



St Thomas' Catholic Primary School

Science Intent and Progression Map



At St Thomas' we aim to provide pupils with exciting opportunities to develop their scientific enquiries, while encouraging their natural curiosity of the world around them. Through high quality teaching of key knowledge of the scientific topics and through the progression of their 'working scientifically' skills, we aim to build on their conceptual understanding, allowing them to ask and answer their own questions.

We encourage pupils to be enquiry based learners, devising their own experiments, therefore becoming confident and successful young scientist.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	<ul style="list-style-type: none"> To extend vocabulary especially by grouping and naming To comment and ask questions about aspects of their familiar world. 	<ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and 	<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 	<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 			

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	<ul style="list-style-type: none"> To develop an understanding of growth, decay and changes of time. To show care and concern for living things and the environment. To talk about and reflect on things they notice about the world, including similarities, differences, patterns and change. 	<p>evergreen trees</p> <ul style="list-style-type: none"> Identify and describe the basic structure of a variety of common flowering plants, including trees. 	<p>grow and stay healthy.</p>	<p>plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</p> <ul style="list-style-type: none"> 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. 			
Animals, including humans	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To express thoughts and share ideas, using vocabulary focused on objects and events. To extend vocabulary especially by grouping and naming. 	<ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores 	<ul style="list-style-type: none"> 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. 	<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. 	<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, 	<ul style="list-style-type: none"> Describe the changes as humans develop to old age 	<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

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Everyday materials	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To express thoughts and share ideas, using vocabulary focused on objects and events. To comment and ask questions about aspects 	<ul style="list-style-type: none"> Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Describe the simple 	<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, 				

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	<p>of their familiar world.</p> <ul style="list-style-type: none"> To talk about and reflect on things they notice about the world, including similarities, differences, patterns and change. 	<p>physical properties of a variety of everyday materials.</p> <ul style="list-style-type: none"> Compare and group together a variety of everyday materials on the basis of their simple physical properties. 	<p>bending, twisting and stretching.</p>				
Seasonal Changes	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To express thoughts and share ideas, using vocabulary focused on objects and events. To comment and ask questions about aspects of their familiar world. To talk about the thing which they observe including why things happen 	<ul style="list-style-type: none"> Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies. 					

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	<p>and how they work.</p> <ul style="list-style-type: none"> To develop an understanding of growth, decay and changes of time. To show care and concern for living things and the environment. 						
Living things and their habitats	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To express thoughts and share ideas, using vocabulary focused on objects and events. To comment and ask questions about aspects of their familiar world. To develop an understanding of growth, decay and changes of time. 		<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 	<ul style="list-style-type: none"> 	<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. 	<ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals. 	<ul style="list-style-type: none"> 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.

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	<ul style="list-style-type: none"> To show care and concern for living things and the environment. 		<ul style="list-style-type: none"> 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. 				
Rocks	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To extend vocabulary especially by grouping and naming To talk about and reflect on things they notice about the world, including similarities, differences, patterns and change. 			<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 			
Light	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To use senses to explore the world around 			<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 			<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

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	<p>them and engage in open ended activities.</p> <ul style="list-style-type: none"> To comment and ask questions about aspects of their familiar world. 			<ul style="list-style-type: none"> 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>because they give out or reflect light into the eye</p> <ul style="list-style-type: none"> 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.
Forces and magnets	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To comment and ask questions about aspects of their familiar world. To talk about the thing which they observe including why things happen 			<ul style="list-style-type: none"> Compare how things move on different surfaces Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others Compare and group together a variety of everyday materials 		<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 	

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	and how they work.			<p>on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <ul style="list-style-type: none"> • Describe magnets as having two poles • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 		<p>moving surfaces</p> <ul style="list-style-type: none"> • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 	
States of matter	<ul style="list-style-type: none"> • To show curiosity about objects, events and people and maintain focus on activity. • To use senses to explore the world around them and engage in open ended activities. • To express thoughts and share ideas, using vocabulary focused on objects and events. • To extend vocabulary especially by grouping and naming. 				<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 		

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	<ul style="list-style-type: none"> • To comment and ask questions about aspects of their familiar world. • To talk about the thing which they observe including why things happen and how they work. • To talk about and reflect on things they notice about the world, including similarities, differences, patterns and change. 				<p>the water cycle and associate the rate of evaporation with temperature.</p>		
<p>Sound</p>	<ul style="list-style-type: none"> • To show curiosity about objects, events and people and maintain focus on activity. • To use senses to explore the world around them and engage in open ended activities. 				<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 		

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					<p>features of the object that produced it</p> <ul style="list-style-type: none"> • 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. 		
Electricity	<ul style="list-style-type: none"> • To show curiosity about objects, events and people and maintain focus on activity. • To comment and ask questions about aspects of their familiar world. • To talk about the thing which they observe including why things happen and how they work. 				<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 		<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

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					<p>not the lamp is part of a complete loop with a battery</p> <ul style="list-style-type: none"> 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 		<ul style="list-style-type: none"> Use recognised symbols when representing a simple circuit in a diagram.
Properties and changes of materials	<ul style="list-style-type: none"> To show curiosity about objects, events and people and maintain focus on activity. To use senses to explore the world around them and engage in open ended activities. To express thoughts and share ideas, 					<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 	

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	<p>using vocabulary focused on objects and events.</p> <ul style="list-style-type: none"> • To extend vocabulary especially by grouping and naming. • To comment and ask questions about aspects of their familiar world. • To talk about the thing which they observe including why things happen and how they work. • To talk about and reflect on things they notice about the world, including similarities, differences, patterns and change. 					<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 	
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						<ul style="list-style-type: none"> • Explain that some changes result in the formation of new materials, that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. 	
Earth and Space	<ul style="list-style-type: none"> • To show curiosity about objects, events and people and maintain focus on activity. • To express thoughts and share ideas, using vocabulary focused on objects and events. • To comment and ask questions about aspects of their familiar world. 					<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 approx. spherical bodies • Use the idea of the Earth's rotation to explain day and 	

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						night and the apparent movement of the sun across the sky.	
Evolution and inheritance							<ul style="list-style-type: none"> • Recognise that living things change over time and that fossils give information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but offspring vary and are not identical to their parents • Identify animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

	Progression of Scientific Skills			
	EYFS	KS1	LKS2	UKS2
Working scientifically	EYFS: Enquiry Skills	Key Stage 1: Scientific Investigation Skills	Lower Key Stage 2: Scientific Investigation Skills	Upper Key Stage 2: Scientific Investigation Skills
	Characteristics of Learning <ul style="list-style-type: none"> • To show curiosity about objects, events and people and maintain focus on an activity • To use senses to explore the world around them and engage in open ended activity 	Asking Questions <ul style="list-style-type: none"> • ask simple questions and recognise that they can be answered in different ways 	Asking Questions <ul style="list-style-type: none"> • ask relevant questions and use different types of scientific enquiries to answer them • set up simple practical enquiries, comparative and fair tests 	Asking Questions <ul style="list-style-type: none"> • plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

	<ul style="list-style-type: none"> • To think of ideas and find new ways to do things, engaging in new experiences • To make links and notice patterns in their experiences • To make predictions and test ideas including planning and making decisions about how to approach a task • To check and review how activities are going, changing strategy if needed and adapting approach 	<p>Measuring and Recording</p> <ul style="list-style-type: none"> • observe closely, using simple equipment • perform simple tests • gather and record data to help in answering questions 	<p>Measuring and Recording</p> <ul style="list-style-type: none"> • make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • gather, record, classify and present data in a variety of ways to help in answering questions 	<p>Measuring and Recording</p> <ul style="list-style-type: none"> • take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
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	<p>Personal, Social and Emotional Development.</p> <ul style="list-style-type: none"> • To choose and share resources needed for the chosen activities • To explain own knowledge and ask appropriate questions of others and show confidence in asking adults for help <p>Physical Development</p> <ul style="list-style-type: none"> • To show good control and co-ordination in small movements and handle tools with increasing control • To recognise the need for safety, to consider how to manage risks and to practice appropriate safety measures without direct supervision including understanding how to store and transport equipment safely. 	<p>Concluding</p> <ul style="list-style-type: none"> • identify and classify • use their observations and ideas to suggest answers to questions 	<p>Concluding</p> <ul style="list-style-type: none"> • identify differences, similarities or changes related to simple scientific ideas and processes • report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • use straightforward scientific evidence to answer questions or to support their findings 	<p>Concluding</p> <ul style="list-style-type: none"> • identify scientific evidence that has been used to support or refute ideas or arguments • report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results • present results in oral and written forms such as displays and other presentations
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	<p>Communication and Language</p> <ul style="list-style-type: none"> • To express thoughts and share ideas, using vocabulary focused on objects and events • To extend vocabulary especially by grouping and naming <p>Understanding the World</p> <ul style="list-style-type: none"> • To comment and ask questions about aspects of their familiar world • To talk about the things which they observe including why things happen and how they work • To develop an understanding of growth, decay and changes of time • To show care and concern for living things and the environment • To talk about and reflect on the things they notice about the world, including similarities, differences, pattern and change 		<p>Evaluating</p> <ul style="list-style-type: none"> • use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. 	<p>Evaluating</p> <ul style="list-style-type: none"> • use test results to make predictions to set up further comparative and fair tests.
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