



Hope Federation
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Brisley C.E.
Primary Academy



Long Term Science Planning Lower KS2

Year 3 and 4

Topic	India		Chocolate		The Stone Age	
Year 3/4 Year A	Light	Sound	States of Matter	Animals, including humans. Teeth and digestion.	Rocks and Soils	Plants

<p>National Curriculum Knowledge Focus</p> <p>See Knowledge Matrices for planning: https://drive.google.com/drive/u/0/folders/1vYGC_Q3IASMPzS5MJCuYFslsI8xMgmeP</p>	<p>-Recognise that they need light in order to see things and that dark is the absence of light.</p> <ul style="list-style-type: none"> • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change. 	<p>-Identify how sounds are made, associating some of them with something vibrating.</p> <ul style="list-style-type: none"> • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases 	<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <ul style="list-style-type: none"> • 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). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<p>Year 4:</p> <p>Describe the simple functions of the basic parts of the digestive system in humans.</p> <ul style="list-style-type: none"> • Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey. 	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <ul style="list-style-type: none"> • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter. 	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <ul style="list-style-type: none"> • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Investigate the way in which water is transported within plants. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal
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<p>Possible unit enquiry questions</p> <p>(linked to Ogden Trust Big Questions and Explorify Enquiries links see google drive links).</p> <p>https://drive.google.com/drive/u/0/folders/1VnKpDfMMkP7An6zqOOguoso_z3WYyA70</p> <p>https://docs.google.com/document/d/1DA6SFoXzT-Guzlu-O_h_KaYffBK-2z_pD/edit#heading=h.gjdgxs</p>	<p>Ideas over time: Who actually invented the light bulb, Thomas Edison or Joseph Swan?</p> <p>Comparative Tests Which pair of sunglasses will be best at protecting our eyes? Lightproof your secret den</p> <p>Fair Test: How does the number of layers of transparent plastic affect how much light can pass through? How does the distance between the shadow puppet and the screen affect the size of the shadow?</p> <p>Identifying and Classifying: How would you organise these light sources into natural and artificial sources? Sources of light</p> <p>Observing changes over time: Is the Sun the same brightness all day? Exploding lights</p> <p>Pattern seeking: Are you more likely to have bad eye sight and to wear glasses if you are older? Shadow shapes</p> <p>Research: How does the Sun make light? How does a light bulb work? What if we didn't have mirrors?</p>	<p>Comparative Testing: Which material is best to use for muffling sound in ear defenders? Are two ears better than one? Protect your ears</p> <p>Fair Test: How does the volume of a drum change as you move further away from it? How does the length of a guitar string/tuning fork affect the pitch of the sound?</p> <p>Identifying and classifying: What's that sound?</p> <p>Ideas over time: How has our understanding and use of ultrasound changed over time? Since the 1800s, how has science helped people who are deaf?</p> <p>Observing over time: When is our classroom the quietest? Sound of silence</p> <p>Pattern seeking: Is there a link between how loud it is in school and the time of day? If there is a pattern, is it the same in every area of the school? Rice and rhythm</p> <p>Research: Do all animals have the same hearing range?</p>	<p>Comparative Testing: Does sea water evaporate quicker than fresh water? Water carriers</p> <p>Fair Test: How does the mass of a block of ice affect how long it takes to melt? How does the surface area of a container of water affect how long it takes to evaporate? Ice lollies How do smells travel?</p> <p>Identifying and Classifying: Can you group these materials and objects into solids, liquids, and gases? Nifty naturals Totally organic Branching out</p> <p>Observing over time: How does an egg shell change when it is left in cola? How does the level of water in a glass change when left on the windowsill? How does the mass of an ice cube change over time? Top of the pops</p> <p>Pattern seeking: Is there a pattern in how long it takes different sized ice lollies to melt? Multiple liquid densities</p>	<p>Ideas over time: How has a visit to the dentist changed since ancient times?</p> <p>Identifying and classifying: How can we organise teeth into groups? What are the names for all the organs involved in the digestive system?</p> <p>Research: How do dentists fix broken teeth?</p>	<p>Comparative testing: Which soil absorbs the most water? Which rock would be best for a skate ramp?</p> <p>Fair Test: How does adding different amounts of sand to soil affect how quickly water drains through it?</p> <p>Ideas over time: What were James Hutton's ideas about how rocks were made and what was his evidence?</p> <p>Identifying and classifying: Can you use the identification key to find out the name of each of the rocks in your collection? Mysterious material Kaleidoscope of colour Surprising surface</p> <p>Observing over time: How does tumbling change a rock over time? What happens when water keeps dripping on a sandcastle?</p>	<p>Comparative Testing: Which conditions help seeds germinate faster? How can you tell if something is a plant?</p> <p>Fair test: How does the length of the carnation stem affect how long it takes for the food colouring to dye the petals?</p> <p>Identifying and classifying: How many different ways can you group our seed collection? Friends of flowers Wet. and not so wet. leaves</p> <p>Observing over time: What happens to celery when it is left in a glass of coloured water? How do flowers in a vase change over time? Venus flytrap What a fun guy Furry fruits</p> <p>Pattern Seeking: What colour flowers do pollinating insects prefer? Making records Sensitive plant</p> <p>Research: What are all the different ways that seeds disperse?</p>
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	<p>Look at Ogden Trust Phizzi Light and Sound Teacher's handbook for KS1 Enquiry plans. Resources in the Ogden Trust boxes at Rudham and Weasenham.</p>	<p>Lyre liar</p> <p>Look at Ogden Trust Phizzi Light and Sound Teacher's handbook for KS1 Enquiry plans. Resources in the Ogden Trust boxes at Rudham and Weasenham.</p>			<p>Sandcastle Pattern Seeking: Is there a pattern in where we find volcanoes on planet Earth? Bubbly water Research: Who was Mary Anning and what did she discover? Do rocks stay the same for ever?</p>	<p>Why are people cutting down the rainforests and what effect does that have? What if we did not plant trees? What if plants could talk?</p>
<p>Vocab</p> <p>https://docs.google.com/document/d/1G7BfDHFTz9UK08xOYnxvgMKbttkWTZQ2/edit#heading=h.gjd_gxs</p>	<p>light dark (absence of light) reflect shadow opaque mirror reflective surface</p>	<p>sound vibration vibrate pitch volume insulation</p>	<p>solid liquid gas temperature heat (heating) cool (cooling) water cycle evaporation condensation melting freezing</p>	<p>types of teeth: molar, premolar, incisor, canine digestive system stomach small intestine large intestine oesophagus saliva</p>	<p>rock soil fossil organic matter grains crystals sedimentary rock</p>	<p>functions nutrients nutrition air transport (water) life cycle pollination seed formation seed dispersal reproduce fertiliser</p>



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Scientific enquiry

Working Scientifically skills document:
<https://drive.google.com/drive/u/0/folders/0AOwPXDNvrjH8Uk9PVA>

Asking relevant questions and using different types of scientific enquiries to answer them

- The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions.
- The children answer questions posed by the teacher.
- Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.

Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

- The children make systematic and careful observations.
- They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.

Setting up simple practical enquiries, comparative and fair tests

- The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher.
- They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.

Explanatory note

A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome.

A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.

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Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions

Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables

- The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams.
- Children are supported to present the same data in different ways in order to help with answering the question.

Using straightforward scientific evidence to answer questions or to support their findings

- Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.

Identifying differences, similarities or changes related to simple scientific ideas and processes

- Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships.

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

- They draw conclusions based on their evidence and current subject knowledge.
- They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.
- Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface.
- Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.



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	<p>Scientific Enquiry Vocab: develop enquiry practical enquiry fair test comparative test relationships conclusion accurate thermometer data logger estimate data diagram key (identifying) table chart bar chart results predictions explanation reason similarity difference question evidence information findings criteria values properties characteristics</p>
<p>TAPS Assessment</p>	



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	Secrets of the pyramids		Romans on the Rampage	Off to the beach!
Topic				
Year 3/4	Forces and Magnetism	Electricity	Living things and their habitats	Animals, including humans. Movement and nutrition
Year B				



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<p>National Curriculum Knowledge Focus</p> <p>See Knowledge Matrices for planning: https://drive.google.com/drive/u/0/folders/1vYGC_O3IASMPzS5MJCuyFslsI8xMgmeP</p>	<ul style="list-style-type: none"> • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<p>Identify common appliances that run on electricity.</p> <ul style="list-style-type: none"> • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • 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. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. 	<ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things. 	<p>Year 3:</p> <p>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <ul style="list-style-type: none"> • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.
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	<p>How have our ideas about forces changed over time? How does a compass work? What if all transport was electric? Look at Ogden Trust Phizzi Forces Teacher's handbook for KS2 Enquiry plans. (copy on Science google drive) Resources in the Ogden Trust boxes at Rudham and Weasenham.</p>			
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<p>Vocab</p> <p>https://docs.google.com/document/d/1G7BfDHFTz9UK08xOYnxvgMKbttkWTZQ2/edit#heading=h.gjd_gxs</p>	<p>move movement surfaces forces push pull contact distance magnet bar magnet ring magnet horseshoe magnet attract repel poles (of magnets) magnetic materials</p>	<p>electricity simple circuit light bulb cell wire buzzer switch motor battery series circuit conductor insulator</p>	<p>environment non-flowering plants ferns mosses flowering plants grasses vertebrate animals: fish, birds, mammals, amphibians, reptiles invertebrate animals: snails, worms, slugs, spiders, insects human impact – litter, deforestation, population increase, ature reserves</p>	<p>nutrition diet skeleton muscles protection support movement bones skull shell</p>
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<p>TAPS Assessments (to do 2/3 of the way through the unit)</p>					
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Scientific Enquiry Vocab

develop enquiry practical enquiry fair test comparative test relationships conclusion accurate thermometer data logger estimate data diagram key (identifying) table chart

bar chart results predictions explanation reason similarity difference question evidence information findings criteria values properties characteristics