suggeste	ed Linked Texts (Reading Across the Curriculum)	
The Enormous Turnip (Katie Daynes) Leonardo's Dream (Hans de Beer) , The Aerodynamics of Biscuits (Clare Helen Welsh)	The Skies Above My Eyes (Charlotte Guillain & Yuval Zommer), George's Secret Key to the Universe (Lucy and Stephen Hawking with Christophe Galfard), The Way Back Home (Oliver Jeffers)	Itch (Simon Mayo), Kensuke's Kingdom (Michael Morpurgo) The BFG (Roald Dahl)	Charlotte's Web (E.B. White), The Land of Neverbelieve (Norman Messenger), Mummy Laid an Egg (Babette Cole) Letters from the Lighthouse (Emma Carroll), The Gruffalo's Child (Julia Donaldson), The King Who Banned the Dark (Emily Haworth-Booth)

Year 6
Year 6– Science Programme of Study – *Knowledge and Understanding* 

	Living Things and their Habitats	Evolution and Inheritance	Animals inc. Humans	Light	Electricity
Year	Describe how living things are classified into broad groups according to common observable characteristics and	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.	Recognise that light appears to travel in straight lines  Use the idea that light travels	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
6	based on similarities and differences, including micro-organisms, plants and animals.	ago.  Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	in straight lines to explain that objects are seen because they give out light into the eye	Compare and give reasons for variations in how components function, including brightness of bulbs, the loudness of buzzers and the on/off position of switches
	Give reasons for classifying plants and animals based on specific characteristics.	their parents.  Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	Describe the ways in which nutrients and water are transported within animals, including humans.	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 recognised symbols when representing a simple circuit in a diagram
Vocab	Micro-organisms, micro- organism, microbe, germ, virus, decay, mould, feed, grow, reproduce, bacteria	Interdependence & Adaptation, plant growth, fertiliser, nutrients, consumer, producer, predator, prey, food chain, key, suited, plant food, produces, identify, habitats, life processes	Keeping Healthy, diet, balanced diet, side effect, fats, sugars, starches, food types, heart, circulation, heart beat, pulse, pulse rate, muscle, blood, blood vessel, lung, breathe, growth, activity	How We See Things, light, beam, reflect, reflection, opaque, mirror, light travelling, source, reflected, travel, block, shiny surface	Changing Circuits, circuit, complete circuit, conductor, insulator, symbol, circuit diagram, electricity, component, voltage
Famous Scientists					



	Carl Linnaeus (Identifying, Naming and Classifying Organisms)	Charles Darwin and Alfred Russel Wallace (Theory of Evolution by Natural Selection), Jane Goodall (Chimpanzees)		Justus von Liebig (Theories of Nutrition and Metabolism), Sir Richard (Linking Smoking and Health Problems), Leonardo Da Vinci (Anatomy)	
Year 6 - Suggested Linked Texts (Reading Across the Curriculum)					
	Beetle Boy (M G Leonard)			eart Boy rie Blackman)	Hair in Funny Places (Babette Cole)
	Insect Soup (Barry Louis Polisar)	The Molliebird (Jules Pottle)	Skellig (David	<b>g</b> I Almond)	Giant (Kate Scott)
	Fur and Feathers (Janet Halfmann)	Our Family Tree (Lisa Westberg Peters)		n <b>rt Pumping Adventure</b> ner Manley)	You're Only Old Once! (Dr. Seuss)