

Types of Scientific Enquiry Overview 2023-2024

Units across the year: **biology** **chemistry** **physics**

Ideas for scientific enquiry taken from PSEC document, Practical Work: Supporting Scientific Enquiry

	Autumn 1: 7 weeks	Autumn 2: 8 weeks	Spring 1: 6 weeks	Spring 2: 5 weeks <small>8th-17th March - BRITISH SCIENCE WEEK: Time</small>	Summer 1: 6 weeks	Summer 2: 7 weeks <small>(excl last 2 days)</small>
F2						
YEAR 1	<p>Seasonal Changes</p> <p>Observation over time:</p> <ul style="list-style-type: none"> observing a tree through the year take weather measurements and make observations over time. Take home bear (a child per week) and record the time it goes to bed when it gets dark. <p>Plants</p> <p>Observation over time:</p> <ul style="list-style-type: none"> observing a tree through the year <p>Research:</p> <ul style="list-style-type: none"> using secondary sources to name plants based on observations of leaves, seeds, flowers etc. 	<p>Seasonal Changes</p> <p>Observation over time:</p> <ul style="list-style-type: none"> As Autumn term <p>Animals including humans</p> <p>Pattern Seeking:</p> <ul style="list-style-type: none"> Children generate questions for investigation linking to body parts, e.g. do people with longer arms have longer legs? <p>Classifying:</p> <ul style="list-style-type: none"> Classify animals based on physical structure Can I taste the difference between different flavours of X e.g. crisps, jelly etc. <p>Seasonal Changes</p> <p>Observation over time:</p> <ul style="list-style-type: none"> As Autumn term 	<p>Everyday Materials</p> <p>Comparative/ Fair Testing:</p> <ul style="list-style-type: none"> Test objects made of different materials to see how effective they are based on properties, e.g. umbrellas for waterproofness, cloths for absorbency etc. <p>Classifying:</p> <ul style="list-style-type: none"> Classifying objects made from the same material Classify objects made from different materials Classify objects based on properties, i.e. texture. <p>Seasonal changes</p> <p>Observation over time:</p> <ul style="list-style-type: none"> As Autumn term <p>Pattern Seeking</p>			

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				<ul style="list-style-type: none"> At the end of the year, look for patterns in evidence, e.g. does it rain more in spring? Do we have more sunny days in summer? 	
YEAR 2	<p>Animals including humans</p> <p>Observation over time:</p> <ul style="list-style-type: none"> Observe how their bodies change before/ after exercise <p>Researching:</p> <ul style="list-style-type: none"> Research adult animals and their young. <p>Classifying:</p> <ul style="list-style-type: none"> Classify food items/ animals etc. based on criteria chosen by children. 	<p>Everyday Materials Comparative/ Fair Testing:</p> <ul style="list-style-type: none"> Testing of materials for different uses, e.g. which material would you use for Cinderella's mop? <p>Classifying:</p> <ul style="list-style-type: none"> Classify different types of materials based on children's own criteria. 	<p>Living things and their habitats</p> <p>Pattern Seeking:</p> <ul style="list-style-type: none"> Children to generate questions for investigation, such as are there more daisies in a meadow or on a field? Where do snails live? Where do you see more butterflies, ivy etc. <p>Classifying:</p> <ul style="list-style-type: none"> Classify things found in the environment using own criteria leading to living, dead and never been alive. 	<p>Plants</p> <p>Observation over time:</p> <ul style="list-style-type: none"> Plant seeds and bulbs and observe how they grow. <p>Pattern Seeking:</p> <ul style="list-style-type: none"> Children generate questions to investigate, e.g. do big seeds germinate more quickly than smaller seeds? Which comes first, the root or the shoot? <p>Researching:</p> <ul style="list-style-type: none"> Look at packets to decide how to plant and care for seeds. <p>Living things and their habitats</p>	<p>Plants</p> <ul style="list-style-type: none"> Continued from Sum1

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					<ul style="list-style-type: none"> Continued from Spr2 	
YEAR 3	<p>Forces and Magnets</p> <p>Classifying</p> <ul style="list-style-type: none"> Sorting materials (magnetic/ non-magnetic) and toys (ways that they move- push/ pull) <p>Comparative/ Fair Test</p> <ul style="list-style-type: none"> Strength of different magnets. <p>Research</p> <ul style="list-style-type: none"> How are magnets used in everyday life? 	<p>Animals including humans</p> <p>Pattern Seeking</p> <ul style="list-style-type: none"> Generate Qs linking to objectives about skeletons, muscles etc. e.g. Do people with long arms throw further than people with short? Can people with bigger hands catch a ball more easily? <p>Classifying</p> <ul style="list-style-type: none"> Classify food items (sorting by nutrients) Classifying animals (skeleton) <p>Research</p> <ul style="list-style-type: none"> Research which types of foods have different nutrients, inc use of food packaging Generate Qs to research about the human skeleton 	<p>Rocks</p> <p>Researching</p> <ul style="list-style-type: none"> How are fossils formed? <p>Classifying</p> <ul style="list-style-type: none"> Classification of rocks based on own criteria. <p>Observation over time:</p> <ul style="list-style-type: none"> Observe how soil separates into different layers in water. <p>Comparative/ Fair Test</p> <ul style="list-style-type: none"> Test how hard different rocks are Test permeability of rocks. Test how quickly water runs through different soils. 	<p>Plants</p> <p>Observation over time</p> <ul style="list-style-type: none"> Observe celery/ white flower in coloured water <p>Pattern Seeking</p> <ul style="list-style-type: none"> Investigate what happens when conditions are changed, e.g. more/less light/water, change in temperature, nutrients etc. 	<p>Light and Shadows</p> <p>Comparative/ Fair Testing</p> <ul style="list-style-type: none"> Test materials for reflectiveness/ transparency etc Investigate size and shape of shadows (DO NOT look at how shadows in the playground change throughout the day.) <p>Classifying</p> <ul style="list-style-type: none"> Based on children's criteria, classify light sources-leading to man-made/ natural. Based on children's criteria, classify materials-leading to reflective/ non-reflective and/or 	

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					transparent/ translucent/ opaque.
YEAR 4	Living things and their habitats Classifying <ul style="list-style-type: none"> Classifying living things in local/wider environment Use of classification keys. Pattern Seeking <ul style="list-style-type: none"> Do animals/ plants with ... have ...? Research <ul style="list-style-type: none"> Research global environmental issues and their impact on living things. 	Sound Comparative/ Fair Testing <ul style="list-style-type: none"> Measure how volume changes from distance away from a source. Explore pitch through a carousel of activities. Investigate string telephones to identify travelling vibrations through a medium to the ear. 	Changes of State Classifying <ul style="list-style-type: none"> Classifying solids/ liquids Observing over time <ul style="list-style-type: none"> Evaporation- watch hand prints dry Melting rates Comparative/ Fair Testing <ul style="list-style-type: none"> What effects the melting rate of X? What effects the rate of evaporation? Which is the most viscous liquid? 	Electricity Classifying <ul style="list-style-type: none"> Classify household appliances/ toys (electrical/ not electrical, batteries/mains) Test materials to classify as insulators or conductors 	Animals including Humans Classifying <ul style="list-style-type: none"> Compare and contrast types of teeth- link to functions. Research <ul style="list-style-type: none"> Research parts of digestive system Research what animals eat in a specific environment to construct food chains.
YEAR 5	Materials Classifying <ul style="list-style-type: none"> Classify materials based on children's criteria. Classify materials based on outcomes of what happens when solids are added to liquids Observing over time <ul style="list-style-type: none"> Observe formation of rust with uncoated nails in different liquids. 	Earth and Space Observing over time <ul style="list-style-type: none"> Measure shadows throughout the day NB- save this data digitally to be used for	Forces Comparative/ Fair Testing <ul style="list-style-type: none"> Compare levels of friction Compare water resistance, e.g. shape of boats, viscosity of liquids. 	Living Things and their Habitats Pattern Seeking <ul style="list-style-type: none"> Chn to generate questions for investigation, such as: Do larger mammals have longer gestation 	Animals including humans Research <ul style="list-style-type: none"> Develop questions to ask an expert, e.g. health visitor, doctor

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	<p>Comparative/ Fair Testing</p> <ul style="list-style-type: none"> Which material would be good to make a tea bag from? Which material will keep X the warmest/ coldest for longest? Test solids for solubility- comparing rates of solubility 	<p>reference in future Y6 lesson looking at light.</p> <p>Research</p> <ul style="list-style-type: none"> Generate questions to research about Earth and Space, presenting results in different ways. 	<ul style="list-style-type: none"> Compare air resistance Compare levers, pulleys and gears 	<p>periods? Do smaller animals lay more eggs?</p> <p>Classifying</p> <ul style="list-style-type: none"> Classify animals according to their life cycle <p>Research</p> <ul style="list-style-type: none"> Generate Qs to research the life cycle of a chosen animal, presenting findings in different ways. 		
YEAR 6	<p>Light and Sight Comparative/ Fair testing</p> <ul style="list-style-type: none"> Investigate the shape of shadows and link this to light travelling in straight lines. <p>NB- use of data from their Y5 Earth and Space lesson looking at measuring shadows over the course of the year to refer back to in place of observation over time enquiry</p>	<p>Electricity Comparative/ Fair testing</p> <ul style="list-style-type: none"> Investigate the effect of adding more bulbs/ cells/ buzzers/ motors to a circuit. 	<p>Animals including Humans Pattern Seeking</p> <ul style="list-style-type: none"> Chn generate questions for investigation, e.g. do older people have lower pulse rates? Does the intensity of exercise alter the pulse rate of all people equally? <p>Research</p> <ul style="list-style-type: none"> Generate questions to research about the human 	<p>Animals including Humans Living Things and their Characteristics Classifying</p> <ul style="list-style-type: none"> As Spring 1 Classifying plants into flowers, mosses, ferns, conifers based on specific characteristics Create a branching database to classify a set of living things <p>Research</p>	<p>Living Things and their Characteristics Evolution and Inheritance Classifying</p> <ul style="list-style-type: none"> As Spring 2 Classifying species of plants/ animals to show variation. <p>Pattern Seeking</p> <ul style="list-style-type: none"> Identify patterns for the suitability of bird beaks for the food available. 	<p>Evolution and Inheritance</p> <ul style="list-style-type: none"> As Summer 1

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	<p>which would repeat the experiment.</p>		<p>circulatory system, e.g. how are nutrients and water transported around the body?</p>	<ul style="list-style-type: none"> • Research the difference between bacteria, virus and fungi- give reasons why these are not plants and animals. • Research how micro-organisms can be helpful or harmful. • Research an unusual animal 	<p>Researching</p> <ul style="list-style-type: none"> • Research different types of a species and their characteristics making them suitable for different habitats (animals AND plants) 	
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Unit

Cross-curricular links

Scientific enquiry questions and enquiry types.

Lesson objective overview- MTP