



Subject Information:

Science Education at Oxenhope C of E
Primary School

How we teach Science at Oxenhope C of E Primary School

Subject Intent

What do we want to achieve with our Science curriculum?

At Oxenhope we develop our children to observe phenomena, looking closely at the world around them. We encourage the natural curiosity of our children and inspire them to ask questions about what they notice. The children are given opportunity to enquire in a scientific manner, use scientific language and learn through practical hands on experiences.

As the children grow themselves so does their scientific view of the world around them. They will discover this world through exploring, talking, testing and developing ideas about their familiar surroundings. The children are exposed to scientific enquiry and will start to develop ideas about the types of enquiry they will use to answer questions.

Through building up a body of key foundational knowledge and concepts, children are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. Our science curriculum, which follows the National Curriculum, encourages children to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Subject Implementation

Our enquiry-based science curriculum aims to ensure that 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.

The focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.

The focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar

environments, and be beginning to develop their ideas and functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways if answering them.

The focus of science teaching in upper key stage 2 is to enable pupils develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena. At upper key stage 2 they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates.

Each science unit is based on an overarching question, with additional learning questions providing a focus for each session. Where possible each unit begins with a hook to engage learners and spark their interests.

Our assessment of science is robust, as we use the progression statements below to support both planning and assessment within each year group.

Subject Impact

Learners will:

- know more, remember more and understand more about science
- inspire learners to have a curiosity and fascination about the world
- children are encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena
- develop and confidently use a range of scientific skills such as observation and measurement to explain what is occurring, predict how things will behave, and analyse causes
- Many learners will achieve or exceed age related expectations in Science

The Science Curriculum at a Glance – Years 1 -6

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum2
Year 1	<p><u>Animals including humans</u></p> <p>identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</p>	<p><u>Seasonal changes</u></p> <p>observe changes across the 4 seasons</p> <p>observe and describe weather associated with the seasons and how day length varies</p>	<p><u>Animals including humans</u></p> <p>identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p><u>Everyday materials</u></p> <p>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>compare and group together a variety of everyday materials on the basis of their simple physical properties</p>	<p><u>Everyday Materials</u></p> <p>describe the simple physical properties of a variety of everyday materials</p> <p>distinguish between an object and the material from which it is made</p>	<p><u>Animals including humans</u></p> <p>identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p>
Year 2	<p><u>Animals, including humans</u></p> <p>notice that animals, including humans, have offspring which grow into adults</p> <p>find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>		<p><u>Plants</u></p> <p>observe and describe how seeds and bulbs grow into mature plants</p> <p>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p>	<p><u>Use of everyday materials</u></p> <p>identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p> <p>find out how the shapes of solid objects made from some materials can be</p>	<p><u>Living things and their habitats</u></p> <p>explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>identify and name a variety of plants and animals in their habitats, including microhabitats</p>	

				changed by squashing, bending, twisting and stretching.	describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	
Year 3	<p><u>Forces and magnets</u></p> <p>To recognise movement using a push or a pull</p> <ul style="list-style-type: none"> - To compare how things, move on different surfaces - To notice that some forces need contact between 2 objects, but magnetic forces can act at a distance - To observe how magnets, attract or repel each other and attract some materials and not others - To compare and group materials based on magnetic properties - To describe magnets as having two poles 	<p><u>Animals including humans</u></p> <p>To 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"> - To identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	<p><u>Light</u></p> <p>To 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"> - To notice that light is reflected from surfaces - To recognise that light from the sun can be dangerous and that there are ways to protect their eyes - To recognise that shadows are formed when the light from a light source is blocked by an opaque object - To find patterns in the way that the size of shadows change. 	<p><u>Rocks</u></p> <p>To 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"> - To describe in simple terms how fossils are formed when things that have lived are trapped within rock - To recognise that soils are made from rocks and organic matter. 	<p><u>Plants - over a term to allow plant growth</u></p> <p>To identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>To 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</p> <ul style="list-style-type: none"> - To investigate the way in which water is transported within plants - To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. 	
Year 4	<p><u>Sound - What is a sound?</u></p> <p><i>identify how sounds are made, associating</i></p>	<p><u>Animals including humans - Where does our food go?</u></p> <p><i>describe the simple functions of the basic</i></p>	<p><u>Animals including humans - How do animals survive?</u></p> <p><i>construct and interpret a variety of food chains,</i></p>	<p><u>Living things and their habitats - Why is the sea important?</u></p> <p><i>recognise that environments can change and that this</i></p>	<p><u>States of Matter - How materials change temperature?</u></p> <p><i>compare and group materials together, according to whether</i></p>	<p><u>Electricity What is electricity and how does it work?</u></p>

	<p>some of them with something vibrating</p> <p>recognise that vibrations from sounds travel through a medium to the ear</p> <p>find patterns between the pitch of a sound and features of the object that produced it</p> <p>find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>recognise that sounds get fainter as the distance from the sound source increases.</p>	<p>parts of the digestive system in humans</p> <p>identify the different types of teeth in humans and their simple functions</p> <p><u>Do we Slow down as we get older? - investigation project</u></p>	<p>identifying producers, predators and prey.</p> <p>recognise that living things can be grouped in a variety of ways</p>	<p>can sometimes pose dangers to living things</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><u>States of Matter</u></p> <p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>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 ($^{\circ}\text{C}$)</p>	<p>identify common appliances that run on electricity</p> <p>construct a simple 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>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>recognise some common conductors and insulators, and associate metals with being good conductors</p>
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<p>Year 5</p>	<p><u>All living things and their habitats -</u></p> <p>describe the life process of reproduction in some plants and animals.</p> <p>Focus on bacteria and infection</p> <p><u>Animals including humans</u></p> <p>Describe the changes as humans develop to old age</p>	<p><u>Properties and changes of materials</u></p> <p>compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials,</p>	<p><u>Earth and Space</u></p> <p>describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>describe the movement of the Moon relative to the Earth</p> <p>describe the Sun, Earth and Moon as approximately spherical bodies</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.</p> <p><u>Forces</u></p> <p>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p>	<p><u>All living things and their habitats - What is the life-cycle of mealworm?</u></p> <p>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p>	<p><u>Forces</u></p> <p>recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p>	<p><u>All living things and their habitats -</u></p> <p>describe the life process of reproduction in some plants and animals.</p> <p>Focus on bacteria and infection</p>
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		<p>including metals, wood and plastic</p> <p>demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>			
Year 6	<p><u>Animals including humans</u></p> <p>identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood -</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function -</p> <p>describe the ways in which nutrients and</p>	<p><u>Living things and their habitats</u></p> <p>describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals -</p> <p>give reasons for classifying plants and animals based on</p>	<p><u>Evolution and inheritance</u></p> <p>- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago -</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and</p>	<p><u>Electricity</u></p> <p>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit -</p> <p>compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the</p>	<p><u>Light</u></p> <p>- recognise that light appears to travel in straight lines - use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye -</p> <p>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes - use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>

	water are transported within animals, including humans.	specific characteristics.	are not identical to their parents - identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	on/off position of switches - use recognised symbols when representing a simple circuit in a diagram.	
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