



Science at Beckford



We believe that Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

- THIS CURRICULUM MAP IS TO BE USED IN CONJUNCTION WITH THE A.S.E. PLANNING MATRICES AND OGDEN TRUST RESOURCES

Aim to ensure all pupils:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

YEAR 4	Autumn 1	Autumn 2	Spring	Spring	Summer 2	YEAR 3
Topic Title	EGYPTIANS	ROMANS	STEAM	EUROPE	EUROPE	Topic Title
Science Unit	Electricity	Animals including humans	Sound	States of matter	Classification of Living things and their habitats	Science Unit
Knowledge	<p>Pupils should be taught to:</p> <p>Identify common appliances that run on electricity</p> <p>Construct a series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>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</p>	<p>Pupils should be taught to:</p> <p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Pupils should be taught to:</p> <p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise that vibrations from a sound 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</p>	<p>Pupils should be taught to:</p> <p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>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)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Pupils should be taught to:</p> <p>Recognise that living things can be grouped in a variety of ways</p> <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	Knowledge

	<p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a series circuit</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>		increases.			
All living things	I can observe my local environment over the course of a year, identifying and naming some organisms that live there.	I recognise that living things can be grouped in a number of ways and this leads on to developing keys that help us to identify living things.	I can use classification keys to identify a wide variety of living things in my local and wider environment.	I am able to group a wide selection of different animals into groups according to their characteristics.	I can use the terms, vertebrate, invertebrate, fish, amphibian, bird, mammal, reptile, flowering and non-flowering, when grouping living things.	I know that environments change over time and that these changes can be a threat to living things if they cannot adapt and survive.
Animals including Humans	I can identify the different types of teeth I have and explain what their functions are.	I can research and investigate what causes damage to my teeth, how to care for them correctly.	I can compare and contrast the teeth of carnivores, herbivores and omnivores and suggest why they are different, linking the types of teeth to the diet of a variety of animals.	I can use my knowledge of what animals eat to develop food chains showing the feeding relationships within a variety of habitats.	I know the main body parts involved with eating and digestion. I can identify, mouth, teeth, tongue, oesophagus, stomach, small and large intestine.	I know the functions of the digestive system.

States of Matter	I can name some solids, liquids and gases.	I know that a solid keeps its shape, a liquid takes the shape of its container or forms a pool and that gases flow from place to place. I can group materials according to these properties,	I know that some materials change from solids to liquids to gases when they are heated, and from gases to liquids to solids when they are cooled.	I can name and describe examples of the main processes associated with water changing state. I know that these processes can be reversed.	I can investigate and explain the water cycle by observing evaporation, condensation, freezing and melting.	I can research and record the temperature at which different materials melt or evaporate.
Sound	I know that sounds are made when objects vibrate.	I know that sounds can travel through solids, liquids and gases, and can suggest ways of investigating how well sound travels through different materials.	I can suggest ways of changing the pitch and loudness of a sound made by a musical instrument.	I can describe how to raise or lower the pitch of a musical instrument or object.	When investigating sound I can identify patterns.	I recognise that sounds get fainter as the distance from the source increases. I can research and investigate the Doppler effect.
Electricity	I can Identify common appliances that run on electricity 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	I can construct a series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers I know that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a	I can draw and label an electrical circuit diagram using recognised symbols.	I can identify some common conductors and insulators, and associate metals with being good conductors.		

		simple series circuit				
Skills	<p>Raising Questions. They should be given a range of scientific experiences to enable them to raise their own questions about the world around them.</p> <p>Choosing a suitable scientific enquiry. They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions</p> <p>Observations. They should help to make decisions about what observations to make, how long to make them for. They should make systematic and careful observations.</p> <p>Fair testing. Recognise when a fair test is necessary.</p> <p>Sorting and classifying. Talk about the criteria for grouping, sorting and classifying and use simple keys.</p> <p>Secondary sources. They should recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</p> <p>Choosing equipment. They should help to make decisions about the type of equipment that might be used. They should learn how to use new equipment, such as a data loggers and thermometers, appropriately.</p> <p>Collecting data. They should collect data from their own observations and measurements.</p> <p>Measuring. They should use standard units.</p> <p>Recording. They should make decisions as to how to record. They should record in notes, drawings, labelled diagrams, bar charts and simple tables. Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.</p> <p>Analysing data. They should make decisions as to how to analyse the data. They should begin to look for patterns and decide what data to collect to identify them. With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions</p> <p>Making improvements. They should find ways of improving what they have already done.</p>					
Working Scientifically Ideas and evidence	I can ask questions and recognising that they can be answered in different ways.	I can ask relevant questions and using different types of scientific enquiries to answer them.	I can use models to describe scientific ideas..			
W S Planning Experimental Work	I can identify and classify. I can perform tests using equipment, observing closely.	I can set up practical enquiries, comparative and fair tests making accurate and careful	I can take accurate measurements using standard unit.			

		observations.				
W S Obtaining and Presenting Evidence	I can gather and record data to help in answering questions.	I can gather, record, classify and present data in a variety of ways to help in answering questions.	I can record findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables			
W S Considering Evidence and Evaluating	I can use my observations and ideas to suggest answers to questions	I can use results to draw conclusions and suggest improvements	I can suggest new questions and predictions for new values in my results. I can identify differences, similarities or changes using my knowledge of scientific ideas and processes. .			