

Science Curriculum Progression Map



This progression map details the skills and knowledge that children at The Free School Norwich will gain at each stage of the curriculum.

Working Scientifically							
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Greater Depth
Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:
explore the natural world around them	ask simple questions	ask more in depth questions	ask relevant questions and use scientific enquiry to answer them	ask relevant questions and use different types of enquiry to answer them	plan different types of scientific enquiry to answer questions	plan different types of scientific enquiry to answer questions, including recognising and controlling variables where possible	select, plan and carry out the most appropriate types of enquiries to test
develop an understanding of growth, decay and changes over time	use simple equipment to make observations	recognise that questions can be answered in different ways	set up simple practical enquiries	set up simple practical enquiries, comparative and fair tests	take measurements using a range of scientific equipment	take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeat readings where appropriate	predictions, including identifying independent, dependent and control variables where appropriate
make observations	perform simple tests	use simple equipment to make detailed observations	make systematic and careful observations	make systematic and careful observations	record data and results of increasing complexity using scientific diagrams, labels, tables, bar graphs, scatter graphs, line graphs	record data and results of increasing complexity using scientific diagrams, labels, tables, bar graphs, scatter graphs, line graphs, classification keys	make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements
	identify and classify objects/animals	perform simple tests	take accurate measurements using standard units	take accurate measurements using standard units, using a range of equipment	use test results to make predictions to set up further comparative tests		
	use their observations and ideas to suggest answers to questions	identify and classify objects/animals, giving a reason	gather, record, classify and present data in a variety of ways to help in answering questions	gather, record, classify and present data in a variety of ways to help in answering questions	report and present findings from enquiries, including conclusions, causal relationships and		
	gather and record data	use their observations and ideas to suggest answers to questions	record findings using simple scientific language,				

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		gather and record data to help answer a scientific question	<p>drawings, labelled diagrams, tables</p> <p>report on findings from enquiries, including oral and written explanations of results and conclusions</p> <p>use results to draw simple conclusions</p> <p>identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>use straightforward scientific evidence to answer questions</p>	<p>record findings using simple scientific language, drawings, labelled diagrams, tables, keys, bar charts</p> <p>report on findings from enquiries, including oral and written explanations, displays or presentation of results and conclusions</p> <p>use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>use straightforward scientific evidence to answer questions</p>	<p>explanations of and a degree of trust in results, in oral and written form</p> <p>identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>use test results to make predictions to set up further comparative tests</p> <p>report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written form, such as displays or presentations</p> <p>identify scientific evidence that has been used to support or refute ideas or arguments</p>	<p>apply sampling techniques</p> <p>present reasoned explanations, including explaining data in relation to predictions and hypotheses</p> <p>evaluate data, showing awareness of potential sources of random and systematic error</p>
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or support their findings

Biology

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Greater Depth
Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:	Learners will be able to:
<p>make observations and draw pictures of animals and plants</p> <p>understand some important processes and changes in the natural world around them, including the seasons</p> <p>know similarities and differences between the natural world around them, contrasting environments and drawing on their experiences</p> <p>explain why some things occur</p>	<p>Animals, including humans: identify and name a range of common animals, including fish, amphibians, reptiles, mammals and birds</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, birds, reptiles, mammals and amphibians, including pets)</p> <p>identify, name, draw and label the</p>	<p>Animals, including humans: notice that animals, including humans, have offspring that grow into adults</p> <p>find out about and describe the basic needs of animals, including humans, for survival (water, food, air)</p> <p>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p> <p>Living things and their habitats: explore and compare the differences</p>	<p>Animals, including humans: 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> <p>recognise and explain the importance of nutrition for our bodies</p> <p>identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Animals, including humans: describe the simple functions of the basic parts of the digestive system in humans</p> <p>identify the different type 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>Living things and their habitats: recognise that living things can be grouped in a variety of ways</p>	<p>Animals, including humans: describe the changes as humans develop to old age</p> <p>Living things and their habitats: describe the differences in life cycles of a mammal, an amphibian, a bird and an insect</p> <p>describe the life process of reproduction in some plants and animals</p>	<p>Animals, including humans: 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 way nutrients and water are transported in animals, including humans</p> <p>Living things and their habitats:</p>	<p>Animals, including humans: know the structure and function of the human skeleton, including the interaction between skeleton and muscles to create movement</p> <p>know the functions and examples of antagonistic muscles</p> <p>the content of a healthy diet: carbohydrates, lipids, proteins, vitamins, minerals, dietary fibre, water –</p>

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	<p>basic parts of the human body</p> <p>say which part of the body is associated with each sense</p> <p>Seasonal changes: observe changes across the 4 seasons</p> <p>observe and describe weather associated with the seasons and how day length varies</p> <p>Plants: identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>identify and describe the basic structure of a variety of common flowering plants, including trees</p>	<p>between things that are living, dead, never been alive</p> <p>identify that most things live in habitats to which they are suited</p> <p>describe how different habitats provide 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> <p>describe how animals obtain their food from plants and other animals, using the idea of a simple food chain</p> <p>identify and name different sources of food</p> <p>Plants:</p>	<p>Plants: identify and describe the functions of different parts of flowering plants: roots, stem/trunk, flowers, leaves</p> <p>explore the requirements of plants for life and growth (air, light, water, nutrients from the soil, space)</p> <p>notice how requirements can vary from plant to plant</p> <p>investigate the way water is transported within plants</p> <p>explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</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>		<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</p> <p>give reasons for classifying plants and animals based on specific characteristics</p> <p>Evolution and Inheritance: 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</p>	<p>know why each is needed</p> <p>know the consequences of imbalances in a healthy diet</p> <p>know the role of bacteria in the digestive system</p> <p>Living things: recognise the interdependence of an ecosystem, including food webs</p> <p>know the importance of plant reproduction through insect pollination</p> <p>how organisms affect, and are affected by, their environment</p> <p>Plants: know and describe the processes of photosynthesis</p>
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		<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>normally offspring vary and are not identical to their parents</p> <p>identify how plants and animals are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	<p>recognise how plants are adapted to photosynthesize</p> <p>Evolution: identify heredity as genetic information transferring between generations</p> <p>explore how changes in the environment may leave individuals less well adapted to survive and how this can lead to extinction</p>
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Chemistry							
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Greater Depth
<p>Learners will be able to:</p> <p>make observations of the natural world around them</p> <p>understand some important processes in</p>	<p>Learners will be able to:</p> <p>Everyday materials: distinguish between an object and the material from which it is made</p>	<p>Learners will be able to:</p> <p>Uses of everyday materials: identify and compare the suitability of a variety of everyday materials: wood,</p>	<p>Learners will be able to:</p> <p>Rocks: compare and group together different kinds of rocks on the basis of their appearance and</p>	<p>Learners will be able to:</p> <p>States of Matter compare and group materials together, according to whether they are solids, liquids or gases</p>	<p>Learners will be able to:</p> <p>Properties and changes of materials: compare and group together everyday materials on the basis of their</p>	<p>Learners will be able to:</p> <p>N/A</p>	<p>Learners will be able to:</p> <p>States of Matter: know the properties of the different states of matter in terms of the particle model</p>

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<p>changing states of matter</p> <p>know similarities and differences in contrasting environments</p>	<p>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, brick, paper, fabric, elastics and rock</p> <p>describe the simple physical properties of a variety of everyday materials: hard/soft, stretchy/stiff, shiny/dull, rough/smooth, bendy/not bendy, waterproof, absorbant, opaque/transparent</p> <p>compare and group together a variety of everyday materials on the basis of their simple physical properties</p>	<p>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 also be changed by squashing, bending, twisting and stretching</p> <p>describe how materials can be used for more than one thing (eg. Metal for coins, cans, cars, table legs) or that the same thing can be made out of different materials (spoons from plastic, metal but rarely glass)</p> <p>consider and explain the suitability of materials for a purpose, using their knowledge of a materials properties</p>	<p>simple physical properties</p> <p>describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>recognise that soils are made from rock and organic matter</p>	<p>observe that some materials change state when they are heated or cooled</p> <p>measure or research the temperature at which materials change state (°C)</p> <p>identify the part played by evaporation and condensation in the water cycle</p> <p>associate the rate of evaporation with temperature</p>	<p>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</p> <p>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, including metal, glass, wood, plastic</p>		<p>describe changes of state in terms of the particle model</p> <p>Materials: properties of ceramics, polymers and composites</p> <p>understand chemical reactions as the rearrangement of atoms</p> <p>begin to represent chemical reactions using formulae</p>
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					<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>		
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Physics							
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Greater Depth
<p>Learners will be able to:</p> <p>Offer explanations for why things might happen</p> <p>Express their ideas and feelings about their experiences</p>	<p>Learners will be able to:</p> <p>N/A</p>	<p>Learners will be able to:</p> <p>N/A</p>	<p>Learners will be able to:</p> <p>Light: recognise that they need light in order to see things and that dark is the absence of light</p>	<p>Learners will be able to:</p> <p>Sound: identify how sounds are made, associating them with something vibrating</p> <p>recognise that vibrations from</p>	<p>Learners will be able to:</p> <p>Forces: explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth</p>	<p>Learners will be able to:</p> <p>Light: recognise that light appears to travel in straight lines</p> <p>use the idea that light travels in straight lines to explain that objects</p>	<p>Learners will be able to:</p> <p>Light: know that light travels in waves</p> <p>explore effects of prisms to split white light</p>

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<p>Talks about why things happen and how things work</p>			<p>notice that light is reflected from surfaces</p> <p>recognise that light from the sun can be dangerous</p> <p>identify ways that they can protect their eyes from light from the sun</p> <p>recognise that shadows are formed when light from a light source is blocked by an opaque object</p> <p>find patterns in the way size of shadows change</p> <p>Forces and Magnets: compare how things move on different surfaces</p> <p>notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p>	<p>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 vibrations that produced it</p> <p>recognise that sounds get fainter as distance from the sound source increases</p> <p>Electricity: identify common appliances that run on electricity</p> <p>construct a simple series circuit</p> <p>identify and name basic parts of a circuit, including cells, wires, bulbs,</p>	<p>and the falling object</p> <p>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p> <p>Earth and Space: 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>are seen because they give out or reflect light into our 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 eye</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as objects that cast them</p> <p>Electricity: associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells in the circuit</p> <p>compare and give reasons for variations in how components function, including the brightness of</p>	<p>use a pinhole camera to explain the refraction of light</p> <p>Electricity: compare series and parallel circuits</p> <p>know that electric current is measured in amperes</p> <p>explain the term resistance and recognise differences between conducting and insulating components</p> <p>Forces: know that forces have opposing forces and explore the equilibrium</p> <p>recognise direction of forces, and which will be stronger</p>
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			<p>observe how magnets attract or repel each other and attract some materials and not others</p> <p>compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>describe magnets as having 2 poles</p> <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>	<p>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</p> <p>associate metals with being good conductors</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>the bulbs, loudness of buzzers and the on/off position of switches</p> <p>use recognised symbols when representing a simple circuit in a diagram</p>	<p>plot magnetic fields with a compass, explore the Earth's magnetism</p> <p>Earth and Space: know that our Sun is a star</p> <p>explore stars in other galaxies</p> <p>use the movement of the Earth to explain the seasons</p> <p>Sound: know that sound travels in waves</p> <p>explore how sound travels in different mediums</p> <p>know that sound is measured in hertz</p>
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