



Science Intent

Our Science curriculum aims to develop our pupils’ inquisitive natures and a curiosity in how the world works. Our curriculum is taught through our themed topics, which immerse pupils into learning, giving it purpose, focus and context. Content is carefully planned to be progressive, with an aim to consolidate learning and build upon prior knowledge and skills. We strive to go beyond the National Curriculum to ensure that our pupils have a foundation of knowledge which is then developed and deepened. Science is assessed through Enquiry Questions which have been written to encourage pupils to draw on their science learning to formulate a structured, informed and scientifically accurate response.

Working scientifically is a theme which runs throughout our Science Curriculum. We support pupils to work scientifically, carrying out tests and experiments with increasing accuracy and precision.

We teach science weekly as well as dedicating a term to a science topic. Our annual ‘Science week’ is an additional opportunity for pupils to engage in a range of experiments and have fun!


You can follow our Science learning by searching on Twitter @Linden_Science


Our Science Themes


Working Scientifically	Animals including humans	Living things and their habitats	Properties and changes of materials	Rocks and Evolution	Electricity	Sound	Light	Forces	Earth and Space	Seasonal changes





Science Progression and Programme of Study

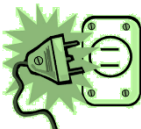
Working Scientifically	EYFS		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	3-4 year olds	Reception						
	<p>Understand ‘why’ questions.</p> <p>Talk about what they see using a wide vocabulary.</p> <p>Explore how things work</p>	<p>Learn new vocabulary and use it in different contexts.</p> <p>Ask questions to find out more and check what has been said to them.</p> <p>Articulate their ideas and thoughts in well-formed sentences.</p> <p>Describe events in some detail.</p> <p>Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen.</p> <p>Make comments about what they have heard and ask questions to clarify their understanding.</p>	<p>asking simple questions and recognising that they can be answered in different ways</p> <p>performing simple tests</p> <p>observing closely, using simple equipment</p> <p>identifying and classifying</p> <p>gathering and recording data to help in answering questions</p> <p>using their observations and ideas to suggest answers to questions</p>	<p>asking relevant questions and using different types of scientific enquiries to answer them</p> <p>setting up simple practical enquiries, comparative and fair tests</p> <p>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>using straightforward scientific evidence to answer questions or to support their findings.</p>	<p>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>using test results to make predictions to set up further comparative and fair tests</p> <p>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>identifying scientific evidence that has been used to support or refute ideas or arguments</p>			
Key Vocabulary	Describe, same, different, test, watch, pattern, group, measure, predict		Compare, describe, similar, different, test, classify, notice Patterns, group, measure, record, data, bar chart, gather Predict, observe	Compare, describe, similar, different, test, hypothesis, classify, categories, notice Patterns, group, measure, record, data, bar chart, gather Predict, observe	Compare, describe, similar, different, investigate, test Hypothesis, classify, categories Notice, patterns, group, measure, record, data, scattergram, table, bar chart Gather, predict, observe Research, identification key, survey, database, fair test Sort, theory	Compare, describe, question, similar Different, investigate, test, hypothesis Classify, branching database, identify Categories, notice, patterns, group Measure, record, data, scattergram Table, bar chart, gather, predict, observe Research, identification key, survey Database, fair test, sort, theory	Compare, describe, question, similar, different Investigate, test, hypothesis, classify, branching database, identify, categories, notice, patterns Group, measure, record, data, scattergram, table, bar chart, gather, predict, observe, research, identification key, survey, database fair test, sort, theory, line graph, causal relationship, opinion/fact, variables, accuracy precision, scatter graphs, enquiry, degree of trust, support/refute, model	Compare, describe, question, similar, different, investigate, test, hypothesis, classify, branching, database, identify, categories, notice, patterns Group, measure, record, data, scattergram, table bar chart, gather, predict, observe, research, identification key, survey, database, fair test sort, theory, line graph, causal relationship, opinion/fact, variables, accuracy, precision scatter graphs, enquiry, degree of trust, support/refute, model, cladogram, findings

<u>Animals including humans</u>	<u>EYFS</u>		<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>	
	<u>3-4 year olds</u>	<u>Reception</u>	<u>King of the Jungle</u>	<u>Africa</u>	<u>Amazing South America</u>	<u>Egyptians</u>	<u>PSHE</u>	<u>Is it Worth the Risk?</u>	
	Make healthy choices about food, drink, activity and toothbrushing. food tasting all year round	Know and talk about the different factors that support their overall health and wellbeing: <ul style="list-style-type: none">- regular physical activity- healthy eating- toothbrushing- sensible amounts pf ‘screen time’- having a good sleep routine- being a safe pedestrian Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. Explore the natural world around them, making observations and drawing pictures of animals and plants. I wonder if dark is important – Autumn 2	identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	notice that animals, including humans, have offspring which grow into adults	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	describe the simple functions of the basic parts of the digestive system in humans	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	
	Begin to make sense of their own life story and family’s history. (History spring 1)		identify and name a variety of common animals that are carnivores, herbivores and omnivores	find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	identify that humans and some other animals have skeletons and muscles for support, protection and movement.	identify the different types of teeth in humans and their simple functions		describe the ways in which nutrients and water are transported within animals, including humans.	
	Understand the key features of the life cycle of an animal.		describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		construct and interpret a variety of food chains, identifying producers, predators and prey.			recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
	Begin to group animals based on their similarities and differences. Introduce the language of animal groups. I wonder if dinosaurs lived in zoos? - Autumn 2								
Begin to understand what animals need to survive and how they get these from their habitats I wonder if dinosaurs lived in zoos? - Autumn 2	identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.								
Key Vocabulary	Baby, adult, child, changes, Growing, centimetre, millimetre, ears, senses, taste, touch, sight, smell, hear, taste, tongue, sensory, behaviour, habitat, living things, damp, dry, hot, cold, birds, fish, amphibians, reptiles, mammals		Baby, adult, child, changes, Growing, centimetre, millimetre, ears, senses, taste, touch, sight, smell, hear, taste buds, classify, tongue, sensory, behaviour, habitat, living things, damp, shady, dry, vertebrate, invertebrate, backbone, birds, fish, amphibians, reptiles, mammals	Egg, chick, hatch, baby, adult, grow, change, feathers, young, old, change, adults, basic needs, food, water, shelter, air, breathing, heart, beating, healthy, exercise, fruit, vegetables, bread, rice, potatoes, pasta, milk, dairy, food high in fat, sugar, meat, fish, beans	Herbivore, carnivore, omnivore, nutrition, diet, food chain, carbohydrates, proteins, dairy, fats, sugars, vitamins, minerals, fibre Growth, repair, health Energy, vertebrate, invertebrate, bone, skeleton, skull, ribcage, pelvis, femur, muscles, joints, tendons, contract, relax, biceps, triceps, lungs Diaphragm lung, capacity	Teeth, incisors, molars, canines, jaw, evidence, digestion, chew, saliva, digestive system, nutrition, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, faeces Diet, herbivore, omnivore, carnivore food chain, producer, predator, prey, consumer, impact	Gestation, life cycle, sperm, egg, foetus, development, nutrition, uterus, baby, child, growth, development, centile, healthy, adolescence, adolescent, puberty, teenager, reproduction, testicles, pubic hair, vagina, penis, scrotum, genitals, period, menstruation, pregnancy, aging, old age, elderly, adult, death	Blood, blood vessels, ventricle, atrium, plasma, platelets, red blood cells, white blood cells, arteries, veins, capillaries, heart, pumps Oxygen, carbon dioxide, lungs, nutrients Water, circulatory system, double circulation Exercise, diet, health, drugs, lifestyle, addiction, disease, medicine, alcohol, cigarettes, stimulant, depressant, analgesic hallucinogen	


<u>Living things and their habitats (including plants)</u>	<u>EYFS</u>		<u>Year 1</u> <u>King of the Jungle</u>	<u>Year 2</u> <u>It's a Bug's Life</u>	<u>Year 3</u> <u>Amazing South America</u>	<u>Year 4</u> <u>Save our World</u>	<u>Year 5</u> <u>Survival</u>	<u>Year 6</u> <u>Is it Worth the Risk?</u>
	<u>3-4 year olds</u>	<u>Reception</u>						
	Plant seeds and care for growing plants. I wonder how I will get there? Summer 1	Explore the natural world around them. I wonder what makes a hero – Spring 1 I wonder what's under my feet – Spring 2 I wonder where we will go – Summer 2	identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	explore and compare the differences between things that are living, dead, and things that have never been alive	identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers	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 insect and a bird	describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
	Understand the key features of the life cycle of a plant. I wonder where I came from? Summer 2	Recognise some environments that are different to the one in which they live. I wonder what makes a hero – Spring 1 I wonder what's under my feet – Spring 2 I wonder if it's real – Summer 1 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.	Identify and describe the basic structure of a variety of common flowering plants, including trees.	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	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	explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	describe the life process of reproduction in some plants and animals.	
	Begin to understand the need to respect and care for the natural environment and all living things. Spring 1 polar bears			identify and name a variety of plants and animals in their habitats, including microhabitats	investigate the way in which water is transported within plants	recognise that environments can change and that this can sometimes pose dangers to living things		
				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.	explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
				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.				
	Key Vocabulary	Plant, leaf, grow, change, living, water, healthy, seeds, pollen, flower, roots, stem, leaves, tree, trunk, bark	Plant, leaf, grow, weed, change, living, water, healthy, potato, chit, seeds, pollen, flower, deciduous Evergreen, roots, stem, leaves, tree, trunk, bark	Seed, disperse, wind, pollination, bulb, hydroponics, produce, harvest, water, warmth, nutrients, soil, dry, wet, moist, growth, germination, leaves, stem, roots, living, dead, never been alive, needs, air, feeds, grows, reproduces, gets rid of waste, microhabitat damp/dry/wet, dark/light/shady, features Habitat, savannah Rainforest, tundra food chain, predators dependence, energy transfer seasons, sun, mini-beasts	Plants, growth, light, warmth, air, soil, water Seedlings, height, root Stem, leaves, flowers, petals, buds, fruits, seeds Classify, light level, temperature, wilting, yellowing, requirement, male, female, stigma, stamens, style, ovary Ovules, carpel, pod, seeds Berry, seed head, pollination, fertilisation Reproduction, dispersal, germination	Alive, dead, never been alive, movement, reproduction, sensitivity Nutrition, excretion, respiration, growth, habitat, local, living thing, animal, insect, natural, manmade, vertebrate, invertebrate, arachnid, variety, question, explore, key, environment, change, danger, adapt, threat, climate, greenhouse, thermometer, carbon dioxide	Gamete, stamen, stigma, carpel, pistil, pollination, germination, flowering, sexual reproduction, asexual reproduction, life cycle, seed, pollen, anther, filament, style, ovary, botanical, dissection, corm, bulb, spores, cutting, fern, moss, liverwort, tubers, asexual non-flowering, propagation, artificial, natural metamorphosis, amphibian, insect, mammal bird, gestation, foetus, sperm, egg, uterus, chick, baby, adult, natural scientist, naturalist conservation, endangered	Classification, kingdom, phylum, class, order Family, genus, species, Linnaeus, micro-organism, organism, taxonomy

<u>Properties and changes of materials</u>	<u>EYFS</u>		<u>Year 1 Pirates</u>	<u>Year 2 Explorers</u>	<u>Year 3</u>	<u>Year 4 Save our World</u>	<u>Year 5 Survival</u>	<u>Year 6</u>
	<u>3-4 year olds</u>	<u>Reception</u>						
	Use all their senses in hands-on exploration of natural materials. I wonder how I will get there? Summer 1	Explore the natural world around them. I wonder what makes a hero – Spring 1	distinguish between an object and the material from which it is made	identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses		compare and group materials together, according to whether they are solids, liquids or gases	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	
	Explore collections of materials with similar and/or different properties. I wonder how I will get there? Summer 1	I wonder what's under my feet – Spring 2					know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	
	Talk about the differences between materials and changes they notice. I wonder how I will get there? Summer 1	I wonder where we will go – Summer 2						
	Understand that they are familiar with basic scientific concepts such as floating, sinking, experimentation. I wonder why it is cold? Spring 1	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching		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)	decide how mixtures might be separated, including through filtering, sieving and evaporating	
	Talks about why things happen and how things work I wonder why it is cold? Spring 1		describe the simple physical properties of a variety of everyday materials			identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	
			compare and group together a variety of everyday materials on the basis of their simple physical properties				use knowledge of solids, liquids and gases to 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.		
Key Vocabulary	rough/smooth, flat/bumpy, sharp/blunt, wood, metal, plastic, glass, rock, materials, properties, magnetic, non-magnetic, waterproof absorbent, easy to breaks/tears, hard to break/tear, water ice, melts, frozen, puddle bigger, smaller		rough/smooth, flat/bumpy, sharp/blunt, wood, metal, plastic, glass, rock, materials, properties, magnetic, non-magnetic, waterproof absorbent, lightweight breaks/tears, water ice, melts, frozen, puddle evaporation, bigger, smaller	Material, properties, absorbency, waterproof, strong, weak, resist, flexible Rigid, stiff, hard, soft, twist/twisting, squash/squashing, bend/bending, stretch/stretching, melting Particles, changing shape Tear, rip, weight, grams		Solid, liquid, state, matter, particle, grain, category, classify, group, evidence, question, discuss, gas, evidence Proof, explain, solidifying, freezing, melting, condensing/condensation, evaporating/evaporation, particles, thermometer, temperature, Celsius, Farenheit Degrees, precipitation, ice Rain, clouds, vapour, transpiration, cycle	material names, property names, thermal insulator/conductor, solid, liquid, gas, dissolve, soluble, solute, solution, line graph, insoluble, filter, sieve, magnetism, evaporation, reversible, irreversible, not usually reversible, gas released, chemical reaction, mixture, heating, burning, reaction	


<u>Rocks and evolution</u>	<u>EYFS</u>		<u>Year 1</u>	<u>Year 2</u>	<u>Year 3 Invaders</u>	<u>Year 4</u>	<u>Year 5 Survival</u>	<u>Year 6 Where did it all Begin?</u>
	<u>3-4 year olds</u>	<u>Reception</u>						
	Use all their senses in hands-on exploration of natural materials.	Explore the natural world around them. I wonder what makes a hero – Spring 1			compare and group together different kinds of rocks on the basis of their appearance and simple physical properties		Classify different rocks: sedimentary, metamorphic and igneous.	recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
	Explore collections of materials with similar and/or different properties.	I wonder what's under my feet – Spring 2			describe in simple terms how fossils are formed when things that have lived are trapped within rock		Explain how fossils are formed.	recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
	Begin to understand how fossils are made. I wonder if dinosaurs lived in zoos? - Autumn 2	I wonder where we will go – Summer 2			recognise that soils are made from rocks and organic matter.			identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Key Vocabulary	Rock, sand, chalk, granite, slate, marble, brick, concrete, fossil, soil				Rock, sandstone, limestone, chalk, granite, slate, marble, petrologist man-made rocks, brick, tile, concrete, igneous, sedimentary, metamorphic, permeable, mpermeable, acid, erosion, fossil, ichthyosaur, plesiosaur, ammonite, sediment minerals, mould, cast, soil, micro-organisms, organic matter, particles, sand, silt			Offspring, characteristics, vary/variation inherit/inheritance, environmental variation, suited/suitable, environment adaptation/adapted, characteristics natural selection, evolution, fossils

Electricity	EYFS		Year 1	Year 2	Year 3 DT	Year 4 Super Senses	Year 5	Year 6 Where did it all Begin?
	3-4 year olds	Reception						
	To begin to understand electricity. To connect a simple circuit. <i>I wonder what is beyond the sky – Spring 2</i>				An introduction into electricity During DT Torch Project	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		associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit .
	Begin to understand the concept of light, dark and shadows. <i>I wonder what is beyond the sky – Spring 2</i>					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		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
						recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit		use recognised symbols when representing a simple circuit in a diagram
						recognise some common conductors and insulators, and associate metals with being good conductors.		
Key Vocabulary	Wire, plug, socket, switch, battery, light bulb, power, danger, safety, electric					Electricity, circuit, switch, battery, plug, mains, appliance Device, wire, crocodile clip, bulb, buzzer, connection, power Cell, danger, electrocute, socket, safety, energy, flow Current, conductor, insulator		Electricity, appliances/device, electrical circuit, complete circuit, parallel circuit circuit symbol, components, cell, battery positive/negative, connect/connection loose connection, short circuit, wire crocodile clip, bulb, bright/dim, switch buzzer, volume, motor, fast(er)/slow(er) voltage, current, conductor, insulator metal/non-metal, resistance

Sound	EYFS		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	3-4 year olds	Reception	Deaf Awareness	Deaf Awareness	Deaf Awareness	Super Senses	Deaf Awareness	Deaf Awareness
	Explores and learns how sounds can be changed. (Linked to phonics) <i>I wonder if you have heard this one? - Autumn 1</i> To begin to understand sound <i>I wonder what is beyond the sky? Spring 2</i>	Describe what they see, hear and feel while they are outside. <i>I wonder if you've heard this one – Autumn 1</i> <i>I wonder what's under my feet – Spring 2</i>	During deaf awareness week (May 2021) Identify different sounds. and their sources. Create different sounds using a variety of objects/untuned instruments Recognise 'louder' and 'quieter' sounds. Illustrate that we use our ears to hear sounds.	During deaf awareness week (May 2021) Categorise sounds Compare and contrast using own criteria. Suggest ways to protect our ears from loud sounds.	During deaf awareness week (May 2021)	identify how sounds are made, associating some of them with something vibrating	During deaf awareness week (May 2021)	During deaf awareness week (May 2021)
					Listen to and describe a range of sounds from different sources.	recognise that vibrations from sounds travel through a medium to the ear	Experiment with, explain and demonstrate the pattern between pitch of sound and the features of the object that produced it.	Relate your understanding of pitch to musical instruments.
					Identify the source of sounds.	find patterns between the pitch of a sound and features of the object that produced it	Experiment with, explain and demonstrate the pattern between the volume of a sound and the distance from its source.	Relate your understanding of volume to a range of orchestral instruments.
					Complete experiments and record findings that demonstrate how a tuning fork is vibrating when it makes a sound.	find patterns between the volume of a sound and the strength of the vibrations that produced it	Experiment with, explain and demonstrate the pattern between the volume of a sound and the strength of the vibrations that produced it.	Why might (suggest, reason) a thunderclap sound loud to some and feint to others?
						recognise that sounds get fainter as the distance from the sound source increases.		
Key Vocabulary	Ear, louder, quieter, instrument, music, sound	Ear, senses, louder, quieter, instrument, music, string, sound	Defenders, sound, ear, ear drum, loud, quiet, repeated, deaf, senses	Deaf, hearing aid, radio aid, cochlea, implant, sign language, sound, vibration, senses	Sound, listen, hear, ears, noise, loud Quiet, silent, vibrations, transmit, medium, air, water, solid, source, sound waves, particles, travel, volume, loudness, amplitude, pitch Frequency, sign language, muffle	Deaf, hearing aid, radio aid, cochlea, implant, sign language, sound, vibration , pitch, source, distance, sound wave	Sound, listen, hear, ears, noise, loud Quiet, silent, vibrations, transmit, medium, air, water, solid, source, sound waves, particles, travel, volume, loudness, amplitude, pitch Frequency, sign language, muffle Deaf, hearing aid, radio aid cochlea, implant, sign language, source, distance, lip reading	



Light	EYFS		Year 1 Pirates	Year 2	Year 3 Defy the Force	Year 4	Year 5	Year 6 WW2
	3-4 year olds	Reception						
		Explore the natural world around them. I wonder what makes a hero – Spring 1 I wonder what's under my feet – Spring 2 I wonder where we will go – Summer 2	Day/night season and shadows Describe day and night – similarities and differences. Identify light sources.		recognise that they need light in order to see things and that dark is the absence of light			recognise that light appears to travel in straight lines
					notice that light is reflected from surfaces			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
					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.			
					recognise that they need light in order to see things and that dark is the absence of light			
Key Vocabulary	Sun, moon, shadow, light, dark, stars,		Sun, moon, shadow, light, dark, stars, block, light source		Light, white light, visible light, colour, spectrum, refraction, light source Energy, reflector, reflect/ion reflective materials, mirror image, concave, convex, transparent, translucent opaque, shadow			Light, energy, natural, manmade, light source, names of light sources, dark Reflect, reflective, refract, mirror, shadow, block, absorb, direct/ direction Transparent, opaque, translucent, straight, rainbow, colours, bend, iris Sclera, pupil




Forces	EYFS		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	3-4 year olds	Reception	Heroes/DT		Defy the Force		Out of this World	
	Explore and talk about different forces they can feel.		Identify push and pull forces.		compare how things move on different surfaces		explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	
					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.			
Key Vocabulary	Push, pull, fall, float, sink, fast, slow, magnet, air		Push, pull, force, resistant		Force, push, pull, gravity, contact, magnet, magnetism, magnetic, non-magnetic, attraction, attract, repel, repulsion, poles, north, south		Support, fall, Earth, gravity, air, resistance, friction, balancing force Weight, newtons, resistance force Variables, moving surfaces, mechanisms, levers, pulleys, transfers Gears, water resistance	

Earth and Space	EYFS		Year 1 Heroes	Year 2 Explorers (Space in Neil Armstrong history)	Year 3 Defy the Force	Year 4	Year 5 Out of this World	Year 6
	3-4 year olds	Reception						
	Begin to understand that there are changes in the natural world through the seasons. I wonder why it is cold? Spring 1	Understand the effect of changing seasons on the natural world around them. Throughout the year.	Name times of the day. Observe and describe the sun's position in the sky at different times of the school day. Name the four seasons. Notice and name the key features of each season. Observe and record weather over four seasons. Describe weather in a named season. Describe how daylight length varies in each season.	Show how might you know (apply) roughly what time it is in a day by looking at the position of the sun. Organise images or objects from each season into categories. Explain your categories Compare and contrast weather and day length across the four seasons. Identify patterns in day length across the four seasons	Describe the movement of the Earth relative to the Sun. Label and describe our solar system. Answer questions about the scientists who first Observed the Earth's movement around the Sun. Describe how the movement of the Earth gives rise to seasonal changes. Identify and label the Moon and Earth. Describe the Moon's movement relative to the Earth. Answer questions about the Moon's movement relative to the earth. Observe, name and record the phases of the Moon.		Describe the movement of the Earth, and other planets, relative to the Sun in the solar system (effect of Earth's movement on seasons and link to temperature near the equator).	
	To begin to understand the differences between seasons. I wonder why it is cold? Spring 1						Describe the movement of the Moon relative to the Earth (effect of the moon on tides of oceans and seas)	
	To know that we live on Earth and begin to understand some aspects of space I wonder what is beyond the sky? Spring 2						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	Sunrise, sunset, sun, Spring, Summer, Autumn, Winter, leaves, weather, hot, cold, snow, frost, rain, hail, fog, breeze, wind, blossom, lambs, daffodils		Sunrise, sunset, north, south east, west, sun, Spring, Summer, Autumn, Winter, leaves, weather, hot, cold, snow, frost, rain, hail, fog, breeze, wind, blossom, lambs, daffodils		Earth, Sun, Solar System, planets, orbit, moon, phases, eclipse, waning, waxing		Earth, planets, Sun, solar system, Moon, celestial body, sphere/spherical, rotate/rotation, spin, axis, night & day, shadow, locks, sundials, astronomical clocks, orbit, Mercury, Venus, Mars, Jupiter Saturn, Uranus, Neptune, Pluto, 'dwarf' planet, geocentric & heliocentric models, orrery, time-zone Greenwich Meantime, lunar, solar Eclipse, light, reflection, telescope Satellite, tide, mass, gravity	



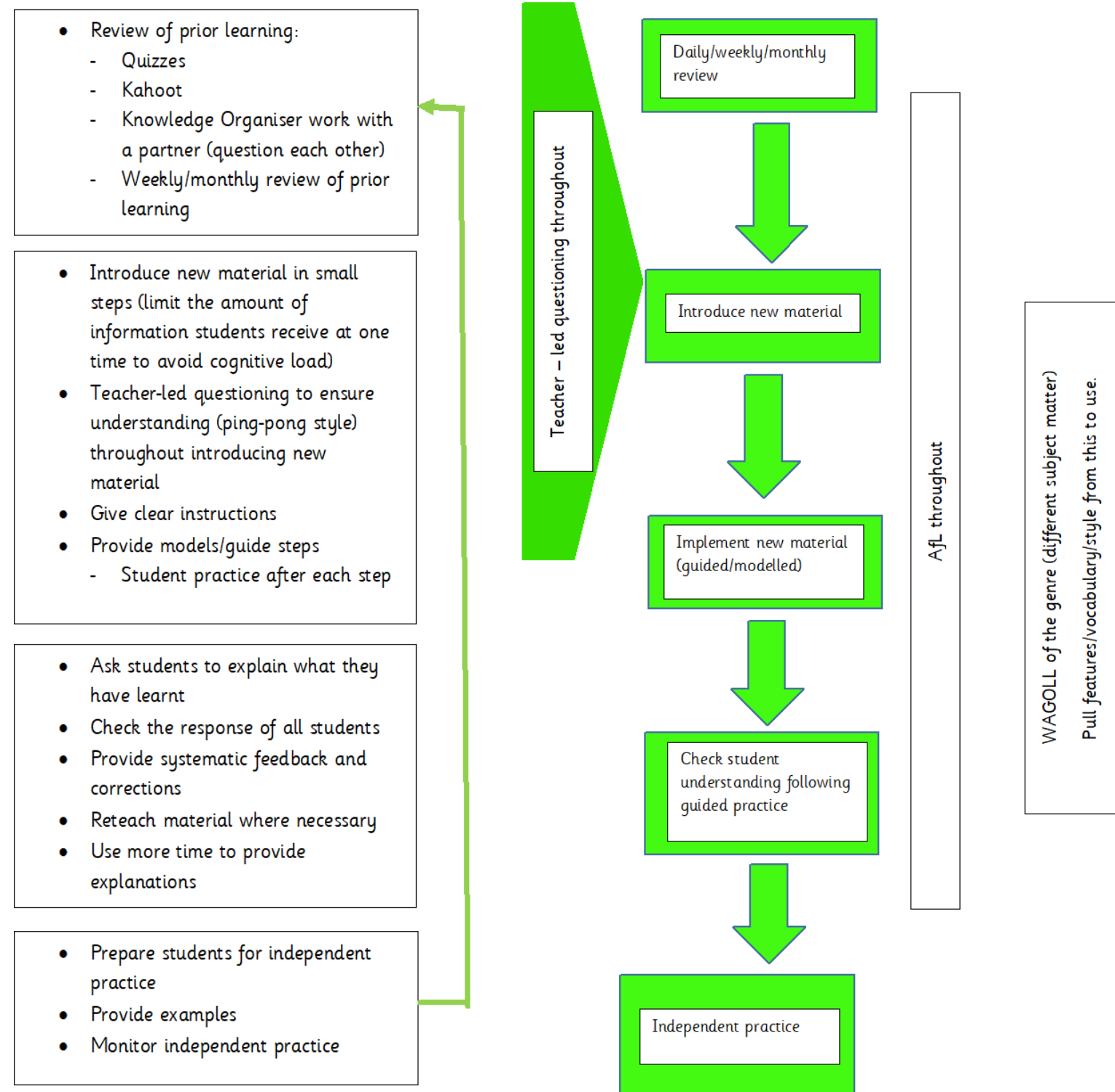
Science Assessment

Animals including humans	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	Question	Enquiry	Question	Enquiry	Question	Enquiry	Question	Enquiry	Question	Enquiry	Question	Enquiry
	Are we all the same or are we all different?	Chn discover what is the same and what is different about their bodies.	Is all food good for us?	Chn look at a variety of food labels (looking at the traffic light nutrition), comparing which are healthy and why.	How does our body move and stand up?	Chn use information from science encyclopaedias / textbooks to label a human skeleton and answer simple questions about it.	How can we know things about a dinosaur when they have been extinct for 65 million years?	Following learning about human teeth, chn use information and pictures of different teeth from dinosaurs to try to work out what they might have eaten, justifying their answers. (Use language of carnivore, omnivore and herbivore.)	What is it like to be old in the UK?	Chn use the office for national statistics information to discuss some of the challenges that face older citizens of the UK. Other secondary sources used to find out about general changes to body and health as people age.	Is our heart rate always the same?	Chn to investigate the effect of exercise on heart rate and how long it takes for their pulse to return to the resting rate after exercising for a minute.
	Are all animals totally different?	Using pictures of animals, chn find out if they can find anything that is the same for all of the animals, thinking about what they do and how they look. Show smaller and larger versions of each animal.	Do all animals start off small?	Chn pair up pictures of a variety of animals with their very young and juvenile forms.							How long does it take to get fitter?	Over the course of a month, chn investigate whether some volunteers (who do consistent exercise at break time) can lower their resting heart rate.
Living things and their habitats (including plants)	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
	Question	Enquiry	Question	Enquiry	Question	Enquiry	Question	Enquiry	Question	Enquiry	Question	Enquiry
	Are all plants the same?	Children put different plants (pictures of real) into two groups, explaining why (e.g. petals vs no petals, leaves vs no leaves, etc)	What do plants need to grow?	Chn compare two plants growing from seed. (Some are given water and some aren't.)	How does water get through a plant to where it is needed?	Chn place carnations / celery in ink and observe the changes	Are some animals more alike than others?	Children to use pictures and descriptions to put animal into groups in different ways (e.g. where they live, what they eat, how they move, how many legs, etc) moving on to using keys to differentiate between closely related animals.	If life has existed for billions of years, why are there still people alive today?	Chn use a variety given information and online resources to research and describe the life cycles of different animals, looking for the similarities between each.	Is it absolutely clear whether something is alive or not?	Chn use given resources and online research to investigate whether bacteria, viruses and fungi are definitely living things. (Whether viruses are alive is open to debate.)
	What parts is a plant made of?	Chn use pages from a science encyclopaedia to draw and label different plants, spotting similarities and differences.	Do plants grow the same amount every day?	Chn measure the height of a growing plant over a period of days and weeks	Do all plants need exactly the same things?	Chn give both a parsley plant and a small cactus minimal water over a two week period and observe the changes (perhaps drawing the result)					What make bread rise?	Chn are shown how yeast, sugar and warm water causes a reaction; they then investigate what happens to this reaction when they change particular variables of their choice (sugar/no sugar, water temperature, adding chemicals, etc)
												In what ways are living things the same and in what ways are they different?

<u>Properties and changes of materials</u>	<u>Year 1</u>		<u>Year 2</u>		<u>Year 3</u>		<u>Year 4</u>		<u>Year 5</u>		<u>Year 6</u>	
	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>
	Are all materials the same?	Chn compare a variety of materials, deciding which are hard, soft, strong, weak, smooth, rough, etc. Chn undertake actions to test whether each material has the property (e.g. touching, weighing, etc)	What materials could be used to make a good raincoat?	Chn test whether different materials are waterproof, flexible and light.			Is it always easy to tell the difference between solids, liquids and gases?	Chn make cornflour slime and discuss the properties to determine whether it is a solid, liquid or a gas.	Is it possible to separate even very small things like sand, salt and stones?	Chn use filtering and evaporation to separate a mixture of sand, salt and stones.		
							Does water always melt at the same speed?	Chn to observe and record as ice melts in different conditions (e.g. outside vs radiator, wrapped in insulation vs not)				
<u>Rocks and evolution</u>	<u>Year 1</u>		<u>Year 2</u>		<u>Year 3</u>		<u>Year 4</u>		<u>Year 5</u>		<u>Year 6</u>	
	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>
					Are all rocks made in the same way?	Using criteria, chn sort rock samples (and pictures) into the three types.					Why do animals often have colours that match their environment?	Chn hunt for coloured wool on the school field over a minute. The different colours are counted and a discussion is had about the easiest colours to spot.
<u>Electricity</u>	<u>Year 1</u>		<u>Year 2</u>		<u>Year 3</u>		<u>Year 4</u>		<u>Year 5</u>		<u>Year 6</u>	
	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>	<u>Question</u>	<u>Enquiry</u>
							Does electricity flow easily through all objects?	Chn to create a small circuit to test whether objects are conductors or insulators (e.g. circuit with bulb which lights when a gap in the circuit is bridged.)			Does electricity flow easily through all objects?	Chn to create a small circuit to test whether objects are conductors or insulators (e.g. circuit with bulb which lights when a gap in the circuit is bridged.)



Science Lesson Construct



The immersive classroom, outdoor learning and trips should be used to enhance the cultural capital and engagement of our pupils.

This construct does not mean every lesson must look the same – components of lessons can be moved and altered in duration to suit the needs of the children.

Be as creative and innovative as you like!