



Poulton Lancelyn
Science
Long Term Plan
2023/24



Science Rationale

Our high quality science education aims to excite and inspire pupil's natural curiosity to develop their scientific understanding of the world around them. Through building up a progression of knowledge and skills across the specific disciplines of biology, chemistry and physics, pupils will develop an appreciation of how scientific processes and methods are vital in understanding natural phenomena and what is occurring around us. We instil the understanding and appreciation of how past and future scientific discoveries have/had the potential to positively impact the world. Pupils will be encouraged to predict outcomes and analyse causes based on the knowledge that they have established. We ensure that pupils are fully equipped with the scientific knowledge and skills that they need to thrive in the wider world.

Science LTP

Year Group	Autumn Our Isles		Spring Our World		Summer Our Planet	
F2	<p>Healthy Bodies <i>Managing self</i> EQ: How can we keep our bodies healthy? George Crum</p>	<p>Materials States of Matter <i>Processes and Changes</i> EQ: What is a material? Ole Kirk Christiansen</p>	<p>Life Cycles of animals <i>Natural World</i> EQ: Do all animals grow in the same way? David Attenborough</p>	<p>Space <i>Differences between other environments</i> EQ: What is beyond Earth? Mae Jemison</p>	<p>Animals <i>Natural World</i> EQ: How are animals similar and different? Cynthia Moss</p>	
	<p>Seasons <i>Processes and Changes</i> EQ: What is the weather like? Anders Celsius</p>					
1	<p>Parts of Animals <i>Animals including humans</i> EQ: Are we all different or all we all the same? Beatrix Potter</p>	<p>Types of Animals <i>Animals including humans</i> EQ: What is the difference between the structure of animals? Jane Goodall A Thames tide-y up Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p>	<p>Identify Materials <i>Materials</i> EQ: What are the properties of everyday materials? Charles Mackintosh Making a pitch Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p>	<p>Comparing Materials <i>Materials</i> EQ: Do some materials have the same properties? Maria Beasley</p>	<p>Plants <i>Plants</i> EQ: What is the basic structure of a plant? Joseph Banks</p>	<p>Changing Seasons <i>Seasons</i> EQ: Is the weather the same everyday? George James Symons</p>

2	<p>Living Things/habitats <i>Living Things</i> EQ: What are the differences between things dead, alive and never been alive? <i>Sir Ernest Shackleton</i></p>	<p>Animals inc. Humans <i>Animals including humans</i> EQ: Do all animals eat the same thing? <i>Louis Pasteur</i></p>		<p>Plants <i>Plants</i> EQ: Do plants grow the same amount every day? <i>Agnes Arber</i></p>		<p>Materials/changing shapes of materials <i>Materials</i> EQ: Can the shape of a solid object change? <i>Cai Lun</i> Fighting fire with fire Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p>
3	<p>Movement and feeding <i>Animals including humans</i> EQ: How does our body move and stand up? <i>Marie Curie</i></p>	<p>Rocks <i>Rocks</i> EQ: Are all rocks made in the same way? Rock solid <i>Mary Anning</i></p>	<p>Forces and Magnets <i>Forces</i> EQ: Are all metals attracted to magnets? Opposites Attract <i>Isaac Newton</i></p>	<p>Plants <i>Plants</i> EQ: Do all plants need exactly the same things? Grow a plant of vegetable <i>Stephen Hales</i></p>		<p>Light <i>Light</i> EQ: Why do shadows change during the day? In the shadows <i>Lewis Latimer</i></p>
4	<p>Electricity <i>Electricity</i> EQ: Does electricity flow easily through all objects? <i>Hertha Ayrton</i> Maintaining a nuclear power plant Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p>	<p>Living Things and their Habitats <i>Living Things</i> EQ: Are some animals more alike than others? Make a mini beast hotel <i>Carl Linneaus</i></p>	<p>Sound <i>Sound</i> EQ: How do we hear sounds? Listen Up <i>Miller Reese Hutchison</i> <i>Alexander Graham Bell</i> Making waves Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p>	<p>States of matter <i>States of Matter</i> EQ: Can materials change state? <i>Antoine Lavoisier</i></p>	<p>Animals including humans <i>Animals including humans</i> EQ: Does food stay in the human body? <i>William Beaumont</i></p>	
5	<p>Properties & Changes of Materials Materials <i>Materials</i></p>	<p>Earth and Space <i>Earth and Space</i> EQ: Do planets, stars and moons in our solar system move?</p>	<p>Properties & Changes of Materials Types of change <i>Materials</i></p>		<p>Living Things/Animals inc. Humans <i>Living Things</i></p>	<p>Forces <i>Forces</i></p>

	<p>EQ: Can we separate materials that have formed together? Stephanie Kwolek</p>	<p>Space balloon project Galleo Galilei Flying to the future Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p> <p>On a mission Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p>	<p>EQ: How do you know a chemical reaction is happening and can we reverse it? Anders Celsius</p>		<p>EQ: How are life cycles different across the animal kingdom? David Attenborough</p>	<p>EQ: Why do objects fall towards the ground? Albert Einstein</p>
6	<p>Evolution <i>Evolution and Inheritance</i> EQ: Why do species of animals look different? From cave man to me Charles Darwin</p>	<p>Electricity <i>Electricity</i> EQ: Is it possible to change how bright a light bulb is or how loud a buzzer is? Michael Faraday</p>	<p>Living Things <i>Living Things</i> EQ: What is the best conditions for microorganisms to grow in? Fecal matters Rachel Carson</p>	<p>No science <u>STEM – Antarctic Explorers</u></p>	<p>Light <i>Light</i> EQ: Why can I hear around corners but not see around corners? Thomas Edison</p>	<p>Humans <i>Animals including humans</i> EQ: Is our heart rate always the same? Why? Compete in a sporting event Heart dissection Alexander Fleming Taking the pressure Case Study Neon - Brilliant inspiration (neonfutures.org.uk)</p>
	<p>Oak Trees Challenge Link Hi Impact Links</p>					

Science Implementation

In order to ensure that our intent of exciting and inspiring pupil's natural curiosity is met, at Poulton Lancelyn, we ensure that pupils are taught a minimum of one science lesson per week that has a clear focus and learning intention linked to the national curriculum. These clear learning intentions will be planned and assessed against progressive knowledge and skills; this ensures that all lessons build effectively upon children's prior knowledge so that the learning throughout our school is progressive for our pupils to be confident in retrieving prior scientific knowledge. In order for us to be able to inform our planning, and build on prior knowledge, we need to ensure clear assessments are in place. Formative assessments will take place each lesson through teacher observation of work and investigations, alongside a range questioning techniques, to build a detailed picture of a child's understanding throughout a topic. Summative assessments in the form of investigations or quizzes may take place (if necessary) at the end of each topic to clarify formative assessments. Throughout their science education, we aim to deliver adequate opportunities for pupils to work collaboratively and allow their inquisitiveness to guide their learning. All lessons will be planned with our intent in mind so that we provide pupils with motivating, engaging and exciting activities to feed their curiosity. In order to achieve these motivating and engaging lessons, we will ensure that lessons contain a combination of a wide variety of resources, websites, activities and hands-on investigations. Due to our intent of preparing our children for life in an ever-increasingly technological society, we will ensure that opportunities for pupils to develop their technology, maths and engineering skills are woven into our science curriculum and clearly evident in our planning. As well as this, we will ensure that our teaching is pertinent to science with a real life context and encourage pupils to ask relevant questions about the world around them. We will also aim to deliver a cross-curricular approach for English opportunities in science as well, ensuring that our pupils understand, and are able to use, a wide variety of scientific vocabulary. At Poulton Lancelyn, we believe enrichment opportunities can enhance pupils learning experiences and therefore, through working closely with companies such as Hi-Impact and local high schools, we will include as many enrichment opportunities as possible to develop our science teaching further for our pupils.

Poulton Lancelyn Science Knowledge Progression Map

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>	<u>Year 6</u>
<u>Living Things</u>		<p><u>Living Things/habitats – A1</u></p> <ul style="list-style-type: none"> -Identifying living and non-living things -Understand that all living things share similar basic life processes (MRSGREN) -Know that most living things live in habitats which best provide for their basic needs -Recognise that different plants and animals live in different habitats -Know that it would be difficult for some living things to survive in habitats to which they are not suited -Understand that within habitats there may be smaller habitats called micro-habitats. -Identify and name a variety of plants and animals in their habitats, including micro-habitats. 		<p><u>Living Things and their Habitats –A1</u></p> <ul style="list-style-type: none"> -Recognise that there is a vast array of living things that can be grouped -Understand that environments can be changed in positive ways, e.g. the creation of nature reserves, and in negative ways, e.g. deforestation -Identify ways in which humans can reduce the effects of environmental change -Recognise that environments can change and that this can sometimes pose dangers to living things -Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (in 	<p><u>Living Things/Life Cycles – Sp1</u></p> <ul style="list-style-type: none"> -Recall the stages of a life cycle of a human as (progression from Y2) -Know that all life cycles have distinct stages -Be able to describe the process of metamorphosis -Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird -Be able to describe and sequence parts of plant and animal life cycles -Understand that sexual reproduction in plants and animals requires fertilisation to occur, i.e. between two parents -Know that some plants can reproduce without other plants 	<p><u>Living Things – Sp1</u></p> <ul style="list-style-type: none"> -Know that germs and bacteria are living organisms called micro-organisms (developed from previous living things learning) -Identify the conditions needed to support the growth of micro-organisms -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 -Know that there is a scientific system for classifying living things (learning about Carl Linnaeus) -Give reasons for classifying plants and animals based

				preparation for branching in Y6) -Use more than one way to sort the same group of living things -Use a simple classification key to identify and name a living thing		on specific characteristics
<u>Plants</u>	<u>Plants – Sp1</u> -Know that plants are living things -Identify and name the leaf, flower, root, and stem in plants -Understand the basic needs of caring for a plant -Identify and name common wild and garden plants (including grass and trees) -Identifying types of plants, leaves and trees (including evergreen and deciduous trees)	<u>Plants – Sp2</u> -Develop their understanding further of how plants need water, light and a suitable temperature to grow. -Observe and describe how seeds and bulbs grow into mature plants -Understand that plant growth is a long process and that plants change their appearance over time as they grow. -Understand that plants can produce seeds and new plants without human intervention.	<u>Parts of plants – A2</u> -Be able to identify the roots, stem/trunk, leaves and flowers of a plant -Be able to describe the functions of each part of the plant -Investigate and describe how water moves from the soil into a plant's roots and up through the stem -Know that flowers are the parts of the plant where reproduction (new seed production) happens <u>Plants – Sum1</u> -Continuation of what plants need – Know that without air, light,			

			<p>water and nutrients a plant will not thrive</p> <ul style="list-style-type: none"> -Explore the requirements of plants for life and growth (air, light, water, nutrients, room to grow) and how they vary from plant to plant -Understand that soil provides the nutrients to help plants grow -Be able to sequence the life cycle of a flowering plant 			
<p><u>Animals incl. humans</u></p>	<p><u>Parts of Animals – A1</u></p> <ul style="list-style-type: none"> -Identify a variety of common animals including fish, amphibians, reptiles, birds and mammals -Describe and compare the structure of a variety of common animals (fish, mammals etc) -Compare features of humans with other animals -Name and identify the main human body parts 	<p><u>Animals (movement and feeding) – A2</u></p> <ul style="list-style-type: none"> -Link to MRSGREN (from living things and humans topic) about the needs of animals. -Know that animals, including humans, need to eat, drink and breathe to stay alive. -Understand that different animals eat different food. (omnivore, carnivore, herbivore) developed from Y1 understanding (include food chains) 	<p><u>Movement and feeding – A1</u></p> <ul style="list-style-type: none"> -Identify that humans and some other animals have skeletons and muscles for support, protection and movement -Name some common bones -Describe how muscles and tendons contract and relax to help with movement -Know why we need different types of food to stay healthy 	<p><u>Animals including humans – Sum 1</u></p> <ul style="list-style-type: none"> -Know that the human body has organs and be able to name some -Understand that some groups of organs work together in a system -Recognise that humans have a body system which digests (breaks down) food -Be able to name and describe the main organs of the digestive system: teeth, mouth, tongue, 		<p><u>Humans – Sum2</u></p> <ul style="list-style-type: none"> -Know that the human body contains organs (developed from Y3 and 4) -Know that together the heart, blood vessels and blood form the circulatory system (link back to digestive system in Y4) -Understand that blood picks up oxygen from the lungs and transports it through blood vessels to all of our organs

	<p>-Name the five senses -Identify and label the basic parts of the human body and say which part of the body is associated with each sense</p> <p><u>Types of Animals – A2</u> -Identifying animals (including pets) -Identifying animals needs and how they vary based on type of animal -Identify and name a variety of common animals that are carnivores, herbivores and omnivores -Know that animals can be sorted into groups by different factors such as what they eat or the features they have</p>	<p>-Life cycles of animals and humans - notice that animals, including humans, have offspring which grow into adults.</p> <p><u>Humans – Sp1</u> -Recognise typical characteristics of and name distinct phases of human growth (baby, toddler, child, teenager and adult). -Understand the importance for humans of eating the right amount of different types of food. -Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>-Detailed understanding of what makes a healthy lifestyle -Identify different food types and their importance in a balanced diet</p>	<p>oesophagus, stomach, small and large intestines, rectum and anus -Be able to identify and name the main types of teeth in humans: incisor, canine, pre-molar, molar -Understand that the shape of a tooth is linked to its function, e.g. slicing, tearing, chewing or grinding food -Construct and interpret a variety of food chains, identifying producers, predators and prey -Know that food is a basic need and the availability of food affects the animals found in an environment -Know that green plants are producers because they make their own food -Define a predator as an animal that eats another animal and prey as an animal</p>		<p>-Know that the substances in food that help us to grow and repair our bodies are termed 'nutrients' (developed from healthy lifestyle in Y2, 3 and 4) -Understand that it is the circulatory system that transports water and nutrients around our bodies -Understand that some aspects of a person's lifestyle, e.g. lack of exercise, taking narcotics, will have an effect on the way their body functions (developed from healthy lifestyle in Y2, 3 and 4)</p>
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				that gets eaten by another animal		
<u>Seasons</u>	<p><u>Changing Seasons – Sp2</u></p> <ul style="list-style-type: none"> -Understand and recognise weather symbols -Record observations of the daily changes weather using symbols -Describe changes in the weather across seasons -Compare how dark or light it is at different points of the day during different seasons -Understand that day length varies in each season 				-	
<u>Materials</u>	<p><u>Identify Materials – Sum 1</u></p> <ul style="list-style-type: none"> -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 	<p><u>Materials - Sum2</u></p> <ul style="list-style-type: none"> -Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses -Develop vocabulary of classification of materials from Y1 	<p><u>Rocks – Sp1</u></p> <ul style="list-style-type: none"> -Understand that different rocks have different observable features, e.g. colour -Be able to describe some simple properties of rocks, e.g. hardness -Compare and group together different kinds of rocks on the basis of their 	-	<p><u>Materials – A1</u></p> <ul style="list-style-type: none"> -Understand what is meant by a material's hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets -Compare and group together everyday materials on the basis of their properties, including their 	

	<p>-Identifying objects made from specific materials -Describe the properties of a variety of materials</p> <p><u>Comparing Materials – Sum2</u> -Ensuring progression from identifying materials to begin to look at purpose of materials -Outline similarities and differences between two different materials -Comparing how materials react in situations (floating etc) -Sorting materials based on their simple physical properties</p>	<p>(waterproof, absorbent, brittle etc) -Design their own product out of a specific material with reasoning <u>Changing shapes of materials</u> -Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching -Compare materials that change their shape by squashing, bending, twisting or stretching</p>	<p>appearance and simple physical properties -Be able to describe how sedimentary rock is formed -Describe in simple terms how fossils are formed when things that have lived are trapped within rock -Understand that soil contains small parts of rocks</p>		<p>hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets -Know that a variety of materials may be suitable for an object based on the properties of the materials -Test properties of a material to establish their suitability or not for a given purpose</p>	
<u>Forces</u>			<p><u>Forces and Magnets – Sp2</u> -Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p>		<p><u>Forces – Sp2</u> -Know that gravity is an invisible force that pulls falling objects back to Earth -Describe how friction acts on moving objects to slow them down</p>	-

			<ul style="list-style-type: none"> -Recall and use the terms 'attract' and 'repel' accurately -Identify materials that are magnetic and those which are non-magnetic -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 -Recall that the poles of a magnet are described as North and South -Predict whether two magnets will attract or repel each other, depending on which poles are facing 		<ul style="list-style-type: none"> -Understand how friction can be used to improve how well an object grips to a surface -Describe how air resistance reduces the speed at which objects fall -Describe how water resistance slows down moving objects -Recall the terms 'spring', 'lever', 'pulley' and 'gear' ('cog') -Describe how the use of levers, pulleys and other simple machines reduces the amount of effort needed to move things 	
<u>Light</u>	-	-	<p><u>Light – Sum2</u></p> <ul style="list-style-type: none"> -Recognise that they need light in order to see things and that 			<p><u>Light – Sp2</u></p> <ul style="list-style-type: none"> -Know that light can be reflected from shiny surfaces and be able to name some

			<p>dark is the absence of light</p> <ul style="list-style-type: none"> -Recognise that shiny objects can reflect light -Notice that light is reflected from surfaces -Know that the Sun is a powerful source of light -Recognise that light from the sun can be dangerous and that there are ways to protect their eyes -Know that some materials block light -Recognise that shadows are formed when the light from a light source is blocked by a solid object -Make and record observations and measurements of shadows -Find patterns in the way that the size of shadows change 			<p>reflectors (developed from Y3)</p> <ul style="list-style-type: none"> -Recognise that light appears to travel in straight lines -Know that without light we cannot see -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 -Understand that when opaque materials block the path of light a shadow can be cast -Know that shadows are similar in shape to the objects which make them <p>(developed from shadows work in Y3)</p>
Electricity	-	-		<u>Electricity – A2</u>		<u>Electricity – A2</u>

				<ul style="list-style-type: none"> -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 -Record in their own way how to make a bulb light and/or a buzzer buzz -Describe how to use a switch to turn off a light or to stop a buzzer buzzing -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 -Explain what an electrical conductor and insulator are -Test and then classify objects as those that conduct electricity and those that do not 		<ul style="list-style-type: none"> -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 (application of this through making a burglar alarm) -Understand the need for universally recognised symbols for electrical component (developed from Y4 identifying circuits) -Identify recognised electrical component symbols for a bulb, buzzer, battery (cell), wire, switch and motor -Use recognised symbols when representing a simple
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				<ul style="list-style-type: none"> -Recognise some common conductors and insulators, and associate metals with being good conductors 		<p>circuit in a diagram (recap from Y4)</p> <ul style="list-style-type: none"> -Link renewable energy via environment topic
<u>Sound</u>	-	-		<p><u>Sound – Sp1</u></p> <ul style="list-style-type: none"> -Know that sound can travel through solids, liquids and gases -Recognise that vibrations from sounds travel through a medium to the ear -Recognise that sounds can be classified in different ways, e.g. loud, quiet, high, low -Know that the highness or lowness of a sound is called the pitch of the sound -Identify features of an object that can be changed to alter its pitch, e.g. length of tube, length of string, tension of string -Know that the volume of sounds can be measured with a sound meter (data logger) 		

				<ul style="list-style-type: none"> -Find patterns between the volume of a sound and the strength of the vibrations that produced it -Know that the unit of measurement of volume is a decibel (dB) -Recognise that sounds gets fainter as the distance from the sound source increases 		
<u>Matter</u>	-	-		<p><u>States of matter – Sp2</u></p> <ul style="list-style-type: none"> -Know that collectively, solids, liquids and gases are called the states of matter -Compare and group materials together, according to whether they are solids, liquids or gases -Be able to identify the state of matter of a material by its physical properties -Understand that the state of a material can be changed 	<p><u>Types of change – Sum1</u></p> <ul style="list-style-type: none"> -Recall the terms 'dissolving', 'mixing', 'melting', 'freezing', 'evaporation' and 'condensation' from earlier work -Know that some materials will dissolve in liquid to form a solution, describe how to recover a substance from a solution -Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including 	

				<p>-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)</p> <p>-Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p> <p>-Know that temperature is a measure of how hot or cold something is and is measured in degrees Celsius using a thermometer (°C)</p> <p>-Be able to describe the changes of state in the water cycle</p> <p>-Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>through filtering, sieving and evaporating</p> <p>-Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>-Explain that some changes result in the formation of new materials – this is usually not reversible (e.g. burning or acid on bicarb soda)</p> <p><u>Types of change – sum2</u></p> <p>-Recall the terms ‘dissolving’, ‘mixing’, ‘melting’, ‘freezing’, ‘evaporation’ and ‘condensation’ from earlier work</p> <p>-Know that some materials will dissolve in liquid to form a solution, describe how to recover a substance from a solution</p> <p>-Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including</p>	
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					<p>through filtering, sieving and evaporating</p> <ul style="list-style-type: none"> -Demonstrate that dissolving, mixing and changes of state are reversible changes -Explain that some changes result in the formation of new materials – this is usually not reversible (e.g. burning or acid on bicarb soda) 	
<u>Earth and Space</u>	-	-			<p><u>Earth and Space – A2</u></p> <ul style="list-style-type: none"> -Describe the sun, Earth and moon as approximately spherical bodies in the solar system -Know that the planets, including Earth, move around the Sun -Understand that by spinning on its axis, some parts of the Earth are in daylight when other parts are in darkness (link to seasons work in Y1 and light/shadows work in Y4/6) 	

					<ul style="list-style-type: none"> -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 -Understand that a moon is a celestial body that orbits a planet 	
<u>Evolution</u>	-	-				<p><u>Evolution – A1</u></p> <ul style="list-style-type: none"> -Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago -Know that living things reproduce offspring similar to themselves but not identical -Recognise that small inherited changes in physical characteristics, e.g. colour, size, shape of limbs etc. over time

						<p>lead to variation in species</p> <ul style="list-style-type: none"> -Know that some adaptations to the environment in plants or animals can be advantageous if they keep the species alive for long enough to reproduce and pass on their features to a new generation -Know that variation in offspring over time can make animals more or less able to survive in particular environments
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Poulton Lancelyn Science Progression Map

Working Scientifically



2022/23

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<u>Observing and Measuring Changes Over Time</u>	-Understand that observation involves using our sense -Use simple equipment (hand lenses) to make close and careful observations Select appropriate equipment to make observations	-Recognise that some observable features can change over time (e.g. plant growth) -Choose appropriate equipment to make observations -Use equipment to correctly observe and measure	-Make increasingly careful observations (focusing on accuracy) -Accurately use standard measures -Explain why particular equipment is an appropriate choice for a task -Decide for how long to make observations for	Decide what is important and relevant to measure and observe -Make systematic observations -Use new equipment, such as data loggers, appropriately -Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment	-Choose the most appropriate equipment to make measurements and explain how to use it accurately -Recognise that some measurements or observations may need to be repeated -Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	-Recognise when measurements or data are unreliable and be able to take steps to improve this -Explain how repeating measurements impacts on data collection -Make their own decisions about what observations to make, what measurements to use and for how long to make them, and whether to repeat them
<u>Comparative and Fair Tests</u>	-Be able to compare features of two objects -Suggest a practical way to find something out Be able to identify things to observe and things to measure	-Be able to identify two variables in an investigation e.g. water and light in a plant investigation -Be able to set up a comparative test Start to recognise when a test isn't fair and suggest improvements	-Make decisions about which practical method is best to find something out -Recognise when a simple fair test is necessary to answer a scientific question -Set up a fair test – identifying and	-Identify variables to measure and variables to observe -Understand how to make a test fair -Set up simple practical enquiries, comparative and fair tests Be able to develop features of a test to give a better outcome	Select and plan the most appropriate type of scientific enquiry to answer a scientific question -Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why	-Be able to state clearly which is the change variable and which is the measurement variable in a fair test Systematically identify the effect of changing one variable at a time -Using test results to make predictions to set up further

	<ul style="list-style-type: none"> -Understand what we mean by comparing -Perform simple tests 		<ul style="list-style-type: none"> understanding the variables involved 		<ul style="list-style-type: none"> -Be able to use their results to identify when further tests and observations might be needed -Recognise the limitations of tests 	<ul style="list-style-type: none"> comparative and fair tests -Compare their own results with others' and suggest reasons why there may be differences
<u>Identifying and Classifying</u>	<ul style="list-style-type: none"> -Sort and match objects and living things in their own way -Recognise similarities and differences -Use observable features of objects to sort them -Explain which observable features have led them to classify in a particular way 	<ul style="list-style-type: none"> -Sort and group living things and objects in their own way -Use simple observable features to compare objects and living things -Be able to explain why they have sorted objects in that way -Begin to classify and identify by linking observable features to already known objects or things 	<ul style="list-style-type: none"> -Be able to group objects and living things in different ways -Use observable features of objects to identify them -Begin to classify by behavioural features, e.g. is magnetic -Talk about criteria for grouping, sorting and classifying 	<ul style="list-style-type: none"> -Use simple keys -Begin to classify and identify by linking observable features to already known objects or things -Identifying differences, similarities or changes related to simple scientific ideas or processes -Be able, independently, to use simple databases or keys to identify or classify living things, objects or events 	<ul style="list-style-type: none"> Suggest reasons for similarities and differences -Create and use a variety of sources to identify and classify living things, objects and phenomena -Use and develop keys and other information records to identify, classify and describe living things and materials 	<ul style="list-style-type: none"> -Create more complex forms of classification tools, e.g. databases, branching keys -Begin to understand that broad groupings, such as micro-organisms, plants and animals can be subdivided -Be able to discuss reasons why living things are placed in one group and not another
Looking for naturally occurring patterns and relationships	<ul style="list-style-type: none"> -Notice what has changed when observing things or events Talk about what they have found out or what they think may happen 	<ul style="list-style-type: none"> -Begin to recognise links between observations and answers to questions -Begin to use simple scientific language to talk about what they have found out 	<ul style="list-style-type: none"> -Notice patterns and relationships -With help, look for changes, patterns, similarities and differences in their data -Use evidence to answer questions 	<ul style="list-style-type: none"> -Look for naturally occurring patterns and relationships and decide what data to collect to identify them -Be able to collect data from their own observations and measurements 	<ul style="list-style-type: none"> -Identify patterns that might be found in the natural environment -Look for different causal relationships in their data and identify evidence that refutes or supports their ideas 	<ul style="list-style-type: none"> -Systematically investigate the relationship between phenomena, e.g. light and shadows -Be able to identify and offer explanations for anomalous results

	Using their observations and ideas to suggest answers to questions -Say whether what happened was what they expected	-Be able to communicate their ideas to a range of audiences in a variety of ways -Use evidence to suggest answers to questions and make predictions	and make predictions -With support, identify new questions arising from the data -Find ways of improving what they have already done -Link results to their own experiences	-Make predictions for new values within or beyond the data they have collected -Recognise when a result seems unusual when compared with other values	-Find out about how scientific ideas have changed and developed over time as new evidence is discovered, e.g. ideas about the solar system	-Analyse functions, relationships and interactions more systematically
<u>Recording and Reporting Findings</u>	-Be able to record their findings in charts -Gathering and recording data to help in answering questions	-Make some independent choices about appropriate ways to record data -Select the best way of presenting information from a range of options	-Identify relevant evidence to draw conclusions -Using straightforward scientific evidence to answer questions or to support their findings -Use scientific language and facts to describe processes and what they have observed	-Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions -Explain findings reported and recorded using more complex scientific language	-Decide how to record data from a choice of familiar approaches -Justify what type of presentation is appropriate to use -Explain findings using data to identify causal relationships -Decide on the most appropriate method to present findings graphically, e.g. using a line graph or bar chart for different types of data	-Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs -Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms
<u>Researching Using Secondary Sources</u>	-Use information from secondary sources to help answer a question	-Use simple secondary sources, e.g. books, film, internet, to find information	Recognise when and how secondary sources might help answer questions that cannot be answered through	-Recognise when and how secondary sources might help answer questions that cannot be answered through practical investigations	-Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact	Use secondary sources, e.g. internet links to research objects, events and phenomena that cannot be experienced in the

			practical investigations			classroom, e.g. animals from around the world
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Science Curric??