

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plant biology			<p>Grow a plant from seed and from bulb - performing simple observations No need to perform tests, simply monitor. Could also compare growth with a bulb. (Option to investigate whether orientation of seed/bulb when planting has an impact on growth.)</p> <p>Bean diary -observing closely, using simple equipment Focus on naming the parts of the plant. E.g. the leaf is now 2cm long.</p> <p>Measuring and monitoring growth (Maths links to data and graphs) using their observations and ideas to suggest answers to questions</p> <p>Identifying common plants, including deciduous and evergreen trees (Nature walk and Attingham) - asking simple questions and recognising that they can be answered in different ways</p> <p>Identify key parts of a plant and compare plants to trees. (root, stem leaves, flowers</p>	<p>To look at how the conditions effect the growth of a plant. performing comparative/fair tests Potato maze activity to see if the potato leaves will make it to the light hole (Engaging Science). Explore if plants need water to survive.</p> <p>To plant, observe and describe the growth of their own herb garden. observing closely, using simple equipment</p> <p>Describe how plants grow to maturity (ICT) using their observations and ideas to suggest answers to questions</p> <p>To be able to name increasing number of common British plants and trees, including distinguishing between annuals and perennials.</p>	<p>Fair testing – The role of soil nutrition, light level and temperature have on seed growth. (Chn to choose which experiment and how they will investigate) setting up simple practical enquiries, fair tests, using data loggers. Fair testing – Drawing and presenting conclusions (Final report)</p> <p>The functions of the main parts of a flowering plant.</p> <p>How nutrients/water is transported through a plant (flowers) setting up simple practical enquiries, making observations and conclusions.</p> <p>Seed dispersal. Discover how seeds are formed and how different plants disperse their seeds, compare patterns of seed dispersal.</p> <p>Photosynthesis. Briefly explain that plants can make their own food.</p>	<p>Chn to understand the role of plants in the wider environment through food chains. identifying differences, similarities or changes related to simple scientific ideas and processes Explore the human impact on the environment, including positive impacts of nature reserves or ponds, compared with negative impacts.</p> <p>Classify between flowering and non-flowering plants, including grasses, ferns and moss. Classifying.</p> <p>Use simple guides and keys to identify local plants. Creating own key.</p>		

			vs. roots, trunk, branches, leaves. Use magnifying glasses to make close observations.		Life cycle of flowering plant. Explore the part that flowers play in this. Link to seed dispersal, including pollination.			
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Animals including humans			<p>Animal classification including amphibian, fish, reptile, bird and mammal - identifying and classifying</p> <p>Animal diets e.g herbivore, carnivore, omnivore identifying and classifying</p> <p>Big write – fact files on chosen animals</p> <p>Labelling the human body/Labelling outer parts of</p>	<p>Adults and offspring- Chicks/lambs observing closely, using simple equipment Compare mammals with live young to other animals which lay eggs.</p> <p>Observe and generate questions to understand what animals needs for survival. (Water, food and air) using their observations</p>	<p>Food groups and why animals need nutrients – food pyramid. Animals cannot create their own food. Chn to design their own meals based on these findings.</p> <p>Classifying herbivores, omnivores and carnivores. Classifying</p> <p>Compare the diets of different animals including humans.</p> <p>Vertebrates and invertebrates. Classifying</p>	<p>Make poo – Explain the function of the human digestive system. Asking relevant questions. identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Use keys to label human teeth types and apply this information to help make assumptions about whether animals are carnivorous, omnivorous or herbivorous. Drawing simple conclusions and predictions.</p> <p>Construct food chains involving discussing the impact of adding or removing predators. (Chn to learn key vocabulary of food chains including “producer.”) Identifying differences, similarities or changes related to simple scientific ideas and processes. reporting on findings from enquiries, including oral and</p>	<p>Links to RSE and reproduction.</p> <p>Compare the lifecycle of a mammal to that of an amphibian and insect. Butterfly/tadpole metamorphoses.</p> <p>Looking at the lifecycle of a human (key terms adolescence etc) and how it doesn’t always end at ‘old age’. Identifying and classifying Describing the changes in detail including drawing a timeline to indicate stages in growth and development.</p> <p>The process of reproduction in mammals. Interpreting data such as tables bar and line graphs Research the gestation period of other animals and compare with humans. This could include</p>	<p>What is blood – investigate – making edible blood</p> <p>How does the heart work – chambers / muscle / bpm etc.</p> <p>Nutrients travelling through the body – osmosis and diffusion</p> <p>The circulatory system – function of vessels, arteries and the lungs Name the parts and functions.</p>

			<p>different animals, e.g. wings, fins.</p> <p>Labelling and investigating the 5 senses</p> <p>Writing activity on how we have changed from baby to adult (This is actually part of the History unit)</p> <p>Spring watch life cycle of animals – live cameras - using their observations and ideas to suggest answers to questions</p> <p>Use videos to identify and group animals based on what they eat.</p> <p>Learning about treating living things with respect, replacing them to their environment after study. (Forest school bug hunt)</p>	<p>and ideas to suggest answers to questions</p> <p>Describe the importance of humans to exercise and lead a healthy lifestyle. Include need for rest. (Mr Grinling/Literacy) gathering and recording data to help in answering questions</p>	<p>Animal habitats and adaptations –designing an animal to suit its environment.</p> <p>Labelling the heart. Recording</p> <p>Heart investigation – pulse rate. Recording</p> <p>Muscles – voluntary and involuntary movements. Gathering data</p> <p>Bones – investigation into children’s height vs. bone length Identifying similarities and differences</p>	<p>written explanations, displays or presentations of results and conclusions.</p>	<p>comparing the length and mass of a baby as it grows.</p>	<p>Healthy body (links to STAR workshop with PC Jolly)</p> <p>Recognise impact of diet, exercise, drugs and lifestyle on the way bodies function.</p> <p>Children could explore how scientists have researched about the relationship between diet, exercise, drugs and health.</p>
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Living things and their	asking simple questions and recognising that		Cold climate linked to non-fiction writing unit	Grouping and classifying dead, living and		Analyse and interpret data which highlights patterns in population size of predators and prey.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird,	Linnaeus system of classification

<p>environment (Seasonal changes Yr1)</p>	<p>they can be answered in different ways</p> <ul style="list-style-type: none"> •observing closely, using simple equipment •performing simple tests •identifying and classifying •using their observations and ideas to suggest answers to questions •gathering and recording data to help in answering questions 		<p>(trip to Snowdome)</p> <p>Weather charts/Seasons throughout the year. Simple observations. Children to observe that day length changes between the seasons.</p>	<p>never alive - identifying and classifying</p> <p>Know that plants are alive.</p> <p>What makes something alive? MRS NERG.</p> <p>Urban habitats</p> <p>Gathering and recording data to help in answering questions. (Bug hunt) - gathering and recording data to help in answering questions</p> <p>Simple food chains and grouping and classifying identifying and classifying</p> <p>Include micro-habitats – e.g. under log and how conditions may affect number of things living there.</p>		<p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Create branching databases to classify animals and plants, particularly focussing on vertebrates vs invertebrates. Classifying</p> <p>Examine how habitat changes can have an impact on species. asking relevant questions and using different types of scientific enquiries to answer. Explore the human impact on the environment, including positive impacts of nature reserves or ponds, compared with negative impacts.</p> <p>Create and label parts of an insect.</p>	<p>focusing on complete and incomplete metamorphosis</p> <p>Identifying and classifying</p> <p>Describe the life process of reproduction in some plants and animals - classifying reproductive parts of a flower through dissecting, focusing on the purpose of the parts. Reporting and presenting</p> <p>Comparing the growth of cuttings and seeds and establishing which are more effective. Planning and taking measurements, recording data, reporting and presenting findings.</p>	<p>Sorting and grouping using branching database</p> <p>Helpful or harmful bacteria</p> <p>Investigate micro-organisms and their conditions for growth on bread</p> <p>Design and test classification keys to classify leave found on nature walk</p>
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Properties of Materials			<p>Identify and name everyday materials</p> <p>Distinguish between object and material.</p> <p>Sorting and classifying materials according to their property - identifying and classifying</p> <p>Compare and group materials based on simple physical properties.</p> <p>Transparent, Translucent or Opaque? Waterproof? Absorbent? using their observations and ideas to suggest answers to questions</p> <p>Children could be exposed to large range of materials and use the</p>	<p>Identify properties of materials and how they are used.</p> <p>identifying and classifying</p> <p>Compare and contrast materials/use of different materials in different locations, such as play area vs classroom.</p> <p>Identify how materials can be changed by squashing, bending etc - observing closely, using simple equipment</p> <p>Identify how properties of an object make them suitable for every day use. (Experiment,</p>			<p>Classifying of a range of materials focusing on permeability/insulators/conductors/solubility etc.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Reporting and presenting information</p> <p>Practical activities which separate different mixtures e.g. filtration, magnets, sieving etc.</p> <p>Observing and reporting and presenting information</p> <p>To observe reversible and irreversible changes, including new materials formed (coke and mentos/vinegar and bicarbonate of soda).</p> <p>Observing and reporting and presenting information</p> <p>Testing materials to see which are the best thermal insulators.</p> <p>Planning/ Predicting/Measuring, observing and recording temperature/ concluding</p> <p>Give reasons for the use of everyday materials based on comparative/fair tests.</p>	

			<p>properties to answer simple questions, such as “what is the best material for an umbrella?... dog basket lining?... curtains?... a bookshelf?... a gymnast leotard?”</p>	<p>pirate ship) - gathering and recording data to help in answering questions Draw conclusions about what makes materials suitable or unsuitable.</p> <p>Explore how materials can be used for more than one thing.</p>				
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Rocks and Soils					<p>Properties of rocks and soils. Sedimentary, metamorphic and igneous rocks.</p> <p>Compare and group based on physical properties/appearance. Include use of materials in situ, such as buildings and gravestones. Use magnifying glasses. Identify similarities and differences between rock samples.</p> <p>How fossils are formed –Mary Anning?</p> <p>Soil investigation –permeability. Fair testing Raise and answer questions about how soils are formed.</p>			

					Layers of the earth. Not needed unless a curriculum link.			
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States of matter						<p>Observe that materials can change state when cooled or heated. Measure the melting point of chocolate using data loggers and thermometers.</p> <p>Setting up simple practical enquiries, comparative test. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units,</p>		

						<p>using a range of equipment, including thermometers and data loggers. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Compare and group materials according to the state of matter.</p> <p>Examine factors affecting evaporation – Chn to dry paper towels as quickly as possible. Fair testing.</p> <p>Investigate if different liquids evaporate at the same rate. Fair testing and systematic observation. Recording and presenting data. Making conclusions. Associate the rate of evaporation with temperature.</p> <p>Observe condensation (linked to water cycle). Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Use body parts/work as a group to create a model of how particles move during changes of state.</p>		
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Forces and Magnets					Every day uses of forces. Fair testing		Explain that unsupported objects fall towards the Earth because of the force of gravity	

				<p>Investigation – friction (using the ramps). Data loggers. Making predictions, recording, presenting conclusions.</p> <p>Graphing friction investigation results. Recording findings</p> <p>Investigation – are big magnets stronger than small magnets. Predicting Observe that some forces need connection, whereas magnetism can work at a distance.</p> <p>That like poles repel and opposite poles attract. Making observations, making predictions.</p> <p>Compare and group everyday materials based on whether they are attracted to a magnet.</p>		<p>acting between the Earth and the falling object (practical examples) Observing, reporting and presenting findings, take measurements, recording data.</p> <p>Identify the effects of air resistance (creating parachutes and testing their effectiveness) (vortex canon demonstration), water resistance (make different shape boats out of plasticine and test) and friction (data loggers and different surfaces), that act between moving surfaces Observing, reporting and presenting findings, recording data through scientific diagrams</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	
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Electricity						<p>Classify items around the home into those that use electricity and those that don't, including the differences between battery operated items and mains powered items. Classifying.</p> <p>Create simple circuits involving a range of components. Asking and answering relevant questions. Setting up simple practical tests. Observation. Drawing labelled diagrams.</p> <p>Investigated which materials can conduct electricity. Comparative test.</p> <p>Investigated how to make a lightbulb brighter or dimmer and troubleshoot a circuit which is not working based on knowledge of circuits. Asking and answering relevant questions. Setting up simple practical tests. Observation.</p> <p>Created switches to help chn to understand the flow of electricity.</p> <p>Electrical safety</p>		<p>Simple circuit (Y4 revision) and their related symbols (increased range of compnents beyond cell, light, switch, wires)</p> <p>Electrical safety recap</p> <p>Circuit enquiry – thickness of wire/ conductivity/use of other components (buzzer, switch, motor). Use volt meters to record quantitative data. Use dataloggers to take measurements of bulb brightness. Concluding and presenting data.</p> <p><i>Compare and give reasons for variation in how components function. Working systematically to identify the effect of changing a component at a time.</i></p> <p><i>Create a useful circuit.</i></p> <p>Link to DT – WW2 vehicle (with moving propeller or wheels using a motor and pulley system)</p>

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Evolution and inheritance								<p>Inheritance – offspring features / characteristics Could consider different breeds of dogs/cattle, involving cross-breeding. Pupils are not expected to know how genes or chromosomes work.</p> <p>Adaptation and evolution according to environment (link to Darwin)</p> <p>Design a creature that has evolved with advantageous characteristics.</p> <p>Explore evidence for evolution using fossils</p>
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Earth and Space							<p>To explore features of the solar system and the impact of asteroids/comets etc on the structure of spherical bodies. Planning, measuring, recording and presenting data</p> <p>Describe the movement of the Earth and other planets relative to the sun in the solar system (Planetarium visit)</p> <p>Describe the movement of the moon relative to the Earth Presenting information through scientific diagrams</p> <p>Describe the sun, Earth and moon as approximately spherical bodies Presenting information through scientific diagrams</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky Presenting information through scientific diagrams</p>	

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Light					<p>How shadows are formed. Data loggers, asking and answering questions, making predictions and performing simple tests.</p> <p>Explore distance between object and light source and how this affects shadow size.</p> <p>Reflective materials. Data loggers</p> <p>How light is reflected.</p> <p>Translucent, transparent and opaque.</p>			<p>Light travels in straight lines – Make periscopes.</p> <p>Sources of light/that seen objects are reflected light. Include the basic structure of the human eye (retina) Children could make a pinhole camera.</p> <p>How can we change shadows? Explain that the shape of an object affects its shadow. – Create a puppet show.</p> <p>Investigate shadow size / distance from light source and height of shadow. Graph representation.</p> <p>Which surfaces reflect the most light? Data loggers</p>

The dangers of sunlight and how we can protect the eyes. UV bead investigation.

Recognise the need for light in order to see things. And that darkness is the absence of light.