The Leys Primary School Subject Overview - Science 2022-23

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS Nursery	Understanding of the world Begin to understand the need to respect and care for the natural environment and all living things.		Understanding of the world Plant seeds and care for growing plants. Talk about the differences between materials and changes they notice.		Understanding of the world Explore and talk about different forces they can feel. Understand the key features of the life cycle of a plant and an animal.	
EYFS Reception	Understanding of the world Explore the natural world around them. Describe what they see, hear and feel whilst outside. STEAM WEEK		Understanding of the world Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. STEAM WEEK		Understanding of the world 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 Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter STEAM WEEK	

			Healthy Living Week
Key Skills	Cookery Look at changes in the environment and what we notice Talk about things I can see in our school grounds Begin to manage personal hygiene Manage own personal hygiene Answer a simple question	Look at changes in the environment and what we notice Cookery Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps Answer questions about something you have done, seen or heard.	Explore the natural world around them making observations and drawing pictures of animals and plants. Cookery Make comments about what they have heard and ask questions to clarify their understanding.
Key People			
Key links to KS1/KS2	Year 1, 2 and 3 plant topics Year 1, 2, 3, 4, 5 and 6 Animals including Humans topic. Year 2, 4, 5 and 6 Living Things and their Habitats. Year 4 and 6 Electricity topic. Year 5 Properties and Changes of materials (Conductivity). Year 1 Seasonal Changes topic. Year 2 Animals including Humans. (Humans, have offspring which grow into adults). Year 6 Living Things and their Habitats.	Year 1- Seasonal Change	Year 1 -Everyday materials Year 2 - Uses of everyday materials. Year 3 – Rocks Year 4- States of Matter Year 5 - Properties and changes of materials. Year 2, 4, 5 and 6 Living Things and their Habitats.
Key Vocabulary	General • Natural, wild, wildlife, native.		

	Places • Habitats - Woodland, desert, ocean, jungle, Arctic. • Microhabitats: - Log, stone, tree, dead leaves, soil. • Seaside. Objects • British Autumn fruits and vegetables (e.g. apples, pears, beetroot, carrots, potatoes, butternut squash, sweetcorn, cauliflower). • Bread: - Mix, knead, prove, rise. Materials • Object, material, properties, suitable, pipette, recycling. • Properties - Waterproof, strong/weak, dense/less dense, hard/soft. • Materials - Bubble wrap, foil, plastic, fabric, paper, straw, sticks, bricks, metal, glass. Living things – plants • Grow • Lifecycle: - Roots, shoots, stem, leaves, buds, flower • Water, light, warmth, temperature, soil, compost Living things – animals • Body parts. • Backbone, skeleton, soft body, shell. • Adapted, hibernate, migrate. • Predator, prey. • Nocturnal. • Adult/parent, baby. • Lifecycle: - Egg, caterpillar, chrysalis, butterfly. • Birds (owl, duck), insects/bugs/ minibeasts (lacewing, ladybird, woodlouse, bee, wasp, spider, tarantula, earthworm, snail, locust, cricket, millipede, butterfly, caterpillar), fish, reptiles (snake, tortoise, gecko), amphibians, mammals (mouse, shrew, vole, hare, fox).		
Key Texts	Accessed through continuous provision	Accessed through continuous provision	Accessed through continuous provision
Key themes and values			
Year 1	Scientist: Julie Arblaster	Seasonal changes	

	Objectives: Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day lengths vary. Cross Curricular Links: Geography, physical and human features Key vocabulary: Autumn, Winter, Spring, Summer, Weather, Sunrise, Sunset Key texts: The Weather Girls; Tree - Seasons come, seasons go		
	<u>Everyday materials</u> 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. STEAM WEEK	<u>Animals, including humans</u> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Identify, name, draw and label the basic parts of the human body and say what parts of the body are associated with each sense. STEAM WEEK	<u>Plants</u> 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. STEAM WEEK Healthy Living Week
Key Skills	<u>Working Scientifically</u> • Ask simple questions and recognise that they can be answered in different ways (Year 1 focus) • Use simple equipment to observe closely (Year 1 focus)		

	• Perform simple tests (Year 1 focus) • Identify and classify (Year 1 focus) • Use his/her observations and ideas to suggest answers to questions (Year 1 focus) • Gather and record data to help in answering questions (Year 1 focus)			
Key People	Charles Macintosh (1766-1843)	Amy Vedder (1951 -)	Wangari Maathai (1940-2011)	
Key subject links	DT Wacky Windmills	PSHE human body, Dance (moving like an animal)	Topic link - beside the seaside, what plants do we find in the sea? Explanation reports (English) how a plant grows.	
Key Vocabulary	hard, stretchy, waterproof, see-through, absorbent	wing, feathers, paws, claw, hooves	leaf, flower, petal, roof, seed, trunk, stem, branch	
Key Texts	Izzy Gizmo	A first book of animals The big book of beasts	What do scientists do all day?	
Key themes and values				
Year 2	Living things and their habitats 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.	Using everyday materials Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Plants Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to	Animals, including humans Know that animals including humans have offspring which grow into adults and that they can be born in different ways and

	To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food. STEAM WEEK	STEAM WEEK	grow and stay healthy.	look different to their adult. Know what the basic needs are of animals including humans and know what they need to survive. Identify why it is important to be healthy and hygienic. STEAM WEEK Healthy Living Week
Key Skills	Working Scientifically • Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum (Year 2 focus) • Use simple equipment to observe closely including changes over time (Year 2 focus) • Perform simple comparative tests (Year 2 focus) • Identify, group and classify (Year 2 focus) • Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns (Year 2 focus) • Gather and record data to help in answering questions including from secondary sources of information (Year 2 focus)			
Key People	Jane Goodall, Dr Eugenie Clark	John Loudon McAdam (1756-1836) Julie Brusaw Charles Macintosh	David Douglas (1799-1834) Jane Colden	Dr Ernest Madu (born 1960) Sir David Attenbough

Key subject links	TOPIC Poles apart, PSHE needs of living things, English - Meerkat mail		History - Fire of London	Geography - our environment	PSHE Health and Wellbeing
Key Vocabulary	living, dead, never been alive, habitat, micro-habitat		transparent, translucent, opaque, flexible, rigid, absorbent	seed, bulb, germinate, seedling	offspring, reproduction, hygiene
Key Texts	Do you love bugs? The big book of bugs		A super sticky mistake	A seed is sleepy	
Key themes and values					
Year 3	Animals, including humans identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat -identify that	Rocks -compare and group together different kinds of rocks on the basis of their appearance and simple physical properties -recognise that soils are made from rocks and organic matter -describe in simple terms how fossils	Forces and magnets -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	Light -recognise that they need light in order to see things and that dark is the absence of light -notice that light is reflected from surfaces -recognise that light from the sun can be dangerous and that there are	Plants -identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers -explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room

	humans and some other animals have skeletons and muscles for support, protection and movement	are formed when things that have lived are trapped within rock STEAM WEEK	-predict whether two magnets will attract or repel each other, depending on which poles are facing. STEAM WEEK	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.	to grow) and how they vary from plant to plant -investigate the way in which water is transported within plants -explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. STEAM WEEK Healthy living week
Key Skills	Working Scientifically • Ask relevant questions and use different types of scientific enquiries to answer them (Year 3 focus) • Set up simple practical enquiries, comparative and fair tests (Year 3 focus) • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (Year 3 focus) • Gather, record, classify and present data in a variety of ways to help in answering questions (Year 3 focus) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (Year 3 focus) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (Year 3 focus) • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Year 3 focus) • Identify differences, similarities or changes related to simple scientific ideas and processes (Year 3 focus)				

	• Use straightforward scientific evidence to answer questions or to support his/her findings (Year 3 focus)				
Key People	Wilhelm Conrad Rontgen (1845-1923) Marie Curie	Mary Anning (1799-1847) Holly Betts	Michael Faraday (1791-1867)	Justus von Liebig (1803-1873)	Joseph Dalton Hooker (1817-1911) Professor Monique Simmonds
Key subject links	PSHE - health and wellbeing, Stones and Bones topic	History - sources	Maths - Venn Diagrams	Art - shadows and creating shadow using pencil marks	English - explanation texts, instruction writing
Key Vocabulary	nutrients, carbohydrates, protein, fibre, skeleton, bones, muscle	rock, fossil, soil	attract, repel, poles	transparent, translucent, opaque, shadow, reflect	photosynthesis, pollen, seed formation, seed dispersal, germination
Key Texts	Roller Coaster ride around the body	A rock is lively Mary Anning -little people big dreams The street beneath my feet			The big book of blooms What's inside a flower?
Key themes and values					
Year 4	States of matter		Animals including humans	Living things and their habitats	Sound Identify how sounds	Electricity Identify common

	compare and group materials together, according to whether they are solids, liquids or gases observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. STEAM WEEK	Describe the simple functions of the basic parts of the digestive system in humans	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. construct and interpret a variety of food chains, identifying producers, predators and prey. STEAM WEEK	are made, associating some of them with something vibrating recognise that vibrations from sounds travel through a medium to the ear find patterns between the pitch of a sound and features of the object that produced it find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases.	appliances that run on electricity ·construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. ·recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors.

					predict whether two magnets will attract or repel each other, depending on which poles are facing. STEAM WEEK Healthy Living Week
Key Skills	Working Scientifically • Ask relevant questions and use different types of scientific enquiries to answer them (Year 4 focus) • Set up simple practical enquiries, comparative and fair tests (Year 4 focus) • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (Year 4 focus) • Gather, record, classify and present data in a variety of ways to help in answering questions (Year 4 focus) • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (Year 4 focus) • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (Year 4 focus) • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Year 4 focus) • Identify differences, similarities or changes related to simple scientific ideas and processes (Year 4 focus) • Use straightforward scientific evidence to answer questions or to support his/her findings (Year 4 focus)				
Key People	Bernard Palissy (1510-1590)	William Beaumont (1785-1853)	Jane Goodall (Born 1934) Seirian Sumner	Christian Doppler (1803-1853)	Thomas Edison (1847-1931)
Key subject links	Maths - reading scales	PSHE Health and Wellbeing. English - explanation text	Venn diagrams. DT - Shell structures	Music - sound and melody	English - Streets through time

Key Vocabulary	melting, freezing, boiling point, condensation		digestion, herbivore, carnivore, omnivore	classification, migrate, environment, habitat, hibernate	vibration, pitch, volume	cell, battery, switch, conductor, insulator
Key Texts	The rhythm of the rain		The poo that animals do		Moses goes to a concert	
Key themes and values						
Year 5	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	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	Properties and changes of materials -compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets - know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution - use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic - demonstrate that dissolving, mixing and changes of state are reversible changes		Animals, including humans - describe the changes as humans develop to old age.	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. STEAM WEEK Healthy Living Week

	including levers, pulleys and gears allow a smaller force to have a greater effect	apparent movement of the sun across the sky. STEAM WEEK	- 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. STEAM WEEK		
Key Skills	Working Scientifically • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (Year 5 focus) • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Year 5 focus) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 5 focus) • Use test results to make predictions to set up further comparative and fair tests (Year 5 focus) • Report and present 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 (Year 5 focus) • Identify scientific evidence that has been used to support or refute ideas or arguments (Year 5 focus)				
Key People	Galileo Galilei (1564-1642) Sir Isaac Newton (1642-1726	Nicolaus Copernicus (1473-1543) Maggie Aderin-Pocock (born 1968)	Spencer Silver (born 1941) Joe Keddie	Sarah Fowler (marine biologist)	David Attenborough (born 1926) Lucy Evelyn Cheesman (1881-1969)
Key subject links	DT - pulleys and levers	Religious Education - creation of earth	Geography - natural resources	PSHE, health and wellbeing	English - debating global warming

Key Vocabulary	force, gravity, Newton, friction, resistance	Earth, Sun, Moon, rotate, orbit	conductor, insulator, dissolve, reversible, irreversible	puberty, reproduction, menstruation, foetus	life cycle, metamorphosis, reproduction
Key Texts		Dr Maggie's grand tour of the solar system Hidden figures			Life cycles - everything from start to finish
Key themes and values					

Year 6	Living things and their habitats	Evolution and inheritance	Animals including Humans	Light/Electricity
	To explore different habitats and the characteristics of each habitat - ask how climate change is affecting these habitats To develop knowledge on why certain animals live in specific habitats To develop knowledge and compare adaptations of plants and animals according to the climate that they live in - ask how animals are affected by climate change and humans impact in their environments To experiment and compare how microorganisms grow in favourable environments (dark, hot, wet) and don't grow in unfavourable environments (dry, cool) - Experiment with bread mould	To develop knowledge of Evolution - who discovered it and how was it discovered To describe inheritance and how it explains the process of evolution To question why offspring are not identical to parents To explore ideas of inherited characteristics To develop knowledge on natural selection - why is it needed? What happens if it didn't occur in nature? To discuss the different ways in which extinction can occur STEAM WEEK	To develop knowledge on how we grow and change both emotionally and physically To compare the types of relationships that people have as they develop. To consolidate knowledge of the importance of nutrition and exercise. To develop knowledge of the circulatory system - how does the heart function? What is the difference between oxygenated and deoxygenated blood? To investigate how water and nutrients are transported in the circulatory system and recognise the impact of diet, exercise, drugs and lifestyle on how their bodies function. To investigate and hypothesise how exercise can affect the circulatory system. STEAM WEEK	To consolidate knowledge of circuits and how they work - recognising circuit symbols To investigate how voltage in cells affects brightness of a lamp in a circuit To compare and give reasons for variations in how components function - brightness, loudness, position To hypothesise, report and present and conclude findings from enquiries in investigations; recording data in a variety of ways (diagrams, labels, classification keys, graphs) STEAM WEEK Healthy Living Week

Key Skills	Working Scientifically • Plan different types of scientific enquiries to answer their own or others' questions, including recognising and controlling variables where necessary (Year 6 focus) • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Year 6 focus) • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 6 focus) • Use test results to make predictions to set up further comparative and fair tests (Year 6 focus) • Report and present 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 (Year 6 focus) • Report and present 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 (Year 6 focus) • Describe and evaluate their own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources • Group and classify things and recognise patterns			
Key People	Carl Linnaeus (1707-1778) Chris Nelson (horticulturist)	Charles Darwin (1809-1882) Alfred Wallace (1823-1913)	William Harvey (1578-1657)	Abu Ali al-Hasan (Alhazen) (965-1040) Ben Jensen (Inventor of Vantablack) Nicholas Tesla (1856-1943) Peter Rawlinson (engineer of electric vehicles)
Key subject links	Geography - climate change and impact on environment. DT - bread mould and how food is made. English - debating climate change.	Religious Education - debate of theories of evolution. Geography - extinction of animals and global warming	PSHE diet, relationships, health and wellbeing	Computing - presenting graphs on a spreadsheet
Key Vocabulary	vertebrate, amphibian,	offspring, inherited, characteristics,	pulse, blood, lungs, circulatory system. diet, exercise	straight lines, light ray, reflect, shadow

	invertebrate	adapted		
Key Texts		Amazing evolution - the journey of life Under your feet	Kay's Anatomy	
Key themes and values