



Science Subject Overview Science at St Mary's Catholic First School



At St. Mary's Catholic First School, we recognise the importance of science in every aspect of daily life, to explain the wonders of the Universe. As one of the core subjects taught in the primary age range, we give the teaching and learning of science the prominence it requires. The scientific area of learning is concerned with increasing pupils' knowledge and understanding of the world around us, and with developing the skills associated with science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence.

INTENT

It is our intention at St Mary's Catholic First School to develop in all young people a lifelong curiosity and interest in the sciences. We intend children to have the opportunity, wherever possible, to learn through varied systematic investigations, leading pupils to be equipped for life, to be able to ask and answer scientific questions about the world around them.

We want to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of science, today and for the future.

Scientific enquiry skills are embedded in each topic the children study and these topics are revisited and developed throughout their time at school. Topics are taught in Key Stage One and studied again in further detail throughout Key Stage Two. This allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this knowledge into the long-term memory.

All children are encouraged to develop and use a range of skills including observations, planning and investigations, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions.

Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Concepts taught are reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

IMPLEMENTATION

The key knowledge identified by each class is informed by the national curriculum and builds towards identified phase 'end points' in accordance with NC expectations.

The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences; using equipment, conducting experiments, building arguments and explaining concepts confidently. We seek to ensure that these experiences are phase appropriate. Tasks are selected and designed to provide appropriate challenge to all learners, in line with the school's commitment to inclusion and mastery.

The school's approach to science takes account of the school's own context, ensuring access to people with specialist expertise and places of scientific interest as part of the school's commitment to learning outside the classroom.

Cross curricular opportunities are also identified, mapped and planned to ensure contextual relevance. Children are encouraged to ask questions and be curious about their surroundings and a love of science is nurtured through a whole school ethos and a varied science curriculum.

Regular events, such as Science and Space Week, allow all pupils to come off-timetable, to provide broader provision and the acquisition and application of knowledge and skills. These events often involve families and the wider community. At the end and throughout each topic, key knowledge is reviewed by the children and rigorously checked by the teacher and consolidated as necessary.

IMPACT

The successful approach at St Mary's Catholic First School results in a fun, engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world.

Our engagement with the local environment ensures that children learn through varied and first-hand experiences of the world around them. Frequent, continuous and progressive learning outside the classroom is embedded throughout the science curriculum.

Through various workshops, trips and interactions with experts and local charities, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity.

Children learn the possibilities for careers in science, as a result of our community links. They learn from and work with professionals, ensuring access to positive role models within the field of science from the immediate and wider local community. The impact of a linked scheme of work, greater home-school links, outdoor learning, greater teacher creativity and confidence in science, all support an increase in promoting the profile of science. The learning environment being more consistent with science technical vocabulary displayed, spoken and used by all learners. Children will be reflective learners able to work collaboratively and practically to investigate scientifically, adequately prepared for their transition into their next stages of science education at middle school.

From this exposure to a range of different scientists from various backgrounds, all children feel they are scientists and capable of achieving. Children feel confident in their science knowledge and enquiry skills and are excited about science, showing that they are actively curious to learn more, seeing the relevance of what they learn in science lessons to real life situations and the importance of science in their everyday world. Children at St Mary's overwhelmingly enjoy science and develop into motivated learners with sound scientific understanding.



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Reception		
Autumn	Spring	Summer
<ul style="list-style-type: none"> To know the names of different body parts and some functions and 5 senses. To identify and sort healthy and unhealthy food. To identify similarities and differences between themselves and peers. To know that humans, animals and plants grow and change over time. To know different creatures live in different places and natural habitats. To recognise a range of materials and observe how materials change on heating and cooling. To explore shadows, rainbows, light sources. To explore how objects and materials are affected by forces. 		

Year 1		
Autumn	Spring	Summer
<p>Plants Children will 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> <p>Working scientifically: Observing closely, identifying and classifying.</p>	<p>Everyday 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>Working scientifically:</p>	<p>Animal Diets Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>Working scientifically: Observing closely using simple equipment; identifying and classifying foods by origin Performing simple tests to explore how herbivore teeth work; identifying and classifying animals based on diet Observing</p>



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	Observing closely using simple equipment; identifying and classifying Perform simple tests; sort and classify. Observing closely; gathering data observing and recording Using observations to solve problems; choosing materials for a purpose.	closely; identifying and classifying carnivores; observations about carnivore adaptations Performing simple tests comparing tools; identifying omnivores; recording observations about omnivore adaptations Identifying and classifying underwater organisms by diet. Performing simple tests with unusual foods; identifying and classifying unusual animal diet.
<p>My body and My Senses Pupils should identify, name, draw, and label the basic parts of the human body and say which part is associated with each sense.</p> <p>Working scientifically: Observing closely, identifying, and classifying. Use simple equipment (magnifying glass) to observe. Perform simple tests (e.g., listening walks), identifying and classifying sounds. Classifying (sorting foods by taste).</p>	<p>Animal groups Identify and name a variety of common animals, including fish, amphibians, reptiles, birds, and mammals. Describe and compare the structure of a variety of common animal.</p> <p>Working scientifically: Identifying and classifying; using observations to suggest answers. Observing closely with simple equipment; asking and exploring different answers to questions. Performing simple tests; using observations to suggest answers. Gathering and recording data; observing closely. Asking varied questions; using observations to suggest answers.</p>	<p>Seasonal Changes Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies.</p> <p>Working scientifically: Observing closely using simple equipment; identifying and classifying seasonal items recording data about spring features. Using observations and ideas to suggest answers; gathering and recording data.</p>

Year 2		
Autumn	Spring	Summer
<p>Growing Plants Observe how seeds and bulbs grow; Learn about plant needs (water, light, temperature).</p>	<p>Animal Needs Learn about animal life cycles; Understand basic needs of animals and humans (food, water, air).</p>	<p>Habitats and Microhabitats Investigate different habitats and microhabitats; Understand how conditions affect living things.</p>



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<p>Working scientifically Asking Simple Questions & Suggesting Answers: Observing Closely & Using Equipment: Recording Data: Record observations in a plant diary.</p>	<p>Working scientifically Identifying & Classifying: Performing Simple Tests: Record differences. Using Observations to suggest answers.</p>	<p>Working scientifically Observing Over Time. Record changes Using Simple Measurements: Comparative Testing.</p>
<p>Use of Everyday materials Compare the suitability of materials for different uses; Explore how materials can change shape.</p> <p>Working scientifically Performing Simple Tests: Make predictions, conduct tests, and observe outcomes. Identifying & Classifying: Pupils classify materials based on properties. Recording Data: Pupils draw tests and describe observations.</p>	<p>Local Habitats Distinguish between living, dead, and never alive; Explore local habitats and how they meet needs.</p> <p>Working scientifically Exploring & Observing. Using Simple Equipment Gathering & Recording Data: Make lists and draw findings.</p>	<p>Food Chains and Health Create simple food chains; Learn about human health and the importance of a balanced diet.</p> <p>Working scientifically Model Making & Identifying: Gathering information using Ideas to suggest answers.</p>

Year 3		
Autumn	Spring	Summer
<p>Plants Children will learn about the parts of plants, needs of plants and their life cycle.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Plant dissection • Comparative v fair testing. 	<p>Light Children will learn about light sources, how light is reflected off objects, how shadows form, changing shadows, eye protection.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Raising questions and carrying out tests, gathering and recording data to find answers to questions 	<p>Forces and Magnets Children will learn about non-contact forces, attraction and repulsion of magnets, magnetic materials and the N and S pole of magnets.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Investigation to test the strength of a magnet. Develop questions, prediction, conclusion based on evidence, repeats,



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	<ul style="list-style-type: none"> • Comparative test, repeats, averages, bar charts, making conclusions based on evidence, evaluation • Set up a simple investigation, make observations. 	averages, evaluation and suggestions for further improvement.
<p>Rocks Children will learn about comparing different rocks, fossils, soil formation.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Making observations over time • Making conclusions based on evidence. 	<p>Animals including Humans Children will learn about nutrition, the Musculoskeletal system for support, movement, and protection.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Using books as secondary sources of data • Follow a simple practical procedure • Make a simple conclusion. 	<p>Bee project Children will learn about the relationship between bees and their environment; importance in pollination, food and other resource.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Comparative and fair tests, taking accurate measurements, gathering, recording and presenting data, making systematic and careful observations, using results to draw simple conclusions.

Year 4		
Autumn	Spring	Summer
<p>States of matter/ solids, liquids and gases Children will learn about group materials based on their properties, changes of state, heating and cooling, the water cycle.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Investigating melting ice cubes • Investigating the evaporation of water • Follow a simple practical procedure, observation over time, variable, fair testing, making conclusions based on evidence. 	<p>Sound Children will learn about making sounds, vibrations, the ear, changes in pitch and volume.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Investigate how the length of an object affects its pitch • Prediction, comparative test, conclusion based on evidence, evaluation and suggestions for improvement Investigating. 	<p>Electricity Children will learn about appliances, building circuits and identifying components, circuit diagnostics, conductors and insulators.</p> <p>Working scientifically:</p> <ul style="list-style-type: none"> • Testing conductors and insulators • Pattern-seeking • Make conclusions based on evidence • Suggestions for further enquiry.



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<p>Animals including Humans Children will learn about eating, teeth, digestive system and food chains, producers, predators and prey.</p> <p>Working scientifically:</p> <ul style="list-style-type: none">• Research using secondary sources, pattern-seeking, identifying and classifying• Tooth decay investigation• Investigating digestion in the stomach• Set up simple practical enquiry, comparative test, predicting, conclusion based on evidence, evaluation and suggestions for improvement.	<p>Living things and their Habitats Children will learn about classification, characteristics, and the effects of environmental changes.</p> <p>Working scientifically:</p> <ul style="list-style-type: none">• Using books as a secondary source of information, observing, identifying and grouping, classifying, pattern-seeking, making conclusions based on evidence• Follow a simple practical procedure, observation over time, making a conclusion based on evidence.	<p>The History of Science Children will learn about the development of scientific theories by a diverse range of scientists and inventors, both historical and contemporary.</p> <p>Working scientifically:</p> <ul style="list-style-type: none">• Raising questions and carrying out tests, making careful observations, gathering and recording data to find answers to questions, exploring the effects of simple levers, looking for patterns in the way levers are made.
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