Science Curriculum Offer

I can do all things through Christ who strengthens me

Our School Vision

St Mary's Catholic Infant and Junior Academies work together to create a caring, friendly and faith-centred community, where we seek to realise the full potential of all our family through the living love of Christ. All our work with children and their families, staff, governors, parishioners and the wider community is influenced by our core values:

Compassion, Respect and Resilience.

Intent

The purpose of our Arches Curriculum is to ensure that our children are **successful** in life and learning. The 'Nine Arches' Sankey Viaduct in Newton-le-Willows has been the inspiration for our curriculum. The viaduct was built by George Stephenson between 1828 and 1830 and the bridge, built to let trains cross above the Sankey Canal, has international significance as the world's earliest major railway viaduct still in use.

Our Science curriculum is based on the objectives from the National Curriculum, with the principle focus of developing pupil understanding and confidence in the three areas of Science: biology, chemistry and physics. Through investigation, experimentation, research and vocabulary, our children develop their understanding of how our world is made and works.

From this, we teach to the Arches Principles –

Ambitious – Resilience – Christ at the Heart – Health and Wellbeing – Excellence – Success

Ambitious

Our curriculum is designed to show our children that our **ambitious** curriculum will offer them rewards for the future. Our Science curriculum allows our children to see the excitement and challenges that can be found within the three areas, asking in-depth questions and exploring and investigating through **ambitious**, high level and thought provoking enquiries, allowing them to develop aspirations for their futures in science beyond their time at St Mary's, through links to professional sciences and an understanding of science in the workplace.

Resilience

With high expectations and a challenging curriculum, we support our children in developing **resilience** and self-motivation, to overcome barriers in their pursuit of learning and enrichment. In Science, our curriculum teaches our children to develop their resilience through fair testing, and appropriate data collection, research and lines of enquiry. Our children are encouraged to ask questions with confidence and cooperate to get the best successes from their investigations.

Christ at the heart

Christ at the heart along with our Mission Statement, "I can do all things through Christ who strengthens me," we provide a high-quality education within a creative, stimulating, encouraging and mutually supportive environment where children are enabled to develop the skills they require to become successful in Science, knowing it offers us answers to some of God's work in our natural world, and helps us to build a connection to the greatness of the gift He has given to us.

Health and Wellbeing

The Mental **Health and Wellbeing** of our children is paramount in both schools and we seek to ensure all of our lessons have enrichment and enjoyment, allowing children to find satisfaction and fun in the challenge. In Science, we explore how our world is made, including our bodies. My recognising that these changes are natural and instinctive, can give children answers to worries or problems they face. We teach them how to live a healthy lifestyle and link with PE and RSHE to ensure our children know how to look after themselves.

Excellence

In all things, we strive for **excellence** both from and for our children, providing them with the best opportunities, with a curriculum sets high expectations for each and every child. In Science, we aim for high levels of enquiry and investigation, providing the foundations for a strong understanding of the world.

Successful

We work to help our children to be **successful** in all areas of school life, developing children who achieve whatever they put their mind to, and developing skills to help them to continue to be successful in the future. Science encourages children to reach for the highest levels of success, and here at St Mary's we use our Science curriculum to challenge and expand their understanding, building their vocabulary, investigation skills and confidence in questioning what they know.

Our Arches Principles -

Rationale for our Science Curriculum

	Through our '**ambitious**' curriculum driver, we want our children to relish the challenges that being an scientist can bring. We want to ensure that the children have a secure understanding of the subject disciplines: Biology, Chemistry and Physics.
	Through the 'resilience' curriculum driver, we promote optimism and determination in **Science**. The **Working Scientifically Cycle** promotes resilience as children are encouraged to consider variables, value their mistakes. Children are encouraged to be resilient when working through the difference stages of **scientific investigations.** Through the '**resilience**' curriculum driver, we promote optimism and determination in **science.**
	As a Catholic school we place **Christ at the centre** of all that we do. We integrate Gospel values and the teachings of the Catholic Church into every aspect of learning and teaching in our science teaching. We aim to provide a Science curriculum that stimulates and excites pupils' curiosity to explore, discover and investigate the world around them whilst teaching with a regard for the dignity of the human person and our obligation to care for the human needs of one another.
	At St Mary's Catholic Academies, we understand that happiness is linked to personal growth, **health** and development. We ensure our children are happy, healthy individuals. In biology, a huge focus is on **wellbeing** and looking after your body – physically and mentally. With **'health and wellbeing'** as a curriculum driver, we give children the confidence to thrive in a diverse, global society and be respectful citizens with British and Christian Values at the core.
	Through the '**excellence**' curriculum principle, we encourage our children to be risk takers, to reason, to analyse and evaluate. We want our children to be inquisitive and relish challenges. We want our children to research, experiment, plan, test and then evaluate in science built on strong foundations of disciplinary knowledge.
	There are regular opportunities to celebrate their **successes** in Science. We want our pupils to have a clear understanding of the link between achieving well and having goals for the future.

Being a St Mary's Scientist

Being a Scientist means that disciplinary and substantive knowledge complement each other harmoniously. Before every unit of work, we ensure all children are aware of what 'being a biologist', 'chemist' and 'physicist' entails. Through disciplinary literacy, all children read like scientists: reading graphs, tables, research, texts linked to science. Reading is the 'beating heart' of our science curriculum.

Implementation

All of our children will have consistent access to a broad, balanced and high-quality science curriculum which will: provide the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

The 2014 National Curriculum for Science aims to ensure that all children:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific skills required to understand the uses and implications of science, today and for the future.
- We understand that it is important for lessons to have a skills-based focus, built on a foundation of supporting knowledge.

We encourage children to be inquisitive throughout their time at school and beyond. The Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the children will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

Science Long Term Plan

St Mary's 'Arches Curriculum' - all our planning is based on our key principles and intent for our curriculum	
Year Group	Ambitious Resilience, Christ at the Heart, Health and Wellbeing, Excellence, Success
Key thread- Working Scientifically	

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	Senses (Identifying own senses)	Weather and Seasons (Autumn and Winter)	Materials (How things work)	Weather and Seasons (Spring and Summer)	Health and Safety	Our body (Healthy eating, oral health)
Reception	Senses (Use our senses in the environment)	Weather and Seasons (How the change affects us. What is different? Hibernation)	Forces and machines (How things work, mechanisms and structure)	Plants New plants, new life, life cycles, keeping safe.	Health and Safety	Looking after the environment
Year 1	Animals including Humans – All about me	Seasonal Changes (Autumn) Animals including Humans – All about animals	Everyday Materials Seasonal Changes (Winter)	Plants Seasonal Changes (Spring)	Everyday Materials	Seasonal Changes (Summer)
Year 2	Living things and their habitats	Uses of everyday materials	Plants	Animals including humans (life cycle)	Living things and their habitats (habitats from around the world)	Animals including humans (growth)
Year 3	Rocks		Animals inc. Humans	Forces and Magnets	Plants	Light
Year 4	Living Things and their Habitats	Conservation	Animals inc. Humans	States of Matter	Sound	Electricity
Year 5	Properties of Materials	Forces	Earth and Space	Animals inc. Humans	Changes of Materials	Living Things and their Habitats

Year 6	Living Things and their Habitats	Electricity	Light	Animals inc. Humans	Evolution and Inheritance	Looking After the Environment

Progression Document

Progression Documents

Our progression documents have been created by the Curriculum Leader and Science Subject Leader to ensure clear progress in the **disciplines: biology, physics and chemistry**

The progression document show key knowledge (substantive knowledge), key vocabulary and key skills (disciplinary knowledge) and assessment outcomes from EYFS – Year 6.

Physics

	Key knowledge progression to be explicitly taught throughout unit of work (and revised constantly through retrieval practice)	**Key vocabulary** All vocabulary on ARCHES Planners (to be explicitly taught)	**Key skills progression**
Nursery	Pupils should be taught to: • Explore how things work • Explore and talk about different forces they can feel	Push Pull	• Explores and talks about forces (push and pull) • Explores how things work
Reception	Pupils should be taught to: • Understand some important processes and changes in the natural world around them, and changing states of matter	Push Pull Gravity force	• Explores non-contact forces (gravity and magnetism) • Explores and talks about forces (push and pull)

	Key knowledge progression to be explicitly taught throughout unit of work (and revised constantly through retrieval practice)	**Key vocabulary** All vocabulary on ARCHES Planners (to be explicitly taught)	**Key skills progression**	**Assessment outcome**

	YEAR THREE – Scientific Enquiry Pupils should be taught to: • ask relevant questions and use different types of scientific enquiries to answer them • set up simple practical enquiries, comparative and fair tests • make systematic and careful observations and take accurate measurements using standard units, and use a range of equipment, including thermometers and data loggers • gather, record, classify and present data in a variety of ways to help in answering questions • record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identify differences, similarities or changes related to simple scientific ideas and processes • use straightforward scientific evidence to answer questions or to support their findings.	YEAR THREE Scientific investigation Prediction Plausible Record Data Method Control experiment Equipment Enquiry Practical Conclusion Fair test	YEAR THREE • I know how a solar oven can be made more effective: posing questions and writing predictions. • I know how a solar oven can be made more effective: recording and presenting results. • I know how to clean coins: writing a method and carrying out a practical test. • I know how to clean coins: writing a conclusion. • I know how to make a cake: fair testing, controls and variables. • I know how to make a cake: scientific enquiry.	YEAR THREE • Name the stages of the scientific method. • Identify possible variables. • Identify what can be learnt from the data shown in a table • Draw a graph for the data in the table.

	YEAR THREE - Light Pupils should be taught to: • 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	YEAR THREE Light (noun) Dark (adjective) Light source (noun) Transparent (adjective) Translucent (adjective) Opaque (adjective) Shadow (noun) Reflect (verb) Mirror (noun)	YEAR THREE • I know how to identify the difference between light sources and non light sources. • I know how to explore light that comes from the sun and how to stay safe • I know which materials which are reflective • I know how shadows are formed • I know how shadows change throughout the day • I can investigate how to change the size of a shadow	YEAR THREE • Identify how light travels. • Identify sources of light. • Identify the meaning of darkness. • Identify the meaning of translucent. • Identify which reflective surface which is likely to distort a reflection. • Recognise the dangerous effects of the sun.
	YEAR THREE – Forces and Magnets Pupils should be taught to • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets **attract** or **repel** each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials	YEAR THREE Force (noun) Friction (noun) Motion (verb) Texture (adjective) Magnet (noun) Attract (verb) Repel (verb) Magnetic field (noun) Non-contact force (adjective) Magnetism (noun) Compass (noun) Orienteering (verb)	YEAR THREE • I know contact and non-contact forces. • I know how to compare how things move on different surfaces. • I know how to explore different types of magnets. • I know how to explore the properties of magnets and everyday objects that are magnetic. • I know that magnetic forces can act at a distance. • I know the everyday uses of magnets.	YEAR THREE • Identify the pulling/pushing effect. • Identify which force pulls items to the ground. • Identify which surfaces create the most friction. • Identify which materials are magnetic. • Explain what is meant by resistance.
	YEAR FOUR - Sound Pupils should be taught to: • identify how sounds are made, associating some of them with something vibrating	YEAR FOUR Vibration (noun) Medium (noun) Source (noun) Energy (noun) Materials (noun)	YEAR FOUR • I know how sounds are made. • I know how vibrations from sounds travel through a medium to the ear. • I know about sound insulation.	YEAR FOUR • Explain how sound travels • Describe volume • Describe pitch • Describe sound in terms of vibrations

	• 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	Reflect (verb) Volume (noun) Decibels (noun) Pitch (noun) Instruments (noun) Particles (noun) Sound source (noun)	• I know about volume. • I know about pitch. • I know how to explore sounds from near and from far.	
	<u>YEAR FOUR – Electricity</u> Pupils should be taught to: • 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.	<u>YEAR FOUR</u> Electricity (noun) Batteries (noun) Circuit (noun) Voltage (noun) Current (noun) Bulb (noun) Conductor (noun) Insulator (noun) Switch (noun) Control (verb) Wind turbines (noun) Hydropower (noun)	<u>YEAR FOUR</u> • I know about electrical appliances and electrical safety. • I know about electrical components in a series circuit. • I know how to investigate electrical circuits. • I know conductors and insulators. • I know about electrical switches. • I know how electrical components can change within a circuit.	<u>YEAR FOUR</u> • Identify components of an electrical circuit. • Identify conductors and insulators and their properties. • Describe the effect of more batteries in a circuit. • Explain the dangers of electricity.
	<u>YEAR FIVE – Earth and Space</u> Pupils should be taught to: • 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	<u>YEAR FIVE</u> Heliocentric (adjective) Geocentric (adjective) Solar system (noun) Astronomy (noun) Terrestrial planet (noun) Gas giants (noun) Axis (noun) Orbit (noun)	<u>YEAR FIVE</u> • I know the solar system and its planets. • I know and understand the heliocentric model of the solar system. • I know and can explain the Earth's movement in space.	<u>YEAR FIVE</u> • Name the 8 planets in order from the sun. • Describe the heliocentric model of the Solar System. • Identify the different phases of the Moon. • Demonstrate the Earth orbiting the sun.

	• use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Moon (noun) Phase (noun) Waxing (verb) Waning (verb)	• I know and can explain the Earth's rotation and night and day. • I know and can explain the movement of the moon. • I can design a planet using knowledge gained.	
	<u>YEAR FIVE – Forces</u> Pupils should be taught to: • 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.	<u>YEAR FIVE</u> Sir Isaac Newton (noun) Gravity (noun) Galileo Galilei (noun) Parachute (noun) Water resistance (noun) Streamlined (adjective) Buoyant (adjective) Upthrust (noun) Friction (noun) Newton (noun) Lever (noun) Pulley (noun)	<u>YEAR FIVE</u> • I know gravity and the life and work of Isaac Newton. • I know the connection between air resistance and parachutes. • I know factors which affect an object's ability to resist water. • I know the effects of friction on different surfaces. • I know mechanisms – levers and pulleys. • I know mechanisms – gears.	<u>YEAR FIVE</u> • Identify forces • Explain various mechanisms • Carry out a fair test.
	<u>YEAR SIX – Light</u> Pupils should be taught to: • 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.	<u>YEAR SIX</u> Light (noun) Light Source (noun) Reflected (verb) Variable (noun) Angle (noun) Mirror (noun) Opaque (adjective) Transparent (adjective Sunshade (noun) Rotate (verb) Optical (adjective) Spectrum (noun)	<u>YEAR SIX</u> • I know how light travels. • I know how to explore reflection • I know how reflection can be used to help us see • I know how shadows can change • I know how we can show why shadows have the same shape as the object that casts them • I	<u>YEAR SIX</u> • Demonstrate how we see things • Describe how an object's shadow changes if it is moved closer to a light source • Explain reflection/refraction

	YEAR SIX - Electricity Pupils should be taught to: • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram.	YEAR SIX Circuit (noun) Battery (noun) Electricity (noun) Resistor (noun) Variable resistor (noun) Dimmer switch (noun) Output (noun) Systematically (verb) Synchronised (adjective) Signal (noun) Conductor (adjective) Insulator (adjective)	YEAR SIX • I know the parts of an electric circuit. • I know what voltage is and its effect on an electrical circuit. • I know how to apply knowledge to identify and correct problems in a circuit. • I know how to investigate what affects the output of a circuit. • I know how to build a set of traffic lights. • I know how to apply my knowledge of conductors and insulators.	YEAR SIX • Identify components and their symbols • Draw a scientific diagrams of a circuit • Explain ways to make a bulb in a circuit brighter

Chemistry

	Key knowledge progression to be explicitly taught throughout unit of work (and revised constantly through retrieval practice)	**Key vocabulary** All vocabulary on ARCHES Planners (to be explicitly taught)	**Key skills progression**
Nursery	Pupils should be taught to: • Talk about the differences between materials and changes they notice • Use all their senses in hands-on exploration of natural materials. • • Explore collections of materials with similar and/or different properties	Materials Cotton Wool Brick Water Sand	• Explore collections of materials, identifying similar and different properties • Explore collections of materials
Reception	Pupils should be taught to: • Explore the natural world around them • Understand some important processes and changes in the natural world around them, and changing states of matter	Materials Cotton Wool Brick Water Sand Stretch Twist	• Explores the natural world around them • Talks about differences between materials and changes they notice

	Key knowledge progression to be explicitly taught throughout unit of work (and revised constantly through retrieval practice)	**Key vocabulary** All vocabulary on ARCHES Planners (to be explicitly taught)	**Key skills progression**	**Assessment outcome**
MATERIALS	<u>YEAR ONE – Everyday Materials</u> Pupils should be taught to: • Distinguish between an object and the material from which it is made • Identify and name a variety of everyday materials, including	<u>YEAR ONE</u> Shiny (adjective) Dull (adjective) See-through (adjective) Not see-through (adjective)	<u>YEAR ONE</u> • I know how to identify and name a variety of everyday materials • I know how to classify and group between an object and the material it is made from	<u>YEAR ONE</u> • Identify materials that are made from given materials

	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	Smooth (adjective) Bendy (adjective) Waterproof (adjective) Object (noun) Material (noun) Wood (noun) Plastic (noun) Glass (noun) Metal (noun) Water (noun) Rock (noun) Absorbent (adjective) Opaque (adjective)	• I know how to identify the properties of everyday materials • I know how to identify objects that are natural and those that are man – made • I know how to predict and identify if an object will float or sink during a fair test • I know how to identify which materials are best for different objects • I know how to carry out a fair test and build a structure strong enough to withstand wind • I know how to carry out a fair test building a waterproof structure • I know how to identify the properties of glass and its uses • I know how to identify that materials are used to create a variety of furniture • I know how to classify a variety of fabrics and understand their different properties	• Identify materials that would be suitable to wear in wet weather • Identify materials for building a house • Identify man – made materials, absorbent and opaque materials
	<u>YEAR TWO – Uses of Everyday Materials</u> Pupils should be taught to: • 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	<u>YEAR TWO</u> Materials (adjective) Absorbent (adjective) Property (noun) Rigid (adjective) Flexible (adjective) Suitable (adjective) Reflective (adjective) Opaque (adjective) Translucent (adjective) Transparent (adjective)	<u>YEAR TWO</u> • I know how to identify different materials and their uses • I know how to group the materials and select the right ones to build a bridge • I know how to carry out a fair-test of the stretchiness of materials • I know how to identify how materials can change shapes • I know how to identify and compare suitable everyday materials for a purpose	<u>YEAR TWO</u> • Identify what given materials can be used for • Identify the force used with a material

			• I know how to identify and compare a variety of materials which change shape to make a road	
	<u>YEAR THREE - Rocks</u> Pupils should be taught to: • 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.	<u>YEAR THREE</u> Crust (noun) Decay (verb) Fossil (noun) Geologist (noun) Igneous (adjective) Impermeable (adjective) Inner core (noun) Mantle (noun) Metamorphic (adjective) Microbe (noun) Permeable (adjective) Rock (noun) Sedimentary (adjective) Soil (noun)	<u>YEAR THREE</u> • I know how igneous rocks are formed and their properties. • I know how sedimentary and metamorphic rocks are formed and their properties. • I know about weathering and the suitability of rocks for different purposes. • I know how water contributes to the weathering of rocks. • I know how fossils are formed. • I know different types of soil.	<u>YEAR THREE</u> • Describe how fossils are formed. • Identify different rocks and types of rock. • Describe what soil is made from.
	<u>YEAR FOUR – States of Matter</u> Pupils should be taught to: • compare and group materials together, according to whether they are solids, liquids or gases • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	<u>YEAR FOUR</u> Thermometer (noun) Melting point (noun) Freezing point (noun) Boiling point (noun) Solid (adjective) Liquid (noun) Gas (noun) Evaporation (verb) Particles (noun) Condensation (verb)	<u>YEAR FOUR</u> • I know the three states of matter. • I know how particles behave in solids, liquids and gases. • I know melting points. • I know freezing and boiling points. • I know about evaporation and condensation. • I know about the water cycle.	<u>YEAR FOUR</u> • Describe particles in solids, liquids and gases. • Identify the freezing and boiling point of water. • Describe the process of evaporation and condensation. • Conduct a fair test.

		Water vapour (noun) Substance (noun)		
	<u>YEAR FIVE – Properties of Materials</u> Pupils should be taught to: • 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 • 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	<u>YEAR FIVE</u> Conductive (adjective) Magnetic (adjective) Thermal (adjective) Conduction (verb) Hardness (adjective) Force (verb) Dissolve (verb) Solute (noun) Solvent (noun) Substance (noun) Filtering (verb) Evaporation (verb)	<u>YEAR FIVE</u> • I know properties of materials • I know thermal conductors and thermal insulators • I know hardness of materials • I know materials that are soluble in water • I know how to investigate the solubility of materials • I know how mixtures can be separated by filtering, sieving, evaporating or by magnets	<u>YEAR FIVE</u> • Identify and explain properties of particular materials and reasons for their uses • Sort materials • Identify methods of separation • Carry out a fair test
	<u>YEAR FIVE – Changes of Materials</u> Pupils should be taught to: • 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.	<u>YEAR FIVE</u> Solute (noun) Solvent (noun) Reversible (verb) Evaporate (verb) Chemical Change (noun) Effervescence (verb) Fair test (noun) Corrosion (verb) Combustion (verb) Extinguish (verb) Reaction (verb) Carbon Dioxide (noun)	<u>YEAR FIVE</u> • I know how to use evaporation to recover the solute from a solution. • I know reversible changes. • I know how to observe chemical reactions and describe how we know new materials are made. • I know how to investigate rusting reactions. • I know how to investigate burning reactions. • I know how to investigate chemical reactions	<u>YEAR FIVE</u> • Identify reversible/irreversible changes • Describe evaporation, condensation, freezing, melting

Biology

	Key knowledge progression to be explicitly taught throughout unit of work (and revised constantly through retrieval practice)	**Key vocabulary** All vocabulary on ARCHES Planners (to be explicitly taught)	**Key skills progression**
Nursery	Pupils should be taught to: • 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 vocabulary. • Show interest in different occupations. • 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. • Continue developing positive attitudes about the differences between people.	Seasons (noun) Weather (noun) Autumn (noun) Winter (noun) Spring (noun) Summer (noun) Taste (noun) Touch (noun) Smell (noun) Hear (noun) Sight (noun) Plants (noun Flowers (noun) Trees (noun)	• Can name their five senses • Uses senses in hands on exploration • Can identify what you need to wear for each season and why • Understands that the weather changes and that in different countries you have different weather • Can explain the life cycle of a plant and butterfly • Plant seeds and cares for growing plants with support • Understands the difference between plants and animals
Reception	Pupils should be taught to: • Describe what they see, hear and feel whilst outside • Explore the natural world around them. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them	Seasons (noun) Weather (noun) Autumn (noun) Winter (noun) Spring (noun) Summer (noun) Taste (noun) Touch (noun) Smell (noun) Hear (noun) Sight (noun) Plants (noun Flowers (noun)	• Can name their five senses • Explain what their five senses are • Understands the effect of seasons on the natural world, discussing when and how things grow • Names and orders seasons • Understands the need to respect and care for the natural environment and all things • Can talk about different life cycles • Can say what plants need to survive

		Trees (noun)	

	Key knowledge progression to be explicitly taught throughout unit of work (and revised constantly through retrieval practice)	**Key vocabulary** All vocabulary on ARCHES Planners (to be explicitly taught)	**Key skills progression**	**Assessment outcome**
PLANTS	<u>YEAR ONE</u> Pupils should be taught to: • Identify and name a variety of common and wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees	<u>YEAR ONE</u> Leaf (noun) Stem (noun) Root (noun) Flower (noun) Petal (noun) Seed (noun) Trunk (noun) Branch (noun) Bark (noun) Deciduous (adjective) Evergreen (adjective)	<u>YEAR ONE</u> • I know how to observe how a seeds grows into a plant • I know how to identify the parts of a plant and tree • I know how to identify and classify plants that grow in the same environment • I know how to identify deciduous and evergreen trees • I know how to observe how plants change over time • I know how to carry out a fair test	<u>YEAR ONE</u> • Name and label plants and trees. • Identify the stages of a flowering plant • Identify wildflowers • Identify a deciduous tree
	<u>YEAR TWO</u> Pupils should be taught to: • Observe and describe how seeds and bulbs into mature plants • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	<u>YEAR TWO</u> Seedlings (noun) Shoot (noun) Healthy (adjective) Temperature (noun) Germination (noun) Reproduction (noun) Nutrients (noun) Shade (noun) Bulb (noun)	<u>YEAR TWO</u> • I know how to identify and classify seeds and bulbs • I know how to carry out a fair test to see what a plant need to grow • I know how to observe a plant and describe what it needs to grow and stay healthy • I know how to observe and describe the life cycle of a plant • I know how to observe and record the growth of plants over time	<u>YEAR TWO</u> • Explain what a plant needs and why it's important • Explain how plants reproduce

			• I know how to identify and classify how plants adapt to suit their environment	
	YEAR THREE Pupils should be taught to: • 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.	YEAR THREE Fertiliser (noun) Potassium (noun) Chlorophyll (noun) Photosynthesis (noun) Xylem (noun) Phloem (noun) Anther (noun) Filament (noun) Stomata (noun) Transpiration (verb) Pollen (noun) Nectar (noun)	YEAR THREE • I know the effect of different factors on plant growth. • I know the functions of different parts of a flowering plant and how they are used in photosynthesis. • I know how water is transported within plants. • I know the part that flowers play in the life cycle of flowering plants. • I know the pollination process and the ways in which seeds are dispersed. • I know how to compare the effect of different factors on plant growth	YEAR THREE • Label parts of the flower. • Describe the functions of parts of a plant. • Identify types of seed dispersal. • Identify the stages of a plant's life cycle. • Describe photosynthesis.
	YEAR ONE Pupils should be taught to: • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	YEAR ONE Herbivore (noun) Carnivore (noun) Omnivore (noun) Senses (noun) Fish (noun) Reptile (noun) Amphibian (noun)	YEAR ONE • I know how to identify the basic parts of the human body • I know how to identify and record information about my eyes and sight	YEAR ONE • Identify and name parts of the body • Identify the 5 senses and the correct body part • Identify different groups of animals and their characteristics

ANIMALS INCLUDING HUMANS	• 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.	Head (noun) Body (noun) Eyes (noun) Ears (noun) Mouth (noun) Teeth (noun) Leg (noun) Tail (noun) Wing (noun) Claw (noun) Fin (noun) Scales (noun) Fur (noun) Beak (noun) Paw/hooves (noun)	• I know how to identify and record information about my ears and hearing • I know how to identify and record information about my tongue and taste • I know how to identify and record information about my sense of touch • I know how to identify and record information about my sense of smell with my nose • I know how to sort and group animal families • I know how to group and classify mammals and birds • I know how to sort and classify amphibians, reptiles and fish • I know how to identify what different groups of animals eat • I know how to group and classify wild animals and pets • I know how to identify the characteristics of animals	• Identify cold-blooded animals • Identify the meaning of carnivores, herbivores and omnivores
	<u>YEAR TWO</u> 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	<u>YEAR TWO</u> Hygiene (noun) Exercise (noun) Growth (noun) Heartbeat (noun) Breathing (verb) Life Cycle (noun) Germs (noun) Disease (noun) Nutrition (noun) Reproduce (verb) Offspring (noun)	<u>YEAR TWO</u> • I know how to identify and classify the stages of the human life cycle • I know how to describe the stages of a human life cycle • I know how to identify the offspring and parents of an animal • I know how to identify the stages in a life cycle of a chicken • I know how to identify the stages in a life cycle of a butterfly	<u>YEAR TWO</u> • Identify the stages of a human life cycle • Name the stages of a frog's life cycle • Sequence the life cycle of a butterfly • Draw examples of different types of foods • Identify 5 things a human needs to survive

	right amounts of different types of food, and hygiene.	Healthy (noun)	• I know how to identify the stages in a life cycle of a frog • I know how to observe and identify what an animal needs to survive • I know how to observe and identify what a human needs to survive • I know how to identify and classify what is needed for a healthy balanced diet • I know how to carry out a fair test on the impact of exercise on the body • I know how to carry out a fair test on the importance of hygiene	• Identify what a human needs to keep themselves clean • Identify the food groups on the pyramids
	YEAR THREE Pupils should be taught to: • 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.	YEAR THREE Vitamin (noun) Mineral (noun) Nutrition label (noun) Balanced (adjective) Endoskeleton (noun) Exoskeleton (noun) Radius (noun) Tibia (noun) Rib cage (noun) Spine (noun) Hamstrings (noun) Biceps (noun)	YEAR THREE • I know the 5 key food groups. • I know about nutrition in the food we eat. • I know about different types of skeletons. • I know about the human skeleton. • I know about animals and their skeletons. • I know the role of muscles.	YEAR THREE • Label the parts of the human skeleton. • Label the human muscles. • Identify animal skeletons. • Identify the 5 major food groups.
	YEAR FOUR Pupils should be taught to: • 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.	YEAR FOUR Herbivore (noun) Carnivore (noun) Omnivore (noun) Producer (noun) Predator (noun) Prey (noun) Digestion (noun) Incisor (noun) Canine (noun)	YEAR FOUR • I know the organs of the digestive system. • I know the functions of the main organs in the digestive system. • I know the types of human teeth and their functions. • I know the effect of different liquids on the teeth. • I know food chains.	YEAR FOUR • Describe the functions of the digestive system. • Identify types of human teeth. • Describe the effects of tooth decay.

		Molar (noun) Premolar (noun) Nutrients (noun) Absorb (verb)	• I know food webs.	
	YEAR FIVE Pupils should be taught to: • describe the changes as humans develop to old age.	YEAR FIVE Offspring (noun) Foetus (noun) Dependent (noun) Adolescent (noun) Puberty (noun) Gestation (noun) Pregnant (adjective) Toddler (noun) Prenatal (adjective) Breeding (noun) Embryo (noun) Hormones (noun)	YEAR FIVE • I know the key stages of a mammal's life cycle. • I know the gestation periods of mammals. • I know about foetal development. • I know how to investigate the hand span of different aged children. • I know about the changes experienced during puberty. • I know the changes humans may experience during adulthood and old age.	YEAR FIVE • Identify and describe different stages of the human life cycle.

	YEAR SIX Pupils should be taught to: • 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.	YEAR SIX Circulatory system (noun) BPM Diet (noun) Pulse (noun) Pulse rate (noun) Oxygenated (adjective) Deoxygenated (adjective) Atrium (noun) Ventricle (noun) Vessel (noun) Valve (noun) Diffusion (verb) Osmosis (verb)	YEAR SIX • I know the functions of the heart and its role in the circulatory system. • I know how to identify and compare blood vessels. • I know how to explore blood. • I know how the body transports water and nutrients. • I know what affects heart rate. • I know about the impact of drugs and alcohol on the body.	YEAR SIX • Describe the function of the heart. • Describe the functions of blood vessels • Name ways to look after your heart. • Name effects of taking drugs on the body.

LIVING THINGS AND THEIR HABITATS	YEAR TWO Pupils should be taught to: • 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 micro-habitats • 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.	YEAR TWO Living (adjective) Non-living (adjective) Habitat (noun) Food chains (noun) Biomes (noun) Depend (adjective) Invertebrate (noun) Microhabitat (Noun) Minibeast (noun) Offspring (noun) Source (noun) Vegetation (noun) Vertebrate (noun)	YEAR TWO • I know how to identify and classify living, dead and things that have never been alive • I know how to identify and name a variety of plants and animals in a microhabitats • I know how to observe habitats and design a microhabitat where living things could survive • I know how to observe what an animal needs to eat to survive • I know how to research a simple food chain • I know how to research and identify the journey food makes from farm to the supermarket • I know how to identify and classify habitats • I know how to observe the changes in the environment • I know how to research and observe the problems in the rainforest • I know how to identify and describe life in the ocean • I know how to identify and classify the Arctic and Antarctic habitats • I know how to observe and create a model of one of the habitats	YEAR TWO • Draw your own food chain • Identify different habitats • Identify different microhabitats • Explain what the groups of living, dead and non-living mean • Sort the animals and their habitats • Identify what is happening in the rainforest

	YEAR FOUR Pupils should be taught to: • 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	YEAR FOUR Adapted (verb) Camouflage (verb) Coastal (noun) Grassland ((noun) Classify (verb) Species (noun) Sub-group (noun) Classification key (noun) Region (noun) Blubber (noun) Ecosystem (noun) Oxygenised (adjective)	YEAR FOUR • I know different habitats. • I know how to research a habitat. • I know how animals can be classified. • I know how to create a classification key. • I know about adaptations and classification within species. • I know how to classify pond plants.	YEAR FOUR • Identify vertebrates/invertebrates. • Classify living things in a Venn diagram. • Classify living things in a Carroll diagram.
	YEAR FOUR – CONSERVATION Pupils should be taught to: • recognise that environments can change and that this can sometimes pose dangers to living things	YEAR FOUR Migrate (verb) Monsoon (noun) Deforestation (verb) Biodiversity (adjective) Emissions (verb) Pollution (noun) Pesticide (noun) Contaminate (verb) Drought (noun) Freshwater (noun) Marine sanctuaries (noun) Conservation areas (noun)	YEAR FOUR • I know ecosystems and how they are affected by changes in the seasons. • I know human impact on the environment through deforestation. • I know about air pollution. • I know about water pollution. • I know methods to conserve water. • I know that humans can have a positive impact on nature.	YEAR FOUR • Identify and describe natural and man-made disasters. • Describe the effect of greenhouse gases.

	YEAR FIVE Pupils should be taught to: • 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.	YEAR FIVE Living organism (noun) Naturalist (noun) Primatologist (noun) Metamorphosis (verb) Endangered (adjective) Asexual (adjective) Reproduction (verb) Fertilisation (verb) Placental mammal (adjective) Monotreme mammal (adjective)	YEAR FIVE • I know the life process of a plant. • I know the life cycles of mammals. • I know how to compare the life cycles of insects and amphibians. • I know the life cycles of birds and reptiles. • I know about the life and work of Jane Goodall and David Attenborough. • I know how to research and present the life cycle of a creature.	YEAR FIVE • Using taught knowledge and secondary research, accurately draw, label and explain a plant and animal life cycle
	YEAR SIX Pupils should be taught to: • 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	YEAR SIX Classification (noun) Microorganism (noun) Habitat (noun) Living organism (noun) Species (noun) Microscopic (adjective) Ecosystem (noun) Kingdom (noun) Linnaean System (noun) Cell (noun)	YEAR SIX • I know how to classify living organisms • I know and understand the kingdoms of life • I know how to classify living things using the Linnaean system • I know how to identify the characteristics of different types of microorganisms • I know how to investigate asexual reproduction through spore dispersal • I know how to classify and describe a living organism	YEAR SIX • Name the seven life processes • Classify living organisms into kingdoms • Describe microorganisms

	<u>YEAR SIX – Looking after the environment</u> Pupils should be taught to: • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • 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 • Using test results to make predictions to set up further comparative and fair tests	<u>YEAR SIX</u> Weather (noun) Global warming (verb) Recycle (verb) Biodegrade (verb) Net zero (adjective) Greenhouse gases (noun) Industrial revolution (noun) Combustion (verb) COP (noun) Conference (noun) Species (noun) Habitat (noun)	<u>YEAR SIX</u> • I know about climate change • I know ways to reduce how much rubbish is sent to landfill • I know ways to reduce energy consumption • I know what happens when fuels are burnt • I know the outcomes of COP26 • I know how to compare data associated with the weather	<u>YEAR SIX</u> • Describe global warming and its effects • Explain ways to prevent global warming
SEASONAL CHANGES	<u>YEAR ONE</u> Pupils should be taught to: • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies.	<u>YEAR ONE</u> Seasons (noun) Evergreen (adjective) Deciduous (adjective) Weather (noun) Autumn (noun) Winter (noun) Spring (noun) Summer (noun)	<u>YEAR ONE</u> • I know how to identify the four seasons • I know how to identify the changes in autumn • I know how to identify the changes in winter • I know how to identify the changes in spring • I know how to identify the changes in summer • I know how to carry out a fair test to identify the weather changes	<u>YEAR ONE</u> • Identify and classify the months of each season • Match the season the clothes that are appropriate • Identify the 4 seasons • Explain the different between a deciduous and evergreen tree
EVOLUTION AND INHERITANCE	<u>YEAR SIX</u> Pupils should be taught to: • recognise that living things have changed over time and that fossils provide information about living	<u>YEAR SIX</u> Inherit (verb) Adapt(verb) Epiphytes (noun) Fossil (noun)	<u>YEAR SIX</u> • I know how offspring vary and are not identical to their parents. • I know about animal adaptations. • I know about plant adaptations.	<u>YEAR SIX</u> • Identify the stages of human evolution in order • Describe why plant/animal adaptations are useful.

	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	Mary Anning (noun) Palaeontologist (noun) Ichthyosaurus (noun) Charles Darwin (noun) Evolved (verb) Natural selection (verb) Ancestor (noun) Homo sapiens (noun)	• I know what we can learn from fossils. • I know about the theory of evolution. • I know about human evolution.	

Vocabulary

Vocabulary is V.I.T.A.L in Science

Valued	We value vocabulary in **Science** and in everything we do.
Identified	**Science vocabulary** is identified by the **Science subject leader** and is explicitly planned for.
Taught	Vocabulary is explicitly taught in every lesson. Our Knowledge Organisers are used as a teaching tool for **key Science focused vocabulary** and the **Science medium term plans** include additional vocabulary to be taught.
Applied	Once vocabulary is taught, it is applied. Children apply their vocabulary in their speaking and listening, writing and assessment **outcomes in Science**.
Learned	Vocabulary is revisited and relearned. Vocabulary sticks in the children's long-term memory. Lesson by lesson, year by year, **children revisit and relearn key Science vocabulary**.

EYFS

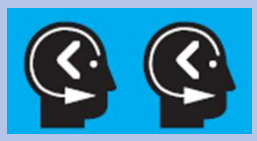
Through an **'explosion of experiences',** our youngest scientists are exposed to the foundations of their understanding of the world learning. Carefully planned understanding of the world experiences are provided for our children. High quality lessons, stories and rhymes and continuous provision in EYFS provides the building blocks for our St Mary's scientists. Knowledge and understanding of the world vocabulary is planned for and staff ensure children are exposed to the correct terminology when exploring experiences that have understanding of the world science related links. Staff are role models in demonstrating scientific vocabulary and this is further enhanced in our excellent provision. The foundations of understanding of the world learning in EYFS is linked to Year 1 and beyond.

Developing a strong grounding in scientific skills and knowledge is essential so that all children develop the necessary building blocks to excel scientifically. Children should be able to start to think scientifically, asking questions and exploring the world around. By providing frequent and varied opportunities to explore, experience and investigate. Children will begin to develop the foundations to secure a base of science knowledge and vocabulary. Through exciting and stimulating themes which engage the children's interest the EYFS science (KUW) curriculum provides rich opportunities for children to develop their curiosity and skills across all areas of biology, physics and chemistry in a fun way. It is important that children develop positive attitudes and interests in science form the beginning of their school journey.

Both our staff and children are enthusiastic about **Science**. Through ongoing CPD, we strive to ensure our teachers have expert knowledge of the science they teach. Our pedagogy is firmly based upon our curriculum intent of embedding concepts into long-term memory so that they can be recalled, to ensure substantive and disciplinary knowledge and skills can be applied fluently.
For both schools, the St Mary's Catholic Academy's model ensures that lessons are effectively sequenced so that new knowledge and skills build on what has been taught before and towards defined end points. We firmly believe that all children should have full access, including those with additional needs, to our Science curriculum therefore lessons are scaffolded where appropriate in order to meet the needs of all our children. The children work scientifically throughout their St Mary's journey and can identify the type of enquiry they will use at the start of each lesson by using the 5 types of enquiry symbols.

Lesson Structure

The sequence of lessons across Science follows the same structure:

St Mary's Catholic Academies Lesson structure	
	**Lesson Part 1: Focus on Feedback** This part of the lesson allows for children to revisit their learning from the previous lesson to address any misconceptions or to complete a challenge for retrieval practice or to further deepen their knowledge of a concept. Feedback from the previous lesson should provide children with prompts to address misconceptions to promote resilience or where necessary should provide specific, accurate and clear feedback focusing directly on the misconception.
	**Lesson part 2: Recap** This part of the lesson allows for retrieval practice of previous learnt knowledge, concepts or processes. Depending on the outcome of teacher assessment from the previous lesson, this could also include revisiting a misconception at a whole class level. The task should allow for consolidation of prior learning and promote the application of this to other topics where appropriate.
	**Lesson Part 3: New learning** Vocabulary is introduced or in some cases revisited at the start of the hook. Explicit teaching of new vocabulary is taught here including the teaching of the vocabulary in a context where applicable. Retrieval practice of key vocabulary is also completed. The key learning should be shared with the pupils at the start of this section. Effective teaching modelling is evident during this part of the lesson with teachers clearly modelling their own thinking.
	**Lesson Part 4: Independent Task** The independent task allows for children to practise or apply their learning. Present the new learning small steps. This is a vital opportunity for assessment and all adults in the class provide immediate feedback through live marking.
	**Lesson Part 5: Plenary** The plenary is an essential opportunity to consolidate learning, gauge levels of understanding and develop pupils' skills in explaining, reasoning, and justifying where appropriate. This part of the lesson provides teachers with immediate, formative assessment of the children's understanding from the lesson and any misconceptions which may need to be addressed either within this part of a lesson or at the start of the next lesson.

Impact

We understand that we may not see the true impact of our **Science** curriculum on our children as our **science curriculum** is just the beginning of a lifetime of learning.

Our well-constructed and well-taught **science curriculum** leads to great outcomes. Our results are a reflection of what our children have learnt. At The St Mary's Catholic Academies, our philosophy is that broad and balanced leads to great outcomes and meeting end points at the end of each key stage. National assessments are useful indicators of the outcomes our children achieve.

We ensure all groups of children are given the knowledge and cultural capital they need to succeed in life. We strive to ensure that our children are equipped with the skills (through a growth mindset approach) to fluently be able to retrieve key facts from their semantic memory.

The quality of our children's work, at every stage, is of a high standard. All learning is built towards an end point and at each stage of their education, we prepare our children for the next stage.

The impact of St Mary's Catholic Academies' **science** curriculum is measured through the following:

- Work is assessed at the end of each lesson and at the end of each sequence
- Pupil voice
- Progress evident in children's books and record of experiences
- Seeking views of parents where appropriate