

Hose Church of England Primary School

'Respect, Bravery, Success, Pride'



Hose Church of England Science Long Term Plan

Key Threads – Diversity / Health / Environmental Impact / Innovation

EYFS In the Early Years Foundation Stage, we lay the foundations of scientific enquiry. We use stories as a catalyst for learning, explore children's interests and develop their knowledge and skills across through discussion, play and meaningful interactions. Our EYFS children are young enquirers who ask questions and enjoy finding out the answers. Curriculum links have been identified and opportunities for learning about the world, exploring and observing changes and experiencing Science in their everyday are built into learning opportunities and continuous provision. These can be seen in our EYFS Curriculum Links document.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y1/2 CYCLE A	Seasonal changes How does seasonal change affect us? Observe and describe weather associated with the seasons and how the day length varies. Name and identify the four seasons. Understand that the amount of daylight hours changes during the year and across different seasons. Discuss different types of weather and make observations on patterns of weather at different times of the year. Due to the nature of this theme, first hand experiences are vital to support discussions and understand concepts. This unit is revisited at key points across the year to enable the children to experience the changing seasons.	Living Things and Their Habitats (Y2) Are all habitats the same? Explore and compare differences between things that are living, dead and things that have never been alive. Identify that most living things live in habitats to which they are suited and describe how different habitats provide the basic needs of different kinds of animals and plants and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Describe how animals obtain food from plants and other animals, using the idea of a simple food chain and identify and name different sources of food.	Animal Enquiry How can we protect the birds on our planet? Significant Scientific Figures: Dr. Mya-Rose Craig Identify the role of an ornithologist. Use a key to identify birds in different local environments and compare them to those found in other locations across the world. Recognise different types of pollution. Understand the risks of plastic pollution to seabirds compared to sea creatures which they have studied previously. How do people protect birds from these pollutants?	Plants (Y1) What grows in Hose? Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants and trees. David Bellamy	Plants (Y2) How does our garden grow? Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Agnes Arbour	Scientist Enquiry How do changing habitats effect the animals within them? Significant Scientific Figures: Jane Goodall Identify different types of habitats and the animals that live in them. Revisit knowledge on what animals including humans need for survival. Discuss and find out what happens when habitats change and how it impacts the animals living there. Find out how Jane Goodall's contributions to Science has improved our understanding of animal behaviour and conservation. Identify local habitats and consider practical ways they can help to protect it.
	Animals Including Humans (Y1) Why and how are animals different? Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals. David Attenborough	Animals Including Humans(Y1) (Y2) How does a baby animal grow into an adult? Plants Enquiry Identify, name, draw and label basic parts of a human body and say which part of the body is associated with each sense. Notice that animals, including humans, have offspring that grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene. Plant Life Cycle – What happens to our pumpkin when Halloween ends? Steve Irwin	Everyday Materials (Y1) What are the things I use made from and why? Distinguish between an object and the material it is made from. Identify and name a variety of every day materials, including wood, plastic, glass, metal, water and rock. Describe the simple physical properties of a variety of every day materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties. Charles Goodyear John Dunlop	Uses of Everyday Materials (Y2) How can I make a structure strong? Identify and compare the suitability of a variety of everyday materials including wood, plastic, metal, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Charles Macintosh John MacAdam	Materials Enquiry What happens when things get wet? Retrieval of knowledge previously taught knowledge. Investigate what happens to different materials when they are wet, how does their structure change and do their properties alter. How can this be of a benefit or a disadvantage to scientists/ builders/ engineers	
Y1/2 CYCLE B	Key Question Living Things and Their Habitats (Y4) How do we classify living things? 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. Chris Packham	States of Matter (Y4) Where do puddles go? 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 at degrees Celsius. Identify the part played by evaporation or condensation in the water cycle and associate the rate of evaporation with temperature.	Forces and Magnets (Y3) Why do opposites attract? 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. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other depending on which poles are facing.	Plants (Y3) What is the most important part of a plant? Identify and describe the function of different parts of flowering plants, roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients and soil and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported. Explore the parts that flowers play in the life cycle of flowering plants including pollination, seed formation and seed dispersal.	Rocks (Y3) What is under our feet? Compare and group together different types of rocks on the basis of their appearance and simple physical properties. 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. Mary Anning	Significant Scientific Figures: Kiara Niagin Retrieval of water cycle and soil. Research water conservation and the effects of climate change on our planet. Find out how Kiara's contributions to Science has helped with water conservation in areas of drought. Understand that age, gender and ethnicity are not a barrier to good scientific research.

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Y3/4 CYCLE B	<p>Light (Y3) What can you see when the light goes out?</p> <p>Recognise that they need light in order to see things and that dark is the absence of light. 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> <p>Elizabeth Garrett-Anderson</p>	<p>Electricity (Y4) What happens when we flick the switch?</p> <p>Identify common appliances that run on electricity. 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. Thomas Edison</p>	<p>Animals Including Humans (Y3) What keeps us healthy and alive?</p> <p>Identify that animals including humans need the right types and amounts of nutrition and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Animals Including Humans (Y4) From eating to excreting, what happens in between?</p> <p>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.</p>	<p>Sound (Y4) How can you see sound?</p> <p>Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel from a medium to the ear. Find patterns between the pitch of a sound and the features of an object that produce it. Find patterns between the volumes of a sound and the strength of the vibrations that produce it. Recognise that sounds get fainter as the distance from the sound source increases.</p> <p>Alexander Graham-Bell</p>	<p>Significant Scientific Figures: Nina Tandon</p> <p>Retrieval on importance and the roles of the bones in our bodies. Research how Biomedical engineers like Nina uses her knowledge of electrical engineering and her understanding of how the human body works to grow new bones that can be used in transplants. Innovation of her technique reduces painful outcomes and surgeries.</p>
	<p>Living Things and Their Habitats (Y5) Do all living things have the same life cycle?</p> <p>Describe the differences in a life cycle of mammal, an amphibian, an insect and a bird. Describe the life processes of reproduction in some plants and animals. Understand the term metamorphosis and describe it. Jane Goodall</p>	<p>Living Things and Their Habitats (Y6) Why are living things classified?</p> <p>Describe how living things are classified into broad groups, according to common, observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics. Alexander Fleming</p>	<p>Forces (Y5) What keeps our feet on the ground?</p> <p>Explain that unsupported objects fall towards the earth because of the force of gravity acting between earth and the falling object. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect. Isaac Newton</p>	<p>Earth and Space (Y5) How we do know the Earth is moving?</p> <p>Describe the movement of the earth and other planets relevant to the sun in the solar system. Describe movement of the moon, relative to the earth. Describe the sun, earth and moon as approximately spherical bodies. Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky. Mae Jamison Maggie Aderin-Pocock Tim Peake</p>	<p>Evolution and Inheritance (Y6) How has evolution helped our survival?</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. Recognise that living things produce offspring of the same kind, but normally offspring vary and 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. Charles Darwin Alfred Wallace</p>	<p>Significant Scientific Figures: Charles Darwin, Mary and Alfred Wallace</p> <p>Understand how Charles Darwin and Alfred Wallace developed their ideas on evolution. Retrieval of Mary Anning and how she used her skills to benefit the understanding of fossils and</p>
Y5/6 CYCLE A	<p>Properties and Changes of Materials (Y5) Where does the sugar go when it is dissolved in water?</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. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solids, liquids and glasses to decide how mixtures might be separated, including through filtering, sieving and evaporation. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials and that this kind of change is not usually reversible, including changes associating with burning and the action of acid on bicarbonate of soda.</p>	<p>Animals Including Humans (Y5) What happens as we get older?</p> <p>Recognise and describe the different stages of human development Describe the changes as humans develop to old age. Understand the varying gestational periods of a range of animals. Describe the physical changes that occur during puberty and explain why they occur.</p>	<p>Animals Including Humans (Y6) How can we keep our heart healthy?</p> <p>Identify and name the parts of the human circulatory system and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported in animals, including humans.</p>	<p>Electricity (Y6) How do we turn up the volume?</p> <p>Associate the brightness of a lamp or the volume of a buzzer with a number and voltage of cells used in the circuit. Compare and give reasons for variations in how components function including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram.</p>	<p>Light (Y6) How can we see around corners?</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. Explain that we see things because light travels from light sources to objects and then into our eyes. Use the idea that light travels in straight lines to explain why shadows have the same shape as the object that cast them.</p>	<p>Significant Scientific Figures: Hayden Francis</p> <p>Identify different types of electricity. Children research the different types energy generation Recognise non-renewable energy sources. Research the role of key scientists such as Hayden Francis in the development of batteries to provide clean energy and their contributions to renewable energy. Understand the impact of generating and using electricity on the Earth.</p>
	<p>Autumn 1</p>	<p>Autumn 2</p>	<p>Spring 1</p>	<p>Spring 2</p>	<p>Summer 1</p>	<p>Summer 2</p>