

Science at Church Eaton



What are our aims?

EYFS (Early Years Foundation Stage)

Understanding of the world educational programme (taken from the EYFS Framework 2020)

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

Key Stages 1 and 2

- To develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- To 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.

What do we cover in EYFS?

Early Years Scientific skills are drawn from The Natural World strand found in Understanding the World.

	Nursery	Reception
The Natural World	<ul style="list-style-type: none">• Explore how things work.• Plant seeds and care for growing plants.• Understand the key features of the life cycle of a plant and an animal.• Begin to understand the need to respect and care for the natural environment and all living things.• Explore and talk about different forces they can feel.• Talk about the differences between materials and changes they notice.	<ul style="list-style-type: none">• Explore the natural world around them.• Describe what they see, hear and feel whilst outside.• Recognise some environments that are different to the one in which they live.• Understand the effect of changing seasons on the natural world around them.

What do we cover in Years 1 to 6?

Our Science key concepts are embedded throughout the curriculum. Our procedural knowledge progression map then outlines what we want your child to learn at the different stages of their time at Church Eaton.

	Concept	Years 1 and 2	Years 3 and 4	Years 5 and 6
General Science	To work scientifically	<ul style="list-style-type: none"> • Ask simple questions. • Observe closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions. 	<ul style="list-style-type: none"> • Ask relevant questions. • Set up simple, practical enquiries and comparative and fair tests. • Make accurate measurements using standard units, using a range of equipment, e.g., thermometers and data loggers. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests. • Identify differences, similarities or changes related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions or to support their findings. 	<ul style="list-style-type: none"> • Plan enquiries, including recognising and controlling variables where necessary. Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. • Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions. • Present findings in written form, displays and other presentations. • Use test results to make predictions to set up further comparative and fair tests. • Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.
Biology	To understand plants	<ul style="list-style-type: none"> • Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. 	<ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers. • 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. • Investigate the way in which water is transported within plants. 	<ul style="list-style-type: none"> • <i>Relate knowledge of plants to studies of evolution and inheritance.</i> • <i>Relate knowledge of plants to studies of all living things.</i>

		<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. 	
To understand animals and humans	<ul style="list-style-type: none"> • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. • 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 (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets). • Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. • Notice that animals, including humans, have offspring which grow into adults. • Investigate 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. 	<ul style="list-style-type: none"> • Identify those animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat. • Construct and interpret a variety of food chains, identifying producers, predators and prey. • Identify that humans and some animals have skeletons and muscles for support, protection and movement. • 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. 	<ul style="list-style-type: none"> • Describe the changes as humans develop to old age. • Identify and name the main 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 within animals, including humans. 	
To investigate living things	<ul style="list-style-type: none"> • Explore and compare the differences between things that are living, that are dead and that have never been alive. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals. 	

		<ul style="list-style-type: none"> • 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. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. • 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. 	<p>of living things in their local and wider environment.</p> <ul style="list-style-type: none"> • Recognise that environments can change and that this can sometimes pose dangers to living things. 	<ul style="list-style-type: none"> • 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.
To understand evolution and inheritance	<ul style="list-style-type: none"> • <i>Identify how humans resemble their parents in many features.</i> 	<ul style="list-style-type: none"> • <i>Identify how plants and animals, including humans, resemble their parents in many features.</i> • <i>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</i> • <i>Identify how animals and plants are suited to and adapt to their environment in different ways.</i> 	<ul style="list-style-type: none"> • 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. 	

Chemistry	To investigate materials	<ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials based on their simple physical properties. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for uses. 	<p>Rocks and Soils</p> <ul style="list-style-type: none"> • Compare and group together different kinds of rocks based on their simple, physical properties. • Relate the simple physical properties of some rocks to their formation (igneous or sedimentary). • Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock. • Recognise that soils are made from rocks and organic matter. <p>States of Matter</p> <ul style="list-style-type: none"> • 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 the temperature at which this happens in degrees Celsius (°C), building on their teaching in mathematics. • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<ul style="list-style-type: none"> • Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets. • Understand how 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 gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the 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 associated with burning, oxidation and the action of acid on bicarbonate of soda.
Physics	To understand movement, forces and magnets	<ul style="list-style-type: none"> • <i>Notice and describe how things move, using simple comparisons such as faster and slower.</i> • <i>Compare how different things move.</i> 	<ul style="list-style-type: none"> • 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. • Compare and group together a variety of everyday materials based on whether they are attracted to a magnet and identify some magnetic materials. 	<p>Magnets</p> <ul style="list-style-type: none"> • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. <p>Forces</p> <ul style="list-style-type: none"> • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

			<ul style="list-style-type: none"> • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<ul style="list-style-type: none"> • Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces. • <i>Describe, in terms of drag forces, why moving objects that are not driven tend to slow down.</i> • <i>Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.</i> • <i>Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.</i>
To understand light and seeing	<ul style="list-style-type: none"> • <i>Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes.</i> 	<ul style="list-style-type: none"> • Recognise that they need light 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 a solid object. • Find patterns in the way that the size of shadows changes. 	<ul style="list-style-type: none"> • Understand 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 eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes. • 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. 	
To investigate sound and hearing	<ul style="list-style-type: none"> • <i>Observe and name a variety of sources of sound, noticing that we hear with our ears.</i> 	<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. 	<ul style="list-style-type: none"> • 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 increases. 	
To understand electrical circuits	<ul style="list-style-type: none"> • <i>Identify common appliances that run on electricity.</i> 	<ul style="list-style-type: none"> • Identify common appliances that run on electricity. 	<ul style="list-style-type: none"> • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. 	

		<ul style="list-style-type: none"> • <i>Construct a simple series electrical circuit.</i> 	<ul style="list-style-type: none"> • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether a lamp will light in a simple series circuit, based on whether 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 a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors. 	<ul style="list-style-type: none"> • 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.
To understand the Earth's movement in space	<ul style="list-style-type: none"> • <i>Observe the apparent movement of the Sun during the day.</i> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. 	<ul style="list-style-type: none"> • <i>Describe the movement of the Earth relative to the Sun in the solar system.</i> • <i>Describe the movement of the Moon relative to the Earth.</i> 	<ul style="list-style-type: none"> • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the 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. 	
Note:	<p>HIGHLIGHTED items in italics are not statutory in the English National Curriculum.</p>			

What does learning look like in EYFS?

Your child will begin to follow the seven-part lesson plan when they join in with small group adult led activities (see below). They also will take part in Continuous Provision. Activities for Continuous Provision are linked to current learning, previous learning or child choice. We call it 'Busy Bee Time' so that the children know that they are not just 'playing.' The activities are loosely planned and enable children to take their own learning where they wish to. They access resources with a degree of independence and are taught how to manage risk safely through modelling and expectation. Learning during Continuous Provision holds the same amount of merit as Adult Directed learning if not more so.

What does learning look like in Years 1-6

Your child is taught in mixed aged classes and will complete units of work that can take up to 6 weeks to finish. We begin each unit with a big question to stimulate discussion and provide links with other areas of the curriculum throughout the unit. For each lesson, or sequence of lessons, we follow a seven-step model based on research completed by the EEF (Education Endowment Foundation) [The Seven Step Model](#).

Step 1: Activating Prior Knowledge: We begin by considering the key concepts that we have taught previously and what your child will need to know to access the learning. We ask a series of questions about what they have learned previously that is relevant. Your child will be reminded of the vocabulary and knowledge that they have acquired which will help with the next task.

Step 2: Explicit Strategy Instruction- We introduce the new knowledge, new vocabulary and/or new technique to your child. We ensure that they are not taught too much in one go as we do not want to overload their working memory. We talk to them about how they will complete the task and take them through each step as well as discussing strategies and how to manage their emotions

Step 2: Modelling of learned strategy: We always model how to complete each step of the task then. We show which strategy we will use and how we manage our emotions during the learning process.

Step 4 Memorisation of strategy: We check to see if your child has understood what they have been taught.

Step 5 Guided Practice We then provide lots of opportunities for them to practice and gradually remove support as they become more comfortable. Sometimes your child might need extra help, so they are supported in a way which promotes and sustains their confidence and competence once the scaffold is removed

Step 6 Independent practice: Your child may then complete the task by themselves without support

Step 7: Structured reflection: Finally, we think about what went well and what they would do differently next time. We encourage pupils to reflect on how their emotions and motivation levels affected their performance in the task. This can take place as whole class, Individually or in small groups.

How do we track progress in EYFS?

Assessment in the EYFS takes the form of observation, and this involves the teacher and other adults as appropriate. These observations are recorded in a variety of forms in the children's Tapestry accounts, floor books or their exercise books. Each child's progress is assessed whether they are working below age related expectations, working within age related expectations, or working above age related expectations.

At the end of EYFS (Reception) Children will be assessed using the Early Learning Goals. They will either be emerging at the goal or achieved it.

Early Learning Goals that link to Science are:

EYFS - Understanding the world

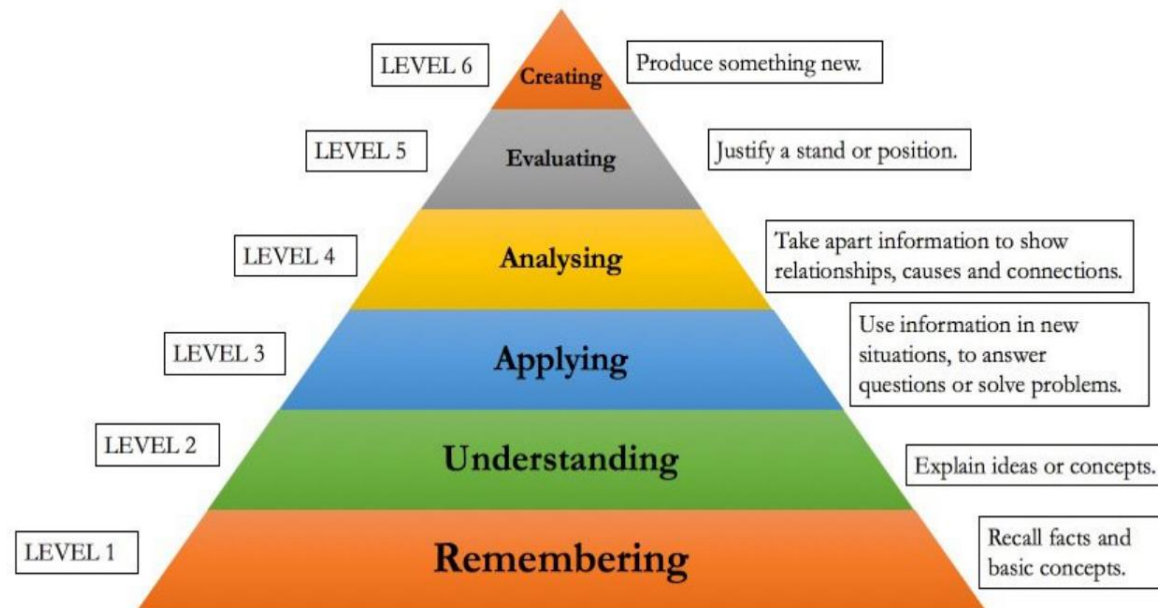
ELG The natural world

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

How do we track progress in Years 1-6?

Children complete endpoint assessments which we call Products., We then complete book looks/ pupil interviews and regular moderation exercises of this work to check on the progress made and identify how we can support your child in the future.

Because your child is in a mixed age class, which they stay in for two years, we may repeat a concept or a chunk of learning several times. As your child becomes more secure in their understanding of this concept, we are then able to identify the depth of their knowledge. We use Bloom’s Taxonomy’ to do this. Bloom’s Taxonomy attempts to classify learning stages from remembering facts to being able to create new ideas with the knowledge that has been gained. The idea of Bloom’s Taxonomy is that learning is a consecutive process. Before applying a concept in real life, we must understand it. Before we understand a concept, we must remember the key facts related to it. It looks like this.



As a rough guide, we aim for children to be working at these levels

	Years 1 and 2			Years 3 and 4			Years 5 and 6		
Year	Year 1	Year1/2	Year 2	Year 3	Year 3/4	Year 4	Year 5	Year5/6	Year 6
Depth of Knowledge demonstrated	Remember	Understand Apply	Analyse Create Evaluate	Remember	Understand Apply	Analyse Create Evaluate	Remember	Understand Apply	Analyse Create Evaluate

