

Long Term Individual Subject Curriculum Plan 2020-21

Subject: Science

	Autumn 1	Autumn 2	Spring	Spring	Summer 1	Summer 2
			1	2		
Y6	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	The Circulatory System 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. Heart, pulse, rate, pumps, blood, blood	Classification • 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. • Give reasons for classifying plants and animals based on specific characteristics. Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates,	Famous Scientists and Inventors	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	Light and Astronomy 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

	different ways and that adaptation may lead to evolution. Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils	vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	insects, spiders, snails, worms, flowering, non- flowering		simple circuit in a diagram. Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage	straight lines to explain why shadows have the same shape as the objects that cast them. As for Year 3 - Light, plus straight lines, light rays
Y5	Living Things and Their Habitats • 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 Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Properties and Cha Compare and group materials on the basis including their hard transparency, conduct thermal), and respe Know that some material individes to form a solution recover a substance Use knowledge of solid decide how mixtures including through filt evapor Give reasons, base comparative and fair to uses of everyday mater wood and the changes of state are Explain that some of formation of new mater of change is not usually changes associated water action of acid on bid Thermal/electrical insulation of state, mixture, dissociated water including through filters and the comparative and fair to use of everyday mater wood and the comparative and fair to use of the	o together everyday is of their properties, dness, solubility, ctivity (electrical and onse to magnets. Iterials will dissolve in an and describe how to be from a solution. Its, liquids and gases to might be separated, attering, sieving and atting. Iterials, including metals, including metals, including mixing and reversible changes. It in the itals, and that this kind y reversible, including with burning and the carbonate of soda	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 Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system,	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 Force, gravity, Earth, air resistance, water resistance, water resistance, friction,	Animals including Humans Describe the changes as humans develop to old age. Puberty – the vocabulary to describe sexual characteristics

	tar, orbit, ets mechanisms, simple machines, levers, pulleys, gears.	
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Working Scientifically Skills UKS2

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

- Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry.
- Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

- The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale.
- During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

• The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

- The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys.
- Children present the same data in different ways in order to help with answering the question.

Identifying scientific evidence that has been used to support or refute ideas or arguments

- Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer.
- They talk about how their scientific ideas change due to new evidence that they have gathered.

• They talk about how new discoveries change scientific understanding.

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

• In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge.

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

- They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used.
- They identify any limitations that reduce the trust they have in their data.

Using test results to make predictions to set up further comparative and fair tests

• Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.

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

• They communicate their findings to an audience using relevant scientific language and illustrations.

Y4

 Identify how sounds are made, associating some of them with something vibrating.

Sound

- 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
- Find patterns between the volume of a sound and the strength of the

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

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

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.

Digestive system, digestion, mouth, teeth, saliva,

Living things and their habitats

- 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.

Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate

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1	vibrations that	closes a circuit and	associate the rate of	oesophagus,		
	produced it.	associate this with	evaporation with	stomach, small		
	 Recognise that 	whether or not a lamp	temperature.	intestine, nutrients,		
	sounds get fainter as	lights in a simple		large		
	the distance from the	series circuit.	Solid, liquid, gas,	intestine, rectum,		
	sound source	 Recognise some 	state change,	anus, teeth, incisor,		
	increases.	common conductors	melting, freezing,	canine, molar,		
		and insulators, and	melting point, boiling	premolars, herbivore,		
	Sound, source,	associate metals with	point, evaporation,	carnivore, omnivore,		
	vibrate, vibration,	being good	temperature,	producer,		
	travel, pitch (high,	conductors.	water cycle	predator, prey, food		
	low), volume, faint,		•	chain		
	loud, insulation	Electricity, electrical				
		appliance/device,				
		mains, plug, electrical				
		circuit, complete				
		circuit, component,				
		cell, battery,				
		positive, negative,				
		connect/connections,				
		loose connection,				
		short circuit, crocodile				
		clip, bulb, switch,				
		buzzer,				
		motor, conductor,				
		insulator, metal, non-				
		metal, symbol				
V2	Rocks and soils	Animals including	Forces and	Light	Animals	Plants
Y3	Compare and group	humans – nutrition	Magnets Magnets	• Recognise that they	including	 Identify and
	together different	 Identify that animals, 	• Compare how	need light in order to	humans –	describe the
	kinds of rocks on the	including humans,	things move on	see things and that		functions of different
	basis of their	need the right types	different surfaces.	dark is the absence	skeletons and	parts of flowering
	appearance and	and amount of	Notice that some	of light.	muscles	plants: roots,
	simple physical	nutrition, and that they	forces need contact	Notice that light is	 Identify that 	stem/trunk, leaves
	properties.	cannot make their own	between two objects,	reflected from	humans and some	and flowers.
	Describe in simple	food; they get nutrition	but magnetic forces	surfaces.	other animals have	• Explore the
	terms how fossils are		can act at a distance.	Recognise that light	skeletons and	requirements of
	formed when things	from what they eat.		from the sun can be	muscles for	plants for life and
	Torried wrier unings		Observe how	dangerous and that		growth (air, light,
	1			dangerous and that		growth (all, light,

	that have lived are	Nutrition, nutrients,	magnets attract or	there are ways to	support, protection	water, nutrients from
	trapped within rock.	carbohydrates, sugars,	repel each other and	protect their eyes.	and movement.	soil, and room to
	 Recognise that 	protein, vitamins,	attract some	 Recognise that 		grow) and how they
	soils are made from	minerals, fibre, fat,	materials and not	shadows are formed	Skeleton, bones,	vary from plant to
	rocks and organic	water	others.	when the light from a	muscles, support,	plant.
	matter.		Compare and group	light source is	protect, move,	Investigate the way
			together a variety of	blocked by an	skull, ribs, spine,	in which water is
	Rock, stone, pebble,		everyday materials	opaque object.	muscles, joints	transported within
	boulder, grain,		on the basis of	 Find patterns in the 		plants.
	crystals, layers, hard,		whether they are	way that the size of		Explore the part
	soft, texture, absorb		attracted to a	shadows change.		that flowers play in
	water, soil, fossil,		magnet, and identify	_		the life cycle of
	marble, chalk,		some magnetic	Light, light source,		flowering plants,
	granite, sandstone,		materials.	dark, absence of		including pollination,
	slate, soil, peat,		 Describe magnets 	light, transparent,		seed formation and
	sandy/chalk/clay soil		as having two poles.	translucent, opaque,		seed dispersal.
			 Predict whether two 	shiny, matt, surface,		
			magnets will attract	shadow, reflect,		Photosynthesis,
			or repel each other,	mirror, sunlight,		pollen, insect/wind
			depending on which	dangerous		pollination, seed
			poles are facing	_		formation, seed
						dispersal (wind
			Force, push, pull,			dispersal, animal
			twist, contact force,			dispersal, water
			non-contact force,			dispersal)
			magnetic force,			
			magnet, strength, bar			
			magnet, ring magnet,			
			button magnet,			
			horseshoe magnet,			
			attract, repel,			
			magnetic material,			
			metal, iron,			
			steel, poles, north			
			pole, south pole			

Working Scientifically Skills LSK2
Asking relevant questions and using different types of scientific enquiries to answer them
• The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions.

• The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • The children make systematic and careful observations. • They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements. Setting up simple practical enquiries, comparative and fair tests • The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. • They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. • Children are supported to present the same data in different ways in order to help with answering the question. Using straightforward scientific evidence to answer questions or to support their findings. • Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence. Identifying differences, similarities or changes related to simple scientific ideas and processes • Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions They draw conclusions based on their evidence and current subject knowledge Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. Fighting Fit – Animals, including **Living Things and Their Habitats** Plants and Materials and Y2 • Explore and compare the differences **Living Things** Their Properties humans 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.

Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed

Names of local habitats e.g. pond, woodland etc.

Names of micro-habitats e.g. under logs, in bushes etc.

- 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

Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)

- 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.

As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy

- 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
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Names of materials wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials - as for Year 1 plus opaque, transparent and translucent. reflective, nonreflective, flexible, rigid Shape, push/pushing. pull/puling. twist/twisting, squash/squashing. bend/bending, stretch/stretching

Y1 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,
- basic parts of the human body and say which part of the body is associated with each sense. Head, body, eyes,

draw and label the

Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves Names of animals experienced first-

Seasonal change (and then ongoing)

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

Weather (sunny, rainy, windy, snowy etc.)
Seasons (winter, summer, spring, autumn)
Sun, sunrise, sunset, day length

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

Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud
Names of trees in the local area
Names of garden and wild flowering plants in the local area

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.

Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through

	hand from each		
	vertebrate group		
	Parts of the body		
	Senses – touch, see,		
	smell, taste, hear,		
	fingers (skin), eyes,		
	nose, ear		
	and tongue		
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Working Scientifically Skills KS1

Asking simple questions and recognising that they can be answered in different ways

- While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions.
- The children answer questions developed with the teacher often through a scenario.
- The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.

Observing closely, using simple equipment

- Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations.
- They begin to take measurements, initially by comparisons, then using non-standard units

Performing simple tests

• The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.

Identifying and classifying

- Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting.
- They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.

Gathering and recording data to help in answering questions

- The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing.
- They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs.
- They classify using simple prepared tables and sorting rings.

Using their observations and ideas to suggest answers to questions

	• Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources.
	Using their observations and ideas to suggest answers to questions
	• The children recognise 'biggest and smallest', 'best and worst' etc. from their data.
Reception	For skills covered in the EYFS please refer to the Understanding The World - The World - Working Scientifically section in The EYFS Lancashire Planning Document page 126.
Nursery	• Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes