

	Science Curriculum Progression Overview
Rationale	 Our Science curriculum is driven by our LEARN statement for our learners to achieve and succeed in science by providing engagement, ambition, relevance and nurture in our approach to this subject to provide the foundations for understanding the world through the specific disciplines of biology, chemistry and physics to build up a body of key foundational knowledge, concepts and vocabulary alongside strong enquiry skills to value the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena
Approach	 to build understanding progressively through unit themes and science projects; use relevant contexts, diverse scientists and role models to value the impact of scientific thinking to the world promote understanding and accurate and precise use of vocabulary highlight achievements of scientists and industry links to maximize pupils' engagement with and motivation to study science embed 'working scientifically' and enquiry approaches and skills throughout the curriculum make connections across learning and with the wider community e.g. apply their mathematical knowledge, geographical understanding, historical context
Working Scientifically	'Working scientifically' is the ability to work and think like scientists in every science lesson. The enquiry approaches and skills of science for each year group below. These are taught in context of the unit or project content. Children learn to use a variety of enquiry approaches and skills to answer relevant scientific questions.

Knowledge and Understanding by Theme

Science	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Projects	How do humans impact on the environment?	How long will our rubbish last?	How can we learn about space science through people and their discoveries?	How can we eat more sustainably? What can we do?	How do microbes effect our lives?	How can design in nature help us solve problems? What is biomimicry?	What is biodiversity? What are the biggest threats? What can we do?

	EYFS	Year 1	Year 2	Year 3	Year 5
Plants	Know about similarities and differences in relation to places, objects, materials and living things. Make observations of animals and plants and explain why some things occur and talk about changes.	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.	Identify and name a variety of plants and animals in their habitats, including micro- habitats. 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.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Describe the life process of reproduction in some plants and animals.

Animals	EYFS	Year 1	Year 2	Year 3	Year 5	Year 6
	 make observations of animals and plants and explain why some things occur and talk about changes 	 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, inc pets). 	 Identify and name a variety of plants and animals in their habitats, including micro-habitats. 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). 	 Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	 Describe the 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. 	Describe the ways in which nutrients and water are transported within animals, including humans.

Humans	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	make observations of animals and plants and explain why some things occur and talk about changes.	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Describe the simple functions of the basic parts of the digestive system in humans. Identify the different types of teeth in humans and their simple functions.	Describe the changes as humans develop to old age.	Identify and name the main parts of 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 bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.

Habitats	EYFS	Year 1	Year 2	Year 4	Year 5
	 Talk about the features of their own immediate environment and how environments might vary from one another. Know that the environment and living things are influenced by human activity. 	 Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies. 	 Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify that most living things live in habitats to which they are suited 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. 	 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 thing. Construct and interpret a variety of food chains, identifying producers, predators and prey. 	 Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.

Evolution	EYFS	Year 2	Year 3	Year 4	Year 6
	Talk about the features of their own immediate environment and how environments might vary from one another. Make observations of animals and plants and explain why some things occur and talk about changes.	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.	Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	Recognise that environments can change and that this can sometimes pose dangers to living things	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

. Materials	EYFS		Year 1	Year 2		Year 3	Year 5
and their properties	Know the properties of some materials and can suggest some of the purposes they are used for know that the environment and living things are influenced by human activity e.g. impact of waste	Disting and fl is mad Identii every wood water Descr prope every Comp a varii matel simple	guish between an object he material from which it de. fy and name a variety of day materials, including l, plastic, glass, metal, r, and rock. ibe the simple physical erties of a variety of day materials. pare and group together ety of everyday rials on the basis of their e physical properties.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glas brick, rock, paper and cardboard to particular uses. Understand what is meant by raw and synthetic materials	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.		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. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Understand about the sustainability of materials, raw and synthetic materials and the issues around use of natural resources
Changing	EYFS		Year 2	Year 4			Year 5
Materials	ing EYFS als • Know the properties of some materials and can suggest some of the purposes they are used for.		• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	 Compare and group material according to whether they all gases. Observe that some materials they are heated or cooled, a research the temperature at degrees Celsius (°C). Identify the part played by excondensation in the water cy rate of evaporation with temp 	together, solids, liquids or hange state when d measure or hich this happens in uporation and le and associate the erature.	 Know that some solution and de solution. Use knowledge mixtures might be sieving and evon Demonstrate the are reversible commaterials, and the reversible, incluit the action of accession. 	e materials will dissolve in liquid to form a scribe how to recover a substance from a of solids, liquids and gases to decide how be separated, including through filtering, uporating. at dissolving, mixing and changes of state hanges. The changes result in the formation of new hat this kind of change is not usually ding changes associated with burning and cid on bicarbonate of soda.

Forces	EYFS	Year 2	Year 3	Year 5
	 Make observations of explain why some things occur, and 	Find out how the shapes of solid objects made from some materials can be changed by causthing, bonding	 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. 	 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.

talk about changes	 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. 	and gears, allow a smaller force to have a greater effect.
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Light	EYFS	Year 3	Year 6
	 Looks closely at similarities, differences, patterns and change E.g. exploring light from different sources, exploring shadows e.g. using shadow puppets 	 Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change. 	 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 straight lines to explain why shadows have the same shape as the objects that cast them.

Earth and	EYFS	Year 1	Year 5		
Space	 Talk about the features of their own immediate environment and how environments might vary from one another. Being to understand significance and difference between seasons and months 	 Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies 	 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. 		
Electricity		Year 4	Year 6		
	 Identify common appliances that a Construct a simple series electrical including cells, wires, bulbs, switches Identify whether or not a lamp will or not the lamp is part of a comple Recognise that a switch opens and or not a lamp lights in a simple series Recognise some common conduct being good conductors. 	un on electricity. circuit, identifying and naming its basic parts, es and buzzers. light in a simple series circuit, based on whether ote loop with a battery. d closes a circuit and associate this with whether es circuit. tors and insulators, and associate metals with	 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 simple circuit in a diagram. 		
Sound	EYFS	Year 1	Year 4		
	 Looks closely at similarities, differences, patterns and change e.g. exploring sounds made by different instruments 	 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. 	 Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the 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. 		

Scientific Enquiry						
Approach	Enquiry and knowledge and understanding are explicitly referenced in lessons. We teach the use of 8 types of enquiry and the enquiry skills to ensure children understand all that is involved in the scientific process					
	 Scientific Enquiry Type Identifying, grouping and cladifferences) Observing changes over time Observing closely Noticing patterns (can be sin Researching (finding things of Modelling Comparative testing (can be Fair testing 	assifying things (noticing similarities and e nple tests in KS1) out using secondary sources of informa e simple tests in KS1)	Enquiry Skills Ask questions Make predictions Decide how to carry out an Collect information - meas Record Analyse - compare, classify Communicate scientifically Understand the science compare 	 Enquiry Skills Ask questions Make predictions Decide how to carry out an enquiry Collect information - measure, observe, research Record Analyse - compare, classify, make conclusions, evaluate Communicate scientifically Understand the science community – now and in the pat 		
	Scientific Enquiry Skill Progression					
	EYFS	KS1	Lower KS2	Upper KS2		
Asking Questions	Answer 'how' and 'why' questions Begin to use 'why' questions	Ask simple questions about what they notice. Recognise that these questions can be answered in different ways	Ask relevant questions about what has been observed.	Use science experiences to explore ideas and raise different kinds of questions about scientific phenomena.		
Making Predictions	Use past, present and future forms accurately when talking about events that are to happen in the future. Answer 'how' and 'why' questions	 Make simple predictions with support. With guidance, notice patterns and relationships between two different things. 	 Use previous knowledge to predict what might happen. 	• Use more abstract ideas and identify scientific evidence to help them understand and predict how the world operates.		
Deciding how to carry out an enquiry	 Begin to use 'why' questions (CLL – U – ELG) 	 Suggest ways to answer a question. Carry out simple tests to see if suspected patterns and relationships between two different things are true. 	 Make decisions about which types of scientific enquiry are likely to be the best way of answering a question. Are guided in their use of controlling variables. Suggest what observations to make, how long to make them for, and what equipment to use when planning an investigation. 	 Select and plan the most appropriate type of enquiry to answer questions. Set up tests explaining which variables need to be controlled and why. Decide what observations or measurements to make, how long to make them for, what equipment to use, and whether to repeat them. 		
Collect Information take measurements, make observations research	 Estimate, measure, weigh and compare and order objects and talk about properties, position and time. (M – SSM – ELG). Make observations of animals and plants (UTW ELG). Look at books and the internet to find things out (L-Reading). 	 Use simple measurements and equipment (for example egg timers) to gather data. Observe the naturally and humanly-constructed world closely, using simple equipment (e.g. magnifying glasses). Use simple secondary sources to find answers. 	 Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including microscopes, thermometers and data loggers. Choose suitable secondary sources to find answers to questions. 	 Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using an increasing range of equipment. Repeat where necessary and explain how to use equipment accurately. Recognise which secondary sources will be most useful to research ideas and begin to separate opinion from fact. 		
Record	 Record information collected in a variety of ways including photos, drawings, notes. 	 Record information collected Use simple tables, make tally, pictograms, take photos, make observations. 	 Collect data from own observations and measurements, using notes, simple tables, standard units Make decisions about how to record and analyse this data. Use simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. 	• Decide how to record data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs, bar and line graphs.		
Analyse compare classify draw conclusions evaluate	 Talk about similarities and differences in relation to places, objects, materials and living things (UTW ELG). Answer 'how' and 'why' questions about their experiences and in response to stories or events (CLL – U – ELG). Explain why some things occur (CLL – U – EXC). Know that the environment and living things are influenced by human activity (UTW – EXC). Talk about things have changed (UTW ELG). 	 Use previous knowledge and simple features to compare, based upon a question. With help, decide how to sort and group based on simple features. Use observations and ideas to suggest answers to questions. With help, talk about how things have changed over time. Say if an enquiry went well and begin to offer suggestions for improvements if not. 	 Use previous knowledge and known features to compare. Group, sort and classify using these comparisons. Use simple keys. Use changes, patterns, similarities, and differences in data in order to draw simple conclusions, answer questions, and make predictions for new values within or beyond the data collected. Use results to suggest improvements and raise further questions. 	 Use and develop keys and other information records of own choice to identify, classify and describe living things and materials. Draw conclusions and make predictions based on different causal relationships in data and observations, use evidence to justify ideas, and use scientific knowledge and understanding to explain findings. Systematically analyse functions, relationships and interactions. Use results to identify when further tests and observations might be needed. 		

Communicate scientifically including modelling	 Express themselves effectively, showing awareness of listeners' needs. Use a range of vocabulary to add information, express ideas or to explain or justify actions or events (Make models of objects and living things (EAD – ELG). 	 Use simple scientific language to talk about what has been found. Communicate ideas to a range of audiences in a variety of ways. Create models that show scientific ideas and support explanations or observations. 	 Use relevant scientific language to discuss ideas and communicate findings in ways that are appropriate for different audiences. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Create models that help explain scientific ideas. 	 Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas. Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. Create models and use analogies to help explain scientific processes, concepts or observations
Understanding of the science community	 Talk about jobs and what skills are needed to do them Understand the importance of working collaboratively 	 Become aware of the ways in which science and technology influence our lives Recognise some scientists and say what they are famous for. 	 Be aware of the specific contributions of science in industry and every day life Talk about a range of scientists and explain their main ideas. 	 Be aware of the contributions of science in industry and every day life including the future of science Talk about a range of scientists, their main ideas and the context of their work and achievements Talk about how scientific ideas have changed and developed over time.