



Big Picture for Curriculum Subjects

(to be used alongside subject specific curriculum overview/progression of skills)

Science

What are the Key Concepts and Ideas that we want children to learn about in this subject through their education?

1. Develop as young scientists to have the knowledge and skills to understand the world around and equip them for the future.
2. Children to be next stage ready by building on prior knowledge and prepare them for modern Britain by understanding science is constantly being challenged and developed in the world.
3. Children will develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
4. Children will develop their working scientifically skills throughout the curriculum with the 5 areas embedded within each discipline.
5. Children to gain knowledge and understand of science specific language and be able to apply this vocabulary across the three disciplines of science.
6. Children will combine and apply skills and knowledge of Science through the exploration of STEM learning.

Biology	Chemistry	Physics
Plants Animals, including Humans Living things & Habitats Evolution & Inheritance	Rocks Everyday Materials Properties & Changes of Materials States of Matter	Light Sound Forces & Magnets Seasonal Changes Earth & Space Electricity

Working Scientifically	<p>Working scientifically is embedded within the content of biology, chemistry and physics. Children will gain an understanding of the nature, process and methods of science with key features of scientific enquiry. Children will discover answers to enquires/questions through collecting, analysing and presenting data across the disciplines.</p> <p>The five areas of working scientifically are pattern seeing, identifying, classifying and grouping, comparative and fair testing (controlled investigations) and researching using secondary sources.</p>
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How do these concepts progress throughout the school?

EYFS	KS1	KS2
<p>Explore the natural world around them and making observations. (1,2,3)</p> <p>Foster curiosity through exploring and observations within their environment and local environments. (1,3,4)</p> <p>Children to have the freedom to have a hands-on experiences in their environment to observe and ask questions. (1,2,5)</p> <p>Understand the effect of changing seasons on the natural world around them. (1,2)</p>	<p>Observe more closely at the natural world around them. Encouraged to be curious and ask questions (1,2,3)</p> <p>Begin to develop their understanding of scientific ideas by using different types of scientific enquiries (observing, questioning, pattern, grouping and classifying). (4,5)</p> <p>Begin to carry out simple comparative tests. (4)</p> <p>First-hand practical experiences are used to develop knowledge and understanding of the disciplines Secondary sources to support their development of knowledge. (2,3)</p> <p>Begin to use simple scientific language to talk. (3,5)</p>	<p>Children will have a broader and deeper scientific view of the world around them. (1,2,3)</p> <p>Ask their own questions about what they observe and make decisions about which types of scientific enquiry are likely to be the best ways of answering them. (2,4,5)</p> <p>Make conclusions from and use scientific language to talk about what they have found and write about what they have found. (3,4,5)</p> <p>Encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. (3)</p> <p>Begin to understand and recognise that scientific ideas change and develop over time. (2,3)</p> <p>Use a range of secondary sources to support enquires/tests and deepen their knowledge and understanding. (4)</p>

Working scientifically across the school.

EYFS	KS1	LKS2	UKS2
<p>Making observations of the natural world and their immediate environment.</p> <p>Opportunities to ask questions and answer questions throughout the provision with the use of a curiosity box.</p> <p>Identify and classifying. Key focus of vocabulary.</p>	<p>Asking simple questions and recognising that they can be answered in different ways</p> <p>Overserving closely, using simple equipment.</p> <p>Perform simple tests.</p> <p>Identifying and classifying</p> <p>Gathering and recording data to help answer question.</p> <p>Key focus of vocabulary within each discipline.</p>	<p>Asking relevant questions and using different types of scientific enquires to answer them.</p> <p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units.</p> <p>Identifying similarities, differences and changes.</p> <p>Setting up simple practical enquires, comparative and fair tests.</p> <p>Using results to draw upon simple conclusions, make simple predictions and suggest further improvements.</p> <p>Recording, reporting and presenting data from</p>	<p>Planning different types of scientific enquires recognising and controlling variables where necessary.</p> <p>Identifying scientific evidence that has been used to support or challenge ideas.</p> <p>Taking measurements, using a range of scientific equipment with increasing accuracy and precision.</p> <p>Using testing results to make predictions to set up further comparative and fair tests.</p> <p>Recording, reporting and presenting data from enquires, conclusions, using increasing in complexity and using scientific diagrams, labels, tables and graphs.</p>

		<p>simple enquires, comparative and fair tests.</p> <p>Key focus of vocabulary within each discipline.</p>	<p>Key focus of vocabulary within each discipline.</p>
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WHY are children learning this and **WHY** are they learning this **now**?

	Autumn	Spring	Summer
EYFS	<p>Science as well as other foundation subjects are covered throughout the year across all the areas of learning but specifically within the following areas:</p> <p>The Natural World</p> <ul style="list-style-type: none"> • Pupils will 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. <p>Personal, Social and Emotional Development</p> <ul style="list-style-type: none"> • Managing Self - Manage their own basic hygiene and personal needs, including dressing, going to the toilet, and understanding the importance of healthy food choices. <p>The areas of Science covered are:</p> <p>Materials and changing states Classification, Knowledge, Camouflage, Fossils and Extinction. Food and healthy diets Seasons Animals and Plants Light Health and hygiene</p> <p>The following skills are covered:</p> <p>Compare Observe Classify Explore Describe Explain</p> <p>Some of the topics may be explored through the following: Biscuits, dinosaurs, dough babies, foods of the seasons, frozen, into the woods, light magic, mud glorious mud, pets and vets, pirates, slimy things, socks, sound collectors, superhero materials, The Gingerbread Man, the potting shed, whatever the weather, Zarg's world Know and talk about the different factors that support their overall health and wellbeing: Personal hygiene</p>		
Year 1	<p>Seasonal changes</p> <p>Building on from EYFS children will observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.</p> <p>Animals, including humans</p> <p>Building on from EYFS children will learn with part of their body is associated with each sense and identify the basic parts of the human body.</p>	<p>Seasonal changes</p> <p>Building on from EYFS children will observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.</p> <p>Everyday Materials</p> <p>Building on from EYFS children will begin to look at basic properties of a variety of everyday materials and identify the different materials using the correct name for the everyday</p>	<p>Seasonal changes</p> <p>Building on from EYFS children will observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.</p> <p>Plants</p> <p>Continuing on from EYFS children will identify and name a variety of common wild and garden plants including deciduous and</p>

	<p>Children will use their knowledge of animals they have explored in EYFS to identify and name variety of common animals, including fish, amphibians, reptiles, birds and mammals and describe/compare the structure of a variety of common animals.</p>	<p>material.</p>	<p>evergreen trees which is new learning in Year 1.</p> <p>Children will continue to build upon their knowledge of Plants. Children will identify and describe the basic structure of a variety of common flowering plants including trees.</p>
<p>Year 2</p>	<p>Animals including human Building on from EYFS when looking at simple features of life cycles, children will learn that animals, including humans, have offspring which grown into adults. Find out and describe the basic needs of animals, including humans for survival. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>Uses of Everyday Materials</p> <p>Building on from Year 1, children will look at everyday materials in more detail. They will be identifying basic properties and compare the suitability of these materials for a variety of uses.</p>	<p>Plants</p> <p>Building on their knowledge from Year 1, children will 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.</p> <p>They will find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Living things and their Habitats</p> <p>Building on from EYFS when they explored the basic features of a life cycle, children will explore and compare the differences between things that are living, dead and things that have never been alive. They will begin to look more at the habitats in their local environment and identify basic needs of animals and plants.</p> <p>Children will continue to build upon their knowledge of habitats. They will begin to look at simple food chains and identify different sources of food.</p>

<p>Year 3</p>	<p>Animals including humans</p> <p>Developing their knowledge from Year 2 children will 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. Identify that humans and some animals have skeletons and muscles for support, protection and movement.</p>	<p>Forces and Magnets</p> <p>Building on from their knowledge of properties of materials in Year 2, children will begin to 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 on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Light</p> <p>This is new learning for the children in science. Children will recognise that they need light in order to see things, 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 they 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 sizes of shadows change.</p>	<p>Rocks</p> <p>This area of science is new learning. The children will compare and group together different kinds 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.</p> <p>Plants</p> <p>After looking at the basic structure of plants over KS1, children will look at the structure and how a plant grows in more depth. They will identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth and how they are vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of a flowering plant, including pollinations, seed formation and seed dispersal.</p>
<p>Year 4</p>	<p>Animals, including humans</p> <p>Building on from Year 3 and understanding the importance of nutrition on the human body, children will 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>Electricity</p> <p>This is new area of learning in science. Children will identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and names its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple circuit, based on whether or not the lamp is a part of a complete loop with a battery.</p>	<p>Sound</p> <p>This is a new area of learning in science. Children will identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of sound and features of the object that produced it. Find patterns between the volume of a sound and the</p>

		<p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple circuit. Recognise some common conductors and isolators, and associate metals with being conductors.</p> <p>States of matter</p> <p>This is a new area of learning in science and is only covered in Year 4. Children will 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 measured or research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound increases.</p> <p>Living things and habitats</p> <p>Continuing to develop on their knowledge from Year 2, children will 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.</p>
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Year 5	<p>Animals, including humans</p> <p>Developing their knowledge from Year 2 when looking at offspring which grown into adults. The children will describe the changes as humans develop from birth to old age.</p> <p>Properties and changes of materials</p> <p>Building their exploring and observing changes in natural processes in EYFS children will look at the properties and changes of materials in greater depth. They will compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity and response to magnets.</p>	<p>Properties and changes of materials</p> <p>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 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 particular uses of everyday materials. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes with burning and the action of acid on bicarbonate of soda.</p> <p>Forces</p> <p>Building on their knowledge of forces in Year 3 children look at forces in greater detail. They will</p>	<p>Earth and Space</p> <p>This is a new area of learning in science and is only covered in Year 5. Children will 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.</p> <p>Living things and habitats</p> <p>Developing their knowledge from Year 2 of basic life cycles, children will describe the differences in the life cycles of a mammal, an amphibian, an</p>
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Year 6	<p>Animals, including humans</p> <p>Adding to their knowledge of the digestive system in Year 4, children will 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 lifestyles on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p>Living things and habitats</p> <p>Building on their knowledge from classification in Year 4, children will 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.</p>	<p>Electricity</p> <p>Developing their knowledge of electricity from Year 4, children will begin to associate the brightness of a lamp or the volume of a buzzer with the 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</p> <p>Building on their knowledge from Year 4 children will begin to understand and 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 onto the eye. 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 ideas that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>		<p>Evolution and inheritance</p> <p>This is a new area of learning in science however the children will use their knowledge of rocks from year 3, animals including humans and living things and habitats from across the years. Children will understand and recognise that living things have changed over time and that fossil proves information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of some 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.</p>
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