Knowledge and Skills Progression for Science

Strand	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Project Driving questions	1. How can we show compassion, care and love to those in need? 2. How can we care for our world? 3. What makes someone a hero?	1. How can we be compassionate, caring and loving towards others? 2. How can we look after our planet? 3. What is it like at the seaside? 4. What does it mean to be an explorer? 5. Growing, Changing, Belonging -Why are differences important? 6. Why did London burn and how can we design it safer today?		1. How can we be more compassionate, caring and loving towards others? 2. How could looking through 'my window' help me to be a better steward of the environment? 3. What can we learn from the Romans about work, innovation, and community? 4. Can rocks show us how to be sustainable? 5. Why is it important to hear everyone's story before we judge what happened in the past? 6. How did the Anglo Saxons build a life they could trust?		1. How can we show compassion, care and love to those in need? 2. What can we learn about stewardship from the medieval monarchs? 3. Why does Britain have the Benin bronzes and should they be given back? 4. Why is Earth special and how can we protect it? 5. How can learning about past and present lifestyles help us understand why we should not judge others? 6. How did trust help Ancient Egyptian society thrive, and how can we build fair and trusting communities today?	
Curriculum Topics - History/ *Science*	Ourselves People that help us Superheroes Journeys and transport	Neil Armstrong, Explorers, Fire of London, Holidays and Seaside, Homes and Houses, Mary Seacole ***Seasonal Changes, Plants, Animals including humans, Living things and their habitats, Everyday Materials***		Vikings and Anglo Saxons, Romans, Stone age to Iron age, Anglo Saxons to Scots, Victorians ***Plants , Light, Living things and their habitats, Animals including humans, Sound, rocks, Electricity, States of Matter, Forces and magnets***		Tudors, Ancient Egypt, Benin, Ancient Greece, WW2 ***Light, Electricity, Living things and their habitats, Earth and Space, Evolution and Inheritance, Properties and changes of materials, Animals including humans, Forces and Magnets***	
Woking Scientifically		Ask simple questions and recognise that they can be answered in different ways. Observe closely, using simple equipment. Perform simple tests. Identify and Classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions.		Ask relevant questions and using different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gather, recording, classifying and presenting data in a variety of ways to help in answering questions		Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs use test results to make predictions to set up further comparative and fair tests	

				Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings.		report and presenting 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 identify scientific evidence that has been used to support or refute ideas or arguments
See specific knowledge and skills progression map for Working Scientifically						
Living things and their habitats		Investigate habitats and animals that live by the beach.		Compare living things found in London, Lake District and Italy . How can they be classified?		What is the flora and fauna of Benin like? Characteristics, classification and life cycles.	
			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		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	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 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

			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				
Seasonal Changes		Observational changes in St Vincent's trees Daily weather and seasons charts - changes in daylight.					
		observe changes across the 4 seasons observe and describe weather associated with the seasons and how day length varies					
Plants		How can we care for the plants in our local area?		Grow a flowering plant from seed and record changes to plant with changes to conditions. Use Forest School plants to investigate flower plants and pollination.			
		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	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			
Animals including humans		What do we need to do to look after humans and animals? What needs do different animals have that are shown in the environment they live in? How does our planet support the needs of animals and humans? What senses do we need for exploring? What do we need to survive?		Learn about Roman soldiers' training and how their skeletons/muscles helped them. What would they need to eat/do to keep healthy? To compare the diets of people in the Stone Age, Bronze Age, and Iron Age. To understand what is meant by a food chain and use examples from Stone age to Iron age to show this. E.g. human - deer - berries etc Understand the basic parts and functions of the digestive system, using Stone Age food as an example.		What did the Greeks know about human anatomy and exercise? How will exercise affect the pulse? How does blood move around the body? What was the Greek diet like and how does it compare to ours? What makes a healthy diet? Compare around the world.	
		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,	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	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,	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	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 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

		amphibians, reptiles, birds and mammals including pets) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	types of food, and hygiene	protection and movement			
Materials and States of Matter				Handle samples of flint, granite, chalk, sandstone. Conduct a scratch test and water permeability test. Collect soil and rock samples from different areas Match rock properties to their uses (e.g., tool-making, building). Link rock choice to prehistoric tools (stone axe, scraper, etc.).			
		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	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	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 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	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 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	
Light				To experiment blocking light with different objects to create shadows and understand the differences between transparent and opaque and reflective materials. To collect data on length of shadow in a fair test experiment.		Experiment with torches, mirrors and models to demonstrate how a searchlight would be used to detect and follow aircraft effectively at night.	
				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 use the idea that light travels in straight lines to

				notice that light is reflected from surfaces recognise that light from the sun can be dangerous and that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by a solid object find patterns in the way that the size of shadows change			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
Forces and Magnets							
				notice that some forces need contact between 2 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 2 poles		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	

				predict whether 2 magnets will attract or repel each other, depending on which poles are facing			
Sound				Investigate Roman baths and how sound travels through water. Conduct experiments on vibrations.			
					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		
Electricity						Design and create an intruder alarm for the Tower of London.	
					identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including		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

					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		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
Earth and Space						Compare Earth to other planets (atmosphere, temperature, gravity). Create models or animations to show Earth's tilt and orbit.	

						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	
						Comic strip to explain natural selection. Create a species that evolves in response to habitat changes. Identify how rainforest animals and plants are adapted to their environment Distinguish between inherited and environmental traits. Understand how fossils give evidence of evolution.	
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 different ways and that adaptation may lead to evolution

Key
Purple - National Curriculum
Red - St Vincent's Curriculum
Black - Skills Progression