
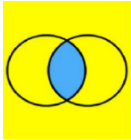
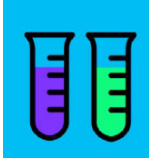



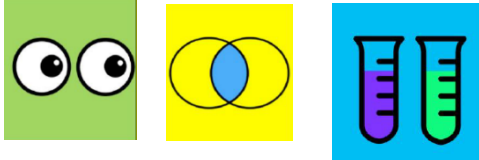


<p><b>Ways of working scientifically</b></p> <p><i>Identified across each scientific area in the progression document</i></p>	 <p>Observing changes over time</p>	 <p>Grouping and classifying</p>	 <p>Carrying out comparative fair tests</p>	 <p>Noticing patterns</p>	 <p>Researching using secondary sources</p>	 <p>Asking questions</p>
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**Design and Technology**

The design and technology process is at the heart of activities / learning cycles



Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	<p><b>Chemistry</b>  <b>What is a scientist?</b>  <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>• Know that a Scientist can be anyone</li> <li>• Understand the scientific lines of enquiry</li> <li>• Be able to Select appropriate scientific line of enquiry</li> </ul> <p>Mini experiments weekly that introduce the <u>3 main 'working scientifically'</u> skills</p> 		<p><b>Chemistry</b>  <b>Everyday materials</b>  <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>• Understand properties of materials</li> <li>• Understand the mechanism of an axle and wheel</li> <li>• Be able to combine knowledge properties of materials to suit a specific design criteria</li> </ul> <p><b>Mechanisms / Axels and wheels</b>  <b>Wacky Races</b>  <b>Learning Intention:</b>                      Pose the children a variety of design criteria which enables them to use and apply their understanding of properties of materials and mechanisms.  <b>Content:</b> DT specific processes</p> <ul style="list-style-type: none"> <li>• Wheel</li> <li>• Axle</li> <li>• Balance</li> </ul>		<p><b>Biology</b>  <b>Plants</b>  <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>• To identify the basic parts of a flowering plant and a tree</li> <li>• To understand the <b>basic functions</b> of the flower, stem, leaves and roots</li> <li>• To understand the basic functions of a tree.</li> </ul> <p>Parts and functions of a plant.</p>	<p><b>Biology</b>  <b>Animals including humans</b>  <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>• To name common animals.</li> <li>• To know how animals are grouped (5 categories).</li> <li>• To understand how you can identify animals.</li> <li>• To name and label the parts of the human body.</li> <li>• Be able to place animals into groups dependent on their characteristics.</li> </ul>
Year 2	<p><b>Biology</b>  <b>Learning intention:</b></p> <ul style="list-style-type: none"> <li>• Understand basic needs for survival</li> <li>• To use understanding of healthy food and cutting skills to design and make a healthy snack.</li> </ul> <p><b>Animals including Humans</b>                      (Offspring, needs for survival)</p> <p><b>Food and Nutrition</b>  <b>Prior Learning:</b> EYFS Healthy eating and food names.  <b>Content:</b> Food hygiene                      Food processes and equipment                      Cutting terminology / skills</p>		<p><b>Biology</b>  <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>• Understand the difference between a seed and a bulb</li> <li>• Understand what a plant needs to germinate</li> <li>• Understand how certain conditions can affect germination.</li> </ul> <p><b>Plants</b>                      (seed and bulb, what plants need to grow)</p>	<p><b>Chemistry</b>  <b>Uses of every day materials</b>  <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>• Understand why materials are selected for certain uses</li> <li>• Test materials to identify their suitability</li> <li>• Use this knowledge to create products which are absorbent or waterproof</li> </ul> <p><b>Puppy challenge</b></p> <p><b>Charles Mackintosh</b>                      LINKS: Art sculpture                      Spring 2 &amp;</p>	<p><b>Biology</b>  <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>• Use their understanding of living things and their habitats to apply to a real life context</li> <li>• Why do we need to know more about certain animals (endangered animals, human impact)?</li> <li>• How can we use our knowledge to observe animals in their natural habitats</li> </ul> <p><b>Living things and their habitats</b>                      (Habitats, dead or alive                      Food chains)                      LINKS: Geog Spring 1</p> <p><b>Famous Scientist</b>  <b>Jane Goodall</b> Biologist Study of gorillas in natural habitat. Effects of humans on this family group</p>	

<p><b>Year 3</b></p>	<p><b>Physics</b> <b>Light</b> <b>Learning intention:</b></p> <ul style="list-style-type: none"> <li>To understand what light is and its importance.</li> <li>To identify sources of light (man-made and natural).</li> <li>To know how light moves and how it can be reflected.</li> <li>To understand how the eye detects light.</li> <li>Use their knowledge of light to create suitable eye wear.</li> </ul> <p><b>Famous Scientist</b> <b>John McAdam</b></p>	<p><b>Chemistry</b> <b>Rocks and Soils</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To identify the physical properties of rocks</li> <li>To use this knowledge to group and compare.</li> <li>To understand how fossils are formed.</li> <li>To know how soil is created and the properties of different types.</li> </ul> <p>(How they are formed) LINKS: Geography Spring 1</p> <p><b>Mary Anning</b> <b>John McAdam</b></p>	<p><b>Biology</b> <b>Plants</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To understand the functions of a flowering plant (plant, tree)</li> <li>Understand how water is transported through a plant (transpiration)</li> <li>Understand how the processes of pollination, seed formation and seed dispersal in flowering plants.</li> <li>Understand the needs of particular plants (e.g. a cactus, volcanic plants etc.)</li> </ul>	<p><b>Biology</b> <b>Animals including humans (Nutrition)</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To understand that animals and humans need the right types and amounts of nutrition.</li> <li>To be able to identify human and animal skeletal systems and muscular systems</li> <li>To know these provide support, protection and movement.</li> </ul> <p><b>DT – Food and Nutrition</b> <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>To use their knowledge of nutrition and seasonality to create a nutritious savoury meal.</li> </ul> <p><b>Famous Scientist</b> <b>Louis Pasteur</b> <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>To use their knowledge of pasteurisation and how foods are processed and manufactured to ensure they are safe for human consumption</li> </ul>	<p><b>Physics</b> <b>Forces and Magnets</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>Understand how things move on different surfaces and the forces acting on them.</li> <li>Understand the properties of magnets</li> <li>Use the knowledge of magnets and materials to identify magnetic materials.</li> </ul> <p><b>Pneumatics</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To use their knowledge of forces and pneumatics to create a moving figure.</li> </ul> <p><b>Content:</b> History of Pneumatics German physicist <b>Otto James Watt</b> Uses of Pneumatics DT vocabulary Tools required for a simple pneumatic</p>
<p><b>Year 4</b></p>	<p><b>Physics</b> <b>Electricity</b> <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>To understand that electricity is an energy and identify everyday appliances that use it</li> <li>To be able to construct simple circuits and know the electrical components <b>but not their symbols</b></li> <li>To use their knowledge of circuits and electricity to create a circuit with a switch and a light which serves a purpose</li> </ul> <p><b>Famous Scientist</b> <b>Alessandro Volta</b></p>	<p><b>Chemistry</b> <b>States of matter</b> <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>To know there are three states of matter.</li> <li>Use this knowledge to group materials according to their properties.</li> <li>To know that water exists naturally in all 3 states.</li> </ul>	<p><b>Biology</b> <b>Living things and their habitats</b> <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>Understand that vertebrates can be grouped due to their characteristics.</li> <li>Use this understanding to use and create classification keys</li> </ul>	<p><b>Physics</b> <b>Sound</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To understand how sounds are made</li> <li>Know that vibrations from sounds travel through a medium to our ear.</li> <li>To understand pitch and volume how this affects sound</li> </ul>	<p><b>Biology</b> <b>Animals Including Humans</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To know the basic parts and functions of the digestive system in humans.</li> <li>To identify the different types of teeth and functions in humans.</li> </ul>

	<p>Physicist Discovered the battery!</p> <p><b>Electrical systems – simple circuits and switches</b> <b>Learning Intention:</b> Pose the children a variety of design criteria which enables them to use and apply their understanding of circuits to design and make a Christmas decoration.</p> <p><b>Content:</b> Design criteria Toggle switch Reed switch Secure connections Handmade switches Commercial switches Circuit symbols</p>	<ul style="list-style-type: none"> <li>To know how the different states play a part in the Water Cycle</li> </ul>	<ul style="list-style-type: none"> <li>To know that environments are changing and how this affects the wildlife. (Basic classification, environment) <b>David Attenborough</b></li> </ul>	<ul style="list-style-type: none"> <li>To understand how the volume of a sound is affected by distance. <b>Marin Mersenne</b> <b>Robert Boyle</b></li> </ul>	<ul style="list-style-type: none"> <li>To be able to construct food chains LINK: Yr5 Hist Autumn 1</li> </ul>
<p>Year 5</p>	<p><b>Chemistry</b> <b>Properties and Changes of Materials</b> <b>Learning Intention:</b></p> <ul style="list-style-type: none"> <li>To be able to group everyday materials on the basis of their properties</li> <li>To know that some materials dissolve in liquids to form a solution.</li> <li>To identify the correct process for separating mixtures</li> <li>Understand everyday uses of particular materials</li> <li>Understand that some changes are reversible and some irreversible.</li> </ul> <p><b>John Dunlop</b></p>	<p><b>Physics</b> <b>Earth and Space</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>Understand the movement of the Earth in relation to the sun and the other planets.</li> <li>Explain the movement of the Moon relative to the Earth</li> <li>Know why the Earth's rotation causes night and day</li> <li>Explain that the Sun, Moon and Earth are spherical bodies</li> <li>To recognise the theories of black holes and relativity</li> </ul>	<p><b>Biology</b> <b>Living Things and their Habitats</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To know the differences in the life cycles of a mammals, amphibian , insect and a bird</li> <li>Describe the life process of reproduction in plants and animals</li> </ul>	<p><b>Biology</b> <b>Animals including humans</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>Understand and describe the changes in humans as they age.</li> </ul>	<p><b>Physics</b> <b>Forces</b> <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>Know why unsupported objects fall towards earth because of the force of Gravity</li> <li>Identify the effects of air resistance, water resistance and friction</li> <li>Recognise that some mechanisms can allow a smaller force to have a greater effect.</li> </ul> <p><b>Mechanical systems – Pulleys and gears</b> <b>Learning Intentions:</b> Pose the children a variety of design criteria which enables them to use and apply their understanding of forces and mechanical systems to design and make a moving object.</p> <p><b>Content:</b> 6 simple machines identified by science and DT Pulley rotations Gear ratios Reversing switches Annotated diagram</p>

		<p><b>Famous Scientist</b>  <b>Stephen Hawking</b>  <b>Brian Cox</b>  <b>Guion ‘Guy’ Bluford</b>  <b>(first African American in Space)</b></p>			Exploded diagram	
Year 6	<p><b>Biology</b>  <b>Animals Including Humans</b>  <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system</li> <li>Describe how water and nutrients are transported through the body.</li> <li>Explain the impact of diet, exercise, drugs and lifestyle on the way the body functions.</li> </ul> <p><b>DT – Food and Nutrition</b></p>	<p><b>Biology</b>  <b>Evolution and Inheritance</b>  <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>Understand that living things have changed over time (evolved).</li> <li>Recognise that living things produce offspring which are similar but not identical</li> <li>Identify how plants and animals are adapted to their environment.</li> </ul> <p><b>Charles Darwin</b>  <b>Mary Anning</b>  <b>Alfred Wallace</b></p>	<p><b>Biology</b>  <b>Living Things and Their Habitats</b>  <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>Describe how living things can be classified into broad groups according to common observable characteristics</li> <li>Understand the characteristics particular of plants, animals and micro-organisms</li> <li>Justify reasons for classifying living things.</li> </ul> <p><b>Carl Linnaeus</b>                  LINKS: History Trench</p>	<p><b>Physics</b>  <b>Light</b>  <b>Learning Intentions:</b></p> <ul style="list-style-type: none"> <li>To know how light travels</li> <li>To explain how light allows us to see</li> <li>To explain how shadows are formed</li> </ul> <p><b>Thomas Edison</b></p> <p><b>STEM Critical Thinking</b></p>	<p><b>STEM Critical Thinking Tomato Challenge</b>  <b>Learning Intention:</b>                  Provide the children with a real life challenge for them to demonstrate and consolidate their STEM skills.</p>	<p><b>Physics</b>  <b>Electricity</b>  <b>Learning Outcomes:</b></p> <ul style="list-style-type: none"> <li>To understand how the voltage of cells affects the brightness of a lamp and the volume of a buzzer.</li> <li>To be able to compare and give reasons for how different electrical components function</li> <li>Use recognised symbols to represent electrical circuits in a diagram.</li> </ul>