

Pudsey Bolton Royd Primary School Science Long-Term Plan

Year 4

<u>Autumn 1</u>	<u>Autumn 2</u>	<u>Spring 1</u>
Enquiry Questions		
How do I hear?	What are solids, liquids and gases?	What happens to food once I eat it?
Outcomes		
How does the volume of a drum change as you move further away from it? (fair test) Line graph of results.	Is there a pattern in how long it takes different sized ice lollies to melt? (pattern seeking) Write a conclusion commenting on reasons for pattern and limitations of the investigation.	How does an egg shell change when it is left in cola? (observing over time) Written conclusion, commenting on the limitations of their investigation and how it could be improved.
Linked Texts		
Can you hear sound in space?	N/A	The digestive system – flowchart science
Linked Experiences		
N/A	N/A	
Overview		
Through hands-on, practical enquiries, pupils will investigate how sounds are formed and how they reach our ears. Through the main enquiry type of fair testing, pupils will identify patterns between the pitch of sounds and the sound source. Pupils will become more familiar with data-loggers and will use these to take accurate and systematic measurements. Finally, using the key principles of fair-testing, pupils will investigate what happens to the volume of a sound as the distance from the source increasing, plotting their results as a line graph.	Pupils will use a range of enquiry types to investigate the properties of solids, liquids and gases. Through the main enquiry type of pattern seeking, pupils will investigate patterns between the size of an ice lolly and how long it takes to melt, commenting on the reasons for this. During the investigation, pupils will learn to make simple calculations (such as subtracting the mass of the melted water from the original weight of the lolly). Pupils will also make qualitative notes during the investigations, such as 'the ice lolly broke in half after 5 minutes', discussing the importance of these notes. Finally, pupils will use their knowledge of changes of state to describe the Water Cycle.	During this unit, pupils will explore the process of food entering the body, being digested and excreted out. Pupils will look at the shape of their teeth and the function of each type, creating their own model using plasticine. As well as this, pupils will investigate the effect of different drinks on teeth enamel, using egg shell as a replica of human teeth. Pupils will then have the opportunity to ask and investigate their own questions based on the previous enquiry. Finally, pupils will create a model of the digestive system, commenting on the function of each part.
Knowledge and/or Skills Covered		
Frame predictions in scientific language & concepts; start to select information to inform these predictions. Start to apply concepts of 'fair testing'. Make estimations and (with help) take systematic and careful measurements (e.g. clear clutter that might affect measurements). Use data loggers. Use age-appropriate graph skills (e.g. time graphs, discrete vs continuous data).	In a given context they explain their plans in detail, verbally and in writing, using technical vocabulary and linking to types of scientific enquiry. Take quantitative and qualitative notes that include scientific language. Start to make simple calculations during the enquiry process. Include comments about causal relationships and link these to scientific content.	Select and use sources to construct their own opinions about science. Use scientific vocabulary, often appropriately Ask and answer scientifically valid questions (e.g. about contrast, cause and effect, reliability) Suggest improvements to their methodology, linking this to scientific knowledge
National Curriculum Attainment Targets		
Make systematic and careful observations and, where appropriate, take accurate measurements using	Set up simple practical enquiries, comparative and fair tests.	Describe the simple functions of the basic parts of the digestive system in humans.

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standard units, using a range of equipment, using thermometers and data loggers. Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Find patterns between the pitch of a sound and features of the object that produced it. Recognise that sounds get fainter as the distance from the sound source increase.	Compare and group materials together according to whether they are solids, liquids or gases. 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. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Identify the different types of teeth in humans and their simple functions. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
Important Vocabulary		
Sound source, wave, noise, vibrate/vibration, pitch, volume, echo, reliability.	Oxygen, change of state, solidify, gaseous, water, vapour, water cycle, precipitation, evaporation, condensation, Celsius.	Digestive system, Digestion, Saliva, Oesophagus, Stomach, Small/large intestine, Rectum, Anus, Faeces, Excrete, Reabsorb, Plaque, Fluoride, Tooth decay, Gums, Enamel, Canines, Incisors, Pre-molars, Molars, Cavities, Decay

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<u>Spring 2</u>	<u>Summer 1</u>	<u>Summer 2</u>
Enquiry Questions		
What happens when I press a light switch?		How do we group living things?
Outcomes		
How does a light bulb work? (research) Double page spread on how a light bulb works.		Can we use the classification keys to identify all the animals that we caught pond dipping? (identifying and classifying) Labelled scientific diagram of a living thing found in the pond.
Linked Texts		
Where does lightning come from?		Cause, effect and chaos in the rainforest
Linked Experiences		
Overview		
In this unit, pupils will practise building their own circuits, investigation what makes a working circuit. Pupils will be able to name the basic parts and link this knowledge to circuits they see in everyday life. Pupils will investigate the effect of switches, commenting on how it breaks the circuits. As well as this, pupils will explain how electrical components require a complete circuit for the electricity to flow. Using this knowledge, pupils will investigate electrical conductors, making predictions on which materials will conduction electricity. Finally, pupils will use their knowledge developed during this unit to research how a light bulb works, presenting their finding in a clear and scientific manner.		In this unit, pupils will understand the need for living things to be grouped as well as understand how scientists group living things. Pupils will comment on how inanimate objects are grouped (such as at a supermarket) and link this to classification of living things. Pupils will explore living things in the Amazon rainforest, using classification keys to identify a range of species. As well as this, pupils will look at a variety of food chains in the Amazon, commenting on the size of the living thing at each level. Pupils will also look at the human impact on the Amazon, exploring the human impact on living things. Finally, pupils will use classification keys to identify the species found in the school pond.
Knowledge and/or Skills Covered		
Start to link the planning and evaluation stages. Make selections to present relevant data, observations and conclusions in a variety of ways (e.g. slideshow, vlog, graphic formats) Relate contrasts, changes and trends to scientific content		Start to explain usefulness and reliability (e.g. by explaining their selection choices) Evaluate own observations and compare them with others' Categorise terms and observations
National Curriculum Attainment Targets		
Identify common appliances that run on electricity.		Recognise that living things can be grouped in a variety of ways.

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Construct a simple series circuit, identifying and naming 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 a series circuit. Recognise that some common conductors and insulators, and associate metals with being good conductors. Identify differences, similarities or changes related to simple scientific ideas.		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. Construct and interpret a variety of food chains, identifying producers, predators and prey. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
Important Vocabulary		
Electrical device, Appliances, Circuit, Components, Conductor, Cell, Battery, Wire, Bulb, Switch, Buzzer, Motor, Connection, Positive/negative, Crocodile clip		classification key, (in)vertebrates, mould, fungus, organism, population, deforestation, pollution, human impact, biome, vegetation, region, environmental