

Swillington Primary School Science Progression

<i>Early Years</i>		
	<i>F1</i>	<i>F2</i>
<i>Communication and language</i>	<ul style="list-style-type: none"> • Understand 'why' questions 	<p>Ask questions to find out more</p> <ul style="list-style-type: none"> • Articulate their ideas and thoughts in sentences. • Describe events in some detail. <ul style="list-style-type: none"> • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Use new vocabulary in different contexts.
<i>Understanding the world</i>	<ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. <ul style="list-style-type: none"> • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history. <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 while they are outside. • Recognise some environments that are different to the one in which they live. <ul style="list-style-type: none"> • Understand the effect of changing seasons on the natural world around them. • 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

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The national curriculum for science 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.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

Working scientifically



KSI

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment and measurement
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering, recording and communicating data and findings to help in answering questions.
- use scientific language and read and spell age-appropriate scientific vocabulary

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LKS2	<ul style="list-style-type: none"> • making decisions, asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations using notes and simple tables • 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 • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, using relevant scientific language, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, patterns, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.
UKS2	<ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments

Scientific enquiry



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Science Progression (Biology, Physics and Chemistry).

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Animals inc humans</p>	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>Can 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>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>Knows that animals, including humans, need the right types and amount of nutrition, Understands they cannot make their own food; they get nutrition from what they eat.</p> <p>Knows that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Can describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Is able to identify the different types of teeth in humans and their simple functions.</p> <p>Can construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>To be able to describe the changes as humans develop to old age.</p>	<p>Identify and name the main parts of the human circulatory system. Can describe the functions of the heart, blood vessels and blood</p> <p>Is able to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describes the ways in which nutrients and water are transported within animals, including humans</p>
<p>Living things and their habitats</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,</p>		<p>Recognises that living things can be grouped in a variety of ways.</p> <p>To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>To recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>To be able to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Can describe the life process of reproduction in some plants and animals</p>	<p>Can 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.</p> <p>Is able to give reasons for classifying plants and animals based on specific characteristics.</p>

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		<p>including microhabitats</p> <p>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>				
<p>Plants</p>	<p>Can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>Can identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>Can 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>Can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Is able 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>			
<p>Evolution and inheritance</p>					<p>Recognize that living things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Understands that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	

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<p>Earth and Space Seasons</p>	<p>Can observe changes across the four seasons</p> <p>Can observe and describe weather associated with the seasons and how day length varies.</p>				<p>Is able to describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>Is able to describe the movement of the Moon relative to the Earth.</p> <p>Can 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>Light</p>			<p>Recognises that they need light in order to see things and that dark is the absence of light.</p> <p>Investigates that light is reflected from surfaces.</p> <p>Is able to find patterns in the way that the size of shadows change.</p> <p>Recognises that shadows are formed when the light from a light source is blocked by a solid object</p>			<p>Is able to recognise that light appears to travel in straight lines.</p> <p>Uses 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>Can 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.</p> <p>Uses the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>

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<p>Sound</p>				<p>To identify how sounds are made, associating some of them with something vibrating.</p> <p>To recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Is able to find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Recognises that sounds get fainter as the distance from the sound source increases.</p> <p>Is able to find patterns between the volume of a sound and the strength of the vibrations that produced it.</p>		
<p>Forces and magnets</p>			<p>Recognises that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Is able to compare how things move on different surfaces.</p> <p>Observes how magnets attract or repel each other and attract some materials and not others.</p> <p>Describes magnets as having two poles.</p> <p>Is able to predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Compares and groups together everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</p>		<p>Explains that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identifies the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>Recognises that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	

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<p><i>Electricity</i></p>				<p><i>Is able to identify common appliances that run on electricity.</i></p> <p><i>Is able to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</i></p> <p><i>Is able to 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></p> <p><i>Recognises that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</i></p> <p><i>Is able to recognise some common conductors and insulators, and associate metals with being good conductors.</i></p>		<p><i>Associates the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</i></p> <p><i>Is able to 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.</i></p> <p><i>Is able to use recognised symbols when representing a simple circuit in a diagram.</i></p>
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<p>Properties and changes of materials</p>	<p>Distinguish between an object and the material from which it is made</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</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 changed by squashing, bending, twisting and stretching.</p>	<p>Is able to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describes, in simple terms, how fossils are formed when things that have lived are trapped within rock.</p> <p>Recognises that soils are made from rocks and organic matter.</p>	<p>Is able to compare and group materials together, according to whether they are solids, liquids or gases</p> <p>Observes 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>To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>Is able to 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>Knows that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Uses knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Gives reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrates that dissolving, mixing and changes of state are reversible changes.</p> <p>Explains 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>	
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