



St Barnabas CE Primary Academy Key Learning in Science- Year 4



- Environment – Living things and their habitats (Autumn 1)
- Electricity (Autumn 2)
- Material properties and changes- states of matter (Spring 1)
- Material properties and changes- states of matter (Spring 2)
- Animals- teeth and digestion (Summer 1)
- Sound (Summer 2)
- Ongoing

This is only guidance- some units will progress through into a new half term for the first week or more.

Working scientifically

- Asking relevant questions and using different types of scientific enquiries to answer them (test questions, ‘what if’ questions, questions from observations).
- Setting up simple practical enquiries, comparative and fair tests (Fair test, design experiments to answer their questions, set up practical enquiries- comparative and fair).
- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions (Data from own observations- standard units, decide own observations, equipment (data logger, hand lens, microscope etc...), gather data in a variety of ways).
- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (explain why, describe and compare different factors on something, look for patterns, look at results and compare with predictions).
- Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identifying differences, similarities or changes related to simple scientific ideas and processes
- Using straightforward scientific evidence to answer questions or to support their findings

Environment – Living things and their habitats)

Pupils should be taught to:

- 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.
- Use and make identification keys for plants and animals.

Notes and Guidance (non-statutory):

Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering

Animals – Teeth, Eating and Digestion)

Pupils should be taught to:

- Describe the simple functions of the basic parts of the digestive system in humans.
- 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.
- Describe how teeth and gums have to be cared for in order to keep them healthy.

Notes and Guidance (non-statutory):

Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them understand their special functions.



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plants and non-flowering plants, Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.

Note: Plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses.

Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks or garden ponds, and the negative effects of population and development, litter or deforestation.

Pupils might work scientifically by:

- Using and making simple guides or keys [sorting, grouping, comparing, classifying] to explore and identify local plants and animals.
- Making a guide [sorting, grouping, comparing, classifying] to local living things.
- Raising and answering questions based on their observations of animals.
- What they have found out about other animals that they have researched.

Pupils might work scientifically by:

- Comparing the teeth of carnivores and herbivores.
- Suggesting reasons for differences.
- Finding out what damages teeth and how to look after them.
- Drawing and discussing their ideas about the digestive system.
- Comparing them with models or images.



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Material Properties and Changes – States of Matter	Sound	Electricity
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • <u>Compare and group materials together, according to whether they are solids, liquids or gases.</u> • <u>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).</u> • <u>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</u> <ul style="list-style-type: none"> • Solids, liquids and gases can be identified by their observable properties. • Solids have a fixed size and shape (the size and shape can be changed but it remains the same after the action). • Liquids can pour and take the shape of the container in which they are put. • Liquids form a pool not a pile. • Solids in the form of powders can pour as if they were liquids but make a pile not a pool. • Gases fill the container in which they are put. • Gases escape from an unsealed container. • Gases can be made smaller by squeezing/pressure. • Liquids and gases can flow. <p>Notes and Guidance (non-statutory): Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled.</p> <p>Note: Teachers should avoid using materials where heating is associated with chemical change, e.g. through baking or burning.</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • Grouping and classifying a variety of different materials. • Exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). • Researching the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. • Observing and recording evaporation over a period of time, such as a puddle in the playground or washing on a line. • Investigating the effect of temperature on washing drying or snowmen melting. • Additional suggestion from Lancashire for working scientifically opportunities which enhance learning and support using ICT. • This unit provides an ideal opportunity for using data logging equipment to detect/measure and compare temperatures. 	<p>Pupils should be taught to:</p> <p>Vibrations</p> <ul style="list-style-type: none"> • <u>Identify how sounds are made, associating some of them with something vibrating.</u> <ul style="list-style-type: none"> • <u>Recognise that vibrations from sounds travel through a medium to the ear.</u> • <u>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</u> • <u>Recognise that sounds get fainter as the distance from the sound source increases.</u> <ul style="list-style-type: none"> • Sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body). • Sounds travel away from their source in all directions. • Vibrations may not always be visible to the naked eye. <p>Pitch</p> <ul style="list-style-type: none"> • Find patterns between the pitch of a sound and features of the object that produced it. • Sounds can be high or low pitched. • The pitch of a sound can be altered. • Pitch can be altered either by changing the material, tension, thickness or length of vibrating objects or changing the length of a vibrating air column. <p>Muffling/blocking sounds</p> <ul style="list-style-type: none"> • Recognise that vibrations from sounds travel through a medium to the ear. • Sounds are heard when they enter our ears (although the structure of the ear is not important key learning at this age phase). • Sounds can travel through solids, liquids and air/gas by making the materials vibrate. • Sound travel can be reduced by changing the material that the vibrations travel through. • Sound travel can be blocked. <p>Notes and Guidance (non-statutory): Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. • They might make ear muffs from a variety of different materials to investigate which provides the best insulation against sound. • They could make and play their own instruments by using what they have found out about pitch and volume. <p>this unit provides an ideal opportunity for using data logging equipment to detect/measure and compare sounds.</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • <u>Identify common appliances that run on electricity.</u> • <u>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</u> • <u>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.</u> • <u>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</u> • <u>Recognise some common conductors and insulators, and associate metals with being good conductors.</u> <ul style="list-style-type: none"> • Electricity can be dangerous. • Electricity sources can be mains or battery. • Batteries 'push' electricity round a circuit and can make bulbs, buzzers and motors work. • Faults in circuits can be found by methodically testing connections. • Drawings, photographs and diagrams can be used to represent circuits (although standard symbols need not be introduced until UKS2). <p>Notes and Guidance (non-statutory): Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in Year 6.</p> <p>Note: Pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage. Pupils should be taught about precautions for working safely with electricity.</p> <p>Pupils might work scientifically by:</p> <ul style="list-style-type: none"> • Observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.