

Working Scientifically				Term	Topic	Need to Know	Steps to Success	Vocabulary	Prior Learning	National Curriculum	Significant Scientists
<p><u>Asking questions and recognising that they can be answered in different ways:</u> <i>Asking simple questions and recognising that they can be answered in different ways.</i></p>	<ul style="list-style-type: none"> While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. 	<ul style="list-style-type: none"> The children answer questions developed with the teacher often through a scenario. 	<ul style="list-style-type: none"> The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered 	Autumn 1	Everyday materials & WS	<p>Children can distinguish between an object and the material from which it is made. Children can describe materials using their senses (touch, sight, smell, sound). Children can describe materials using their senses, using specific scientific words: rough, shiny, smooth, light, heavy, soft, thick, thin, flexible, strong, waterproof, loud, quiet. Children can explain what</p>	<p>Term 1- What do we already know? Flashback Friday. Prior knowledge, key questions, Key Scientific vocabulary. Assessment opportunity.</p>	<p>material touch taste smell sound squashing bending twisting stretching size shape strength flexibility wood plastic metal water rock smooth light heavy soft thick thin flexible strong waterproof loud quiet</p>		<p>Pupils should be taught to:</p> <p>§ distinguish between an object and the material from which it is made</p> <p>§ identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>§ describe the simple physical properties</p>	<p>Charles Mackintosh (1766-1843)</p> <p>Scottish chemist and inventor of waterproof fabric. The mackintosh raincoat is named after him.</p> <p>Martin Brock – Nanotechnology engineer and XelfleX inventor</p>

<p>Engage in practical enquiry to answer questions: <i>Performing simple tests.</i></p>	<ul style="list-style-type: none"> •The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. 	<ul style="list-style-type: none"> • They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. 	<p>Identifying and classifying.</p> <ul style="list-style-type: none"> • Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. 	<ul style="list-style-type: none"> • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing. 	<p>Autumn 2</p>	<p>material objects are made from and compare similarities and differences. Children can explain why a material might be useful for a specific job. Children can name different everyday materials. e.g. wood, plastic, metal, water and rock Children can sort materials into groups with a given criteria- size, shape, strength, flexibility. Children can explain how solid shapes can be changed by squashing, bending, twisting and stretching.</p> <p>If the children complete the previous statements try some of these: Challenge: Children can describe similarities and</p>	<p>Term 2- What do we already know? Flashback Friday. Prior knowledge , key questions, Key Scientific vocabulary. Assessment opportunity. Working Scientifically - Sorting & comparing. Review different everyday materials. Describe them using physical properties. What is the same? What is different? Sort and compare using scientific vocabulary. Senses Explore materials using sight, smell, touch & sound. Make predictions. Use comparative language. Significant</p>	<p>rough shiny</p>		<p>of a variety of everyday materials § compare and group together a variety of everyday materials on the basis of their simple physical properties .</p>	
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						<p>differences between materials. Children can explain what happens to materials when they are heated: bread, ice, chocolate, wax, egg. Children can explain what happens to materials when they are cooled: jelly, heated chocolate, water.</p>	<p>Scientists Charles Mackintosh & Martin Brock What did they invent? Why are their inventions important? How has it impacted our lives? Compare their impact on society.</p> <p>Exploring/ Investigating How do we know it is a solid material? Recap and name solid materials. Investigation- Explore how solid materials can be changed by stretching, twisting, bending and squashing. Predict and conclude.</p> <p>Assessment Focus- Can I describe materials using my senses, using scientific words? Can I describe materials</p>			
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								using my senses (touch, sight, smell, sound)? Can I sort materials into groups? Can I explain how solid shapes can be changed? Can I explain why a material might be useful for a specific job? - Links to Charles Mackintosh.			
<p><u>Making observations and taking measurements:</u> <i>Observing closely, using simple equipment.</i></p>	<ul style="list-style-type: none"> Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital 	<ul style="list-style-type: none"> They begin to take measurements, initially by comparisons, then using non-standard units. 			Spring 1	Seasonal Changes & WS	<p>Children can observe changes across the four seasons. Children can name the four seasons in order. Children can observe and describe weather associated with the seasons. Children can observe and describe how day length varies and why. Children can explain and</p>		<p>observe seasons winter spring summer autumn weather environment changes length rain sunshine snow sleet hail thunder lightening wind fog</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies. 	<p>John Dalton (1766- 1844)</p> <p>John Dalton was a British weather pioneer. In 1787, he used homemade instruments to start recording weather observations. His meteorological instruments helped to turn the forecasting of weather into actual</p>

	microscopes, to make their observations.						understand sun safety. Challenge Children can observe features in the environment and explain that these are related to a specific season. Children can observe and talk about changes in the weather. Children can talk about weather variation in different parts of the world.					science. Michael E Mann (Born 1965) Michael Evan Mann is an American climatologist and geophysicist . He is the director of the Earth System Science Center at Pennsylvania State University. Mann has contributed to the scientific understanding of historic climate change based on the temperature record of the past thousand years.
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<p><u>Recording and presenting evidence:</u> <i>Gathering and recording data to help in answering questions.</i></p>	<ul style="list-style-type: none"> • The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. 	<ul style="list-style-type: none"> • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. 	<ul style="list-style-type: none"> • They classify using simple prepared tables and sorting rings. 		Spring 2	Plants & WS	<p>Children can name the petal, stem, leaf, bulb, flower, seed, stem and root of a plant. Children can identify and name common UK plants and trees. Children can recognise and compare deciduous and evergreen trees. Children can name the trunk, branches and root of a tree. Children can describe the parts of a plant (roots, stem, leaves, flowers).</p>		<p>plants flowers petals trunk branches roots stem leaves seeds bulbs deciduous evergreen light water warmth grow</p>		<p>Pupils should be taught to:</p> <p>§ identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>§ identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>Wangari Maathai (1940-2011)</p> <p>Wangari Maathai was a Kenyan environmentalist who began a movement to plant trees and re-forest her country. She was the first African woman to win a Nobel Peace Prize.</p>
<p><u>Answering questions and concluding:</u> <i>Using their observations and ideas to suggest answers to questions.</i></p>	<ul style="list-style-type: none"> • The children recognise 'biggest and smallest', 'best and worst' etc. from their data. 				Summer 1							

	<ul style="list-style-type: none"> Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. 	
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	Summer 2	Animals including humans	<p>Children can point out some of the differences between different animals. Children can sort photographs of living things and non-living things. Children can identify and name a variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates). Children can describe how an animal is suited to its environment. Children can identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Children can name the parts of the human body that they can see. Children can draw & label basic parts of</p>	<p>same (similarity) different (difference) living non-living birds fish mammals reptiles amphibians environment herbivore carnivore omnivore</p> <p>Ears-hearing Eyes-sight Nose-smell Tongue/mouth-taste Fingers/hands-touch</p> <p>Arms Legs Body Head Neck Shoulders Knees Feet</p>	<p>Pupils should be taught to:</p> <p>§ 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 Science – key stages 1 and 2 8 Statutory requirements § describe and compare the structure of a variety of common animals (fish,</p>	<p>Aristotle (384-322 BC)</p> <p>Is credited with first numbering the senses in his work De Anima. It's certain that the Big Five have been known for thousands of years. Touch, taste, smell, sight, hearing.</p> <p>Linda Buck Born 1947.</p> <p>Co-discovered how our sense of smell works: humans have about 350 different types of odor receptor cell which send signals directly into the brain's olfactory bulb.</p>
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				<p>the human body. Children can identify the main parts of the human body and link them to their senses. Children can name the parts of an animal's body (ears, tail, paws, fins ect...) Children can name a range of domestic animals. Children can classify animals by what they eat (carnivore, herbivore, omnivore). Children can compare the bodies of different animals.</p> <p>Challenge Children can begin to classify animals according to a number of given simple criteria. Children can point out differences between living</p>				<p>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.</p>	
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<p><i>further questions.</i></p>	<p>and prediction skills are used across all areas of the curriculum.</p>			
<p><u>Communicating findings:</u> <i>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</i></p>	<p>Although there are no specific objectives for year 1 & 2, it will not hurt for the children to be exposed to this language and way of thinking. Evaluation, questioning and prediction skills are used across all areas of the curriculum.</p>	<p><i>This could be done verbally, as a whole class, in pairs or recorded as a class on flipchart paper or post its.</i></p>		