

St. Joseph's RC Primary School

"I came so that you may have life, and have it to the full." – John 10:10

Science

Subject Leaders' Sequence and Progression Document

INTRODUCTION

The purpose of this document is to outline the approach and method that we have adopted to implement the Science Curriculum at St. Joseph's RC Primary. It sets out what we aim to achieve and the knowledge and understanding that we have assigned to each class and key stage. This has been designed based on our school's *Mission Statement, I came so that you may have life and have it to the full. John 10:10, alongside* the staff and Governing Board's vision for the future of our school. This document provides a summary of the organisation of the Science Curriculum and how our school ensures that every child's entitlement to essential knowledge and skills to equip them for the next stage of their education and later life is catered for.

AIMS

- To ensure standards are high and English and Maths is taught discretely
- To ensure reading remains a high priority
- To utilise the rich resource and history of our local community of Ordsall and Greater Manchester
- To support our school's values and ethos
- To ensure pupils leave as 'well rounded' and confident individuals
- To ensure the wider sports curriculum and the arts are a key focus

Key Driver Words

- Faith
- Respect
- Resilience
- Empathy
- Confidence

END POINTS IN THE CURRICULUM

By the end of Year 6 children will leave St. Joseph's as well rounded people, as independent, confident, successful learners with high aspirations, who know how to make a positive contribution to their community and wider society.

- Children have a wide understanding of science in their world and learned about the lives of a number of scientists which have impacted the understanding of science over the years.

- Children have studied topics from the three disciplines of science – Physics, Chemistry and Biology and understand what each discipline involves.
- Children have developed skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesizing through working scientifically.
- Children can use scientific language appropriately and are effective communicators of scientific ideas.
- Children can use computers effectively to investigate and record science

INTENT

The structure of our science curriculum ensures that the children develop the learning and skills they need.

The long term plan details how the children's knowledge progresses in the topics as they move through school and how their skills in working scientifically to find the answers to science questions develops.

Foundation Stage - children will encounter science through Understanding of the World. Questioning, investigations and practical activities will be encouraged to help the children to work scientific.

Key Stage 1 – children will ask simple questions, observe closely, perform simple tests, suggest answers to questions and record data while learning about the topics specific to their year group.

Key Stage 2 – Children will plan scientific enquiries to answer questions, take accurate measurements, record data and results, make predictions and draw conclusions using scientific evidence while learning about topics specific to their year group. A significant amount of the subject time should be used to develop children's skills in working scientifically.

Science Week, science investigation days, visits to the Science and Industry Museum and use of the outside learning environment during science lessons should be used to foster and develop the children's interest in science.

Science capital will be encouraged by making links between what the children learn and how it is used in the outside world. Visitors to the school will help to develop children's curiosity in scientific careers and how deepening knowledge of the world around us through science launches many possibilities for future lives.

Scientists and inventors will be studied to allow children to make links with how scientists work through questioning and investigating to find answers. A combination of people from the past and the present will be considered to demonstrate how science is a subject of continuous learning and adjustment of ideas as new evidence unfolds.

Recognising our impact as humans on the world around us is an integral part to our science learning. Children are encouraged to understand the importance of our impact on climate change and appreciate how science is assisting in providing new ways to help us to live in harmony with nature in our changing world.

Attainment and progress at the end of topics are analysed in relation to the disadvantaged pupils and SEND pupils. Planning and book monitoring should demonstrate where adjustments have been made ensure the children can access the science curriculum and appropriate recording methods are available to the children where literacy skills may be a barrier.

CULTURAL CAPITAL

At St. Joseph's we recognise that each child is unique, made in the image and likeness of God.

'Great are the works of the Lord; they are studied by all who delight in them.' Psalm 111:2

Through science children are encouraged to investigate the wonderful world made by God.

Biology – the human body, animals, plants and the greater responsibility for the world around them.

Chemistry – what the earth is made from and how these materials can be used in the world around us. The uniqueness of the properties of different materials giving them a specific purpose.

Physics – how our world works. Children develop an understanding the solar system and the energies that make everything in our world, manmade or natural, work.

Children should learn about the impact they have on the environment around them and on other people.

IMPLEMENTATION

The long term plan details the progression of topics throughout school and the progression in scientific knowledge. Topics are revisited throughout the school with a deepening level of understanding to ensure solid knowledge of the science topic is committed to memory.

There is a focus on scientific vocabulary and how to use it correctly to explain scientific ideas.

Planning focusses on a Big Question that the children will be investigating in class. Children are encouraged to problem solve how to carry out an experiment to find an answer to the question -this many involve observing, classifying, testing or researching.

Predictions, recording and conclusions based on evidence are expressed by the children and show their understanding of what they are investigating. Scientific vocabulary is taught explicitly to allow children to articulate their understanding.

Consolidation of previous teaching is important to bridge any gaps in understanding the children may have before moving onto new content. Teachers assess the children's current knowledge of the topic covered in previous year groups. This is particularly significant at present and moving into future academic years to ensure any gaps in learning due to COVID are addressed. Learning is also linked across topics and other curriculum subjects where appropriate.

Any significant gaps in knowledge in Upper Key Stage classes due to COVID that cannot be met during regular science lessons will be addressed during targeted science days.

Assessment is ongoing throughout lessons so that misconceptions can be addressed quickly, and children's learning can be accelerated and deepened.

Assessment shows the children's ability in explaining scientific ideas using the correct vocabulary with confidence in different ways – carrying out experiments, drawing diagrams, written work, discussions with partners, discussion with teachers, questioning

IMPACT

Children will progressively develop their scientific skills as they progress throughout the school. Their ability to question the world around them and how they can find the answer to questions will help them to gain an understanding of science in the real world and how it is an ever-evolving subject where questions are continuously being generated and investigated.

Their knowledge of science will increase as topics are revisited throughout their time in primary school, allowing them to strengthen their understanding in the varying areas of science on the curriculum.

Children will have experienced science in a variety of ways linking their knowledge to real life. Opportunities through science week, science clubs, scientific visitors and trips will allow them to make links between their knowledge and our world.

Children should leave St. Joseph's at the end of year 6 with a solid foundation in science that prepares them for the next stage in their education. The aim would be that they have a love for the subject that they take with them into their new setting and a thirst to continue to learn more about the world around them. Children are inspired to develop a long-term love of science that should continue in their education and beyond possibly into future careers in STEM.

Science Long Term Plan						
(Note: Topics are not restricted by half term timings. If there is a need to continue a topic beyond the end of a half term to ensure a secure level of understanding, it can be extended as required)						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	<ul style="list-style-type: none">• Use all their senses in hands on exploration of natural materials.• Explore collections of materials with similar and/or different properties.• Talk about what they see using a wide vocab.• 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.• Know that there are different countries in the world and talk about the differences they have experienced or seen in photos.					
Reception	<ul style="list-style-type: none">• Recognise some similarities and differences between life in this country and life in other countries.• Explore the natural world around them.• Describe what they see, hear and feel whilst outside.• Understand the effect of changing seasons on the natural world around them. <p><i>EARLY LEARNING GOALS.</i></p> <p>The Natural World.</p> <ul style="list-style-type: none">• Explore the natural world around them, making observations and drawing pictures of animals and plants.					

	<ul style="list-style-type: none"> 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. 					
Year 1	Animals including Humans	Everyday Materials	Everyday materials	Plants	Plants	Animals including Humans
	Identify, name, label and draw the basic parts of the human body Say which part of the body is associated with each sense	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 on the basis of their simple physical properties	Identify and describe the basic structure of a variety of common flowering plants, including trees, (leaves, petals, fruit, roots, seed, trunk, branches and stem)	Identify and name a variety of common wild and garden plants including deciduous and evergreen trees	Identify and name a variety of common animals including birds, fish, amphibians, reptiles and mammals Describe and compare the structure of a variety of common animals Identify and name a variety of common animals that are carnivores, herbivores and omnivores
Continuing throughout the year in Year 1 Seasonal changes Observing changes across the four seasons						
Year 2	Plants	Everyday Materials	Living things and their habitats	Animals including Humans and movement	Plants	Scientists
	Observe and describe how seeds and bulbs	Identify and compare the suitability of a variety of	Identify that most living things live in habitats to	Describe the importance for humans to exercise, eating	Observe and describe how seeds	Investigate a range of scientists

	<p>grow into mature plants</p> <p>Find out and describe how plants need water, light and suitable temperature to grow and stay healthy</p>	<p>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>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, including micro-habitats</p> <p>Explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>Describe how animals obtain their food from plants and other animals, using the ideas of a simple food chain, and identify and</p>	<p>the right amounts of different types of food, and hygiene</p> <p>Notice and describe how things are moving, using simple comparisons such as faster and slower</p> <p>Compare how different things move</p>	<p>and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and suitable temperature to grow and stay healthy</p>	<p>and inventors</p> <p>Revisit any topics that need further coverage</p>
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			name different sources of food			
Year 3	Light	Rocks	Plants	Animals including humans	Forces and Magnets	Forces and Magnets
	<p>Recognise that we need light in order to see things and that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognize that light from the sun can be dangerous and there are ways to protect our eyes</p> <p>Recognize that shadows are formed when the light from a light source is blocked by a solid object</p> <p>Find patterns in the way that the size of shadows change</p>	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Describe in simple terms how fossils are formed when living things that have lived are trapped within rock</p> <p>Recognize that soils are made from rocks and organic matter</p>	<p>Identify and describe the functions of different parts of flowering plants</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients, room to grow) and how they vary from plant to plant</p> <p>Investigate the way in which water is transported within plants</p> <p>Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and dispersal</p>	<p>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>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects but magnetic forces can act at a distance</p> <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 two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing</p>

Year 4	States of Matter	Animals including humans	Living things their habitats / inheritance	Animals including humans / Evolution	Electricity	Sound
	<p>Compare and group materials together according to whether they are solids, liquids or gases</p> <p>Observe that some materials change state when they are heated or cooled and measure the temperature at which this happens in degrees Celsius</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Look at dentists who are also scientists</p>	<p>Recognise that living things can be grouped in a variety of ways</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>Recognize that environments can change and this can sometimes pose dangers to living things</p> <p>Identify how plants and animals, including humans, resemble their parents in many features</p>	<p>Construct and interpret a variety of food chains, identifying producers, predators and prey</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</p>	<p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts</p> <p>Identify whether or not a lamp will light in a simple series circuit</p> <p>Recognize that a switch opens and closes a circuit and associate this with whether or not a lamp lights</p> <p>Recognise some common conductors and insulators and associate metals with</p>	<p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognize that vibrations from sounds travel through a medium to the ear</p> <p>Find patterns between 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 the vibrations that produce it.</p> <p>Recognize that sounds get fainter as the distance from the</p>

					being good conductors (Understand about electrical safety)	sound source increases
Year 5	Properties and changes of materials	Properties and changes of materials	Earth and Space	Living things and their habitats	Animals including humans	Forces - magnetism
	<p>Compare and group together everyday materials on the basis of their properties including their hardness, solubility, transparency, conductivity and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how</p>	<p>Give reasons based on evidence for the particular use of everyday materials</p> <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</p>	<p>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>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>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the life process of reproduction in some plants and animals</p>	<p>Describe the changes as humans develop to old age</p> <p>Recognize the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals including humans</p>	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effect of air resistance, water resistance and friction that act between moving surfaces</p> <p>Recognize that some mechanisms (levers, pulleys, gears) allow a smaller force to have a greater effect</p>

	mixtures might be separated					Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which pole are facing
Year 6	Animals including animals	Electricity	Light	Living things and their habitats	Evolution and Inheritance	Evolution and Inheritance
	Identify and name the main parts of the human circulatory system and describe 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	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, loudness of buzzers and the on/off position of switches Use recognized	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 the give out or reflect light into the eye Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then our eyes Use the idea that light	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms , plants and animals Give reasons for classifying plants and animals based on specific characteristics	Recognize 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 adaption may lead to evolution	Recognize that living things have changed over timer and fossils provide information about living things that inhabited the Earth millions of years ago

	including humans	symbols when representing a simple circuit (Understand about electrical safety)	travels in straight lines to explain why shadows have the same shape as the objects that cast them			
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National Curriculum Content - Science

EY						
30-50 mths	<ul style="list-style-type: none"> • Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world. • Can talk about some of the things they have observed such as plants, animals, natural and found objects. • Talks about why things happen and how things work. • Developing an understanding of growth, decay and changes over time. • Shows care and concern for living things and the environment 					
40-60 mths	<ul style="list-style-type: none"> • Looks closely at similarities, difference, patterns and change. 					
KS1	Coverage	Autumn	Spring	Summer		
	NC Skills Year 1 and 2	<ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions 				
Y1	NC Content summary	<p>Plants Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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, including trees <p>Animals, including humans Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and name a variety of common animals including 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 (fish, amphibians, reptiles, birds and mammals 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. 				

		<p>Everyday materials Pupils should be taught to:</p> <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, glass, plastic, metal, water and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties <p>Seasonal changes Pupils should be taught to:</p> <ul style="list-style-type: none"> • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies
Y2	NC Content summary	<p>Living Things and their Habitat Pupils should be taught to:</p> <ul style="list-style-type: none"> • explore and compare the 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 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 microhabitats • 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>Plants Pupils should be taught to:</p> <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 <p>Animals, including humans</p> <ul style="list-style-type: none"> • Pupils should be taught to: • notice that animals, including humans, have offspring which 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 <p>Uses of everyday Materials Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, 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

Content Summary				
KS2	Coverage	Autumn	Spring	Summer
	NC Skills Year 3 and 4	<ul style="list-style-type: none"> • 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 and, where appropriate, 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, 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, similarities or changes related to simple scientific ideas and processes • Using straightforward scientific evidence to answer questions or to support their findings. 		
Y3	NC Content summary for each term	<p>Plants Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 (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 • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal <p>Animals, including Humans Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 other animals have skeletons and muscles for support, protection and movement <p>Rocks Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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>Light Pupils should be taught to:</p>		

		<ul style="list-style-type: none"> • 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>Forces and Magnets Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare how things move on different surfaces • notice that some forces need contact between 2 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 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing
Y4	NC Content summary for each term	<p>Living things and their habitats Pupils should be taught to:</p> <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 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>Animals, including humans Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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>States of matter Pupils should be taught to:</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 or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature <p>Sound Pupils should be taught to:</p>

		<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 • 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 <p>Electricity Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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
	NC Skills Year 5 and 6	<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
Y5	NC Content summary for each term	<p>Living things and their habitats Pupils should be taught to:</p> <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 <p>Animals, including humans Pupils should be taught to:</p> <ul style="list-style-type: none"> • describe the changes as humans develop to old age <p>Properties and changes of materials Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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

		<ul style="list-style-type: none"> • 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, 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 and the action of acid on bicarbonate of soda <p>Earth and Space Pupils should be taught to:</p> <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 <p>Forces Pupils should be taught to:</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 • 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
Y6	NC Content summary for each term	<p>Living things and their habitats Pupils should be taught to:</p> <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 <p>Animals, including humans Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 <p>Evolution and inheritance Pupils should be taught to:</p>

	<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 <p>Light Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them <p>Electricity Pupils should be taught to:</p> <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 • 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
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Progression of Skills					
YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Science - Scientific skills ongoing through all topics					
Questioning					
Ask simple questions and recognise that they can be answered in different ways	Ask simple questions and recognise that they can be answered in different ways	Asking relevant questions and using different types of scientific enquires to answer them	Asking relevant questions and using different types of scientific enquires to answer them	Planning different types of scientific enquires to answer questions including recognising and controlling variables where necessary	Planning different types of scientific enquires to answer questions including recognising and controlling variables where necessary
Observations					
Observing closely using simple equipment	Observing closely using simple equipment	Setting up simple practical enquires, comparative and fair tests.	Setting up simple practical enquires, comparative and fair tests.	Taking measurements, using a range of scientific equipment, with increasing	Taking measurements, using a range of scientific equipment, with increasing

Perform simple tests	Perform simple tests	Making systematic and careful observations and where appropriate, taking accurate measurements using standard units , using a range of equipment, including thermometers and data loggers	Making systematic and careful observations and where appropriate, taking accurate measurements using standard units , using a range of equipment, including thermometers and data loggers	accuracy and precision, taking repeat readings when appropriate	accuracy and precision, taking repeat readings when appropriate
Identify and classify	Identify and classify				

Recording

Using their observations and ideas to suggest answers to questions	Using their observations and ideas to suggest answers to questions	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	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	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
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Conclusions

Gathering and recording data to help in answering questions	Gathering and recording data to help in answering questions	Recording findings using simple scientific language, drawings, labelled diagrams, bar	Recording findings using simple scientific language, drawings, labelled diagrams, bar	Reporting and presenting findings from enquiries, including conclusions, casual relationships	Reporting and presenting findings from enquiries, including conclusions, casual relationships
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		charts and tables Reporting on findings from enquires, including oral and written explanations, displays or presentations of results and conclusions Using straightforward scientific evidence to answer questions or to support their findings	charts and tables Reporting on findings from enquires, including oral and written explanations, displays or presentations of results and conclusions Using straightforward scientific evidence to answer questions or to support their findings	and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Identify scientific evidence that has been used to support or refute ideas or arguments.	and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. Identify scientific evidence that has been used to support or refute ideas or arguments.
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Progression of Knowledge per Strand

YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Science - Scientific knowledge development through the year groups					
Biology					
Animals, including humans Identify, name, label and draw the basic parts of the human body Say which part of the body is associated with each sense	Animals, including humans Describe the importance for humans to exercise, eating the right amounts of different types of food, and hygiene Notice that animals have offspring which grow into adults Find out about and describe the basic needs of	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 Identify that humans and some other animals have skeletons and	Animals, including humans 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 Look at dentists who are also scientists	Animals, including humans Describe the changes as humans develop to old age Recognize 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	Animals, including humans Identify and name the main parts of the human circulatory system and describe functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function

	<p>animals, including humans for survival (water, food, air)</p> <p>Look at a particular animal and look at scientists linked to those animals</p>	<p>muscles for support, protection and movement</p>	<p>Evolution</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</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</p>	<p>including humans</p>	<p>Describe the ways in which nutrients and water are transported within animals including humans</p> <p>Evolution</p> <p>Recognize that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaption may lead to evolution</p> <p>Recognize that living things have changed over timer and fossils provide information about living things that inhabited the Earth millions of years ago</p>
<p>Living things and their Habitats</p> <p>Identify and name a</p>	<p>Living things and their Habitats</p> <p>Explore and compare the</p>		<p>Living things and their Habitats</p> <p>Recognise that living things</p>	<p>Living things and their Habitats</p> <p>Describe the differences in</p>	<p>Living things and their Habitats</p> <p>Describe how living things</p>

<p>variety of common animals including birds, fish, amphibians, reptiles and mammals</p> <p>Describe and compare the structure of a variety of common animals</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>	<p>differences between things that are living, dead, and things that have never been alive</p> <p>Describe how animals obtain their food from plants and other animals, using the ideas of a simple food chain, and identify and name different sources of food</p>		<p>can be grouped in a variety of ways</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>Recognize that environments can change and this can sometimes pose dangers to living things</p>	<p>the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the life process of reproduction in some plants and animals</p>	<p>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>Plants</p> <p>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>Plants</p> <p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and suitable temperature to grow and stay healthy</p>	<p>Plants</p> <p>Identify and describe the functions of different parts of flowering plants</p> <p>Explore the requirements of plants for life and growth (air, light, water, nutrients, room to grow) and how they vary from plant to plant</p> <p>Investigate the way in which water is</p>	<p>Plants</p> <p>Identify how plants and animals, including humans, resemble their parents in many features</p>	<p>Plants</p> <p>(Describe the life process of reproduction in some plants in the Living things topic)</p>	<p>Plants</p> <p>(Classifying Plants as part of the Living things topic)</p>

(leaves, petals, fruit, roots, seed, trunk, branches and stem)		transported within plants Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and dispersal			
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Chemistry

<p>Materials 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 on the basis of their simple physical properties</p>	<p>Materials Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, 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</p>	<p>Materials Rocks 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 living things that have lived are trapped within rock Recognize that soils are made from rocks and organic matter (Magnetic materials comes under forces and Magnets in the Physics strand)</p>	<p>Materials 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 Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>Materials Compare and group together everyday materials on the basis of their properties including their hardness, solubility, transparency, conductivity 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 gases to decide how mixtures might be separated Give reasons based on evidence for</p>	<p>Materials (Materials sound be revisited as part on the electricity topic when identifying conducting materials)</p>
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				<p>the particular use of everyday materials</p> <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</p>	
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Physics

			<p>Electricity</p> <p>identify common appliances that run on electricity</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts</p> <p>identify whether or not a lamp will light in a simple series circuit</p> <p>recognize that a switch opens and closes a circuit and associate this with whether or</p>		<p>Electricity</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, loudness of buzzers and the on/off position of switches</p> <p>Use recognized symbols when</p>
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			<p>not a lamp lights</p> <p>Recognise some common conductors and insulators and associate metals with being good conductors</p>		<p>representing a simple circuit</p>
		<p>Light Recognise that we need light in order to see things and that dark is the absence of light</p> <p>Notice that light is reflected from surfaces</p> <p>Recognize that light from the sun can be dangerous and there are ways to protect our eyes</p> <p>Recognize that shadows are formed when the light from a light source is blocked by a solid object</p> <p>Find patterns in the way that the size of shadows change</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 are seen because they give out or reflect light into the 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 our eyes</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p>

		<p>Forces and magnets Compare how things move on different surfaces</p> <p>Notice that some forces need contact between two objects but magnetic forces can act at a distance</p> <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 two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on</p>		<p>Forces Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effect of air resistance, water resistance and friction that act between moving surfaces</p> <p>Recognize that some mechanisms (levers, pulleys, gears) allow a smaller force to have a greater effect</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which pole are facing</p>	
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		which poles are facing			
			<p>(Individual Topics) Sound</p> <p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognize that vibrations from sounds travel through a medium to the ear</p> <p>Find patterns between 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 the vibrations that produce it.</p> <p>Recognize that sounds get fainter as the distance from the sound source increases</p>	<p>(Individual Topics) Earth in Space</p> <p>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>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	