



St Andrew's Primary School
Science Curriculum Overview

Intent:

At St Andrew's Primary we fully recognise Science as a core subject across key stages one and two and value its importance in the EYFS curriculum through developing children's Knowledge of the world. There are two main strands to the teaching of Science in our school. The first is to ensure that the children are taught the specific scientific knowledge set out in the National Curriculum, and covering topics including:

- Plants
- Animals including humans
- Rocks
- Light and Sound
- Forces and magnets
- Living things and their habitats
- Electricity
- States of matter
- Evolution and inheritance
- Earth and space
- The seasons
- Materials

The second is to encourage a spirit of curiosity about the world around them and to develop the skills of scientific enquiry: to be able to predict what will happen in a practical activity, to conduct a fair or comparative tests and to record their results accurately, describing clearly what they have discovered. As part of this, children become increasingly aware of the type of scientific enquiry that they are carrying out or need to carry out to answer their scientific questions.

The types of scientific enquiry are:

- Observation over time
- Research
- Pattern Seeking
- Comparative and Fair testing
- Classifying and sorting
- Problem solving

The Science curriculum at St Andrew's intends to give all children a strong understanding of the world around them, providing them with specific skills and knowledge to enjoy science by ensuring that lessons are engaging and fun, and helping them to think scientifically including having access to the language and vocabulary of science. It also develops their understanding of the uses and implications of science, today and for the future. Our intention is to develop them into budding scientists, who care for the world around them, are curious about what they see and experience, and are able to use science to understand how human activity impacts on the planet.

Implementation:

At St Andrew's we use Curriculum Maestro to build our bespoke Science curriculum. Using the Curriculum Maestro tools, we have ensured that there is continuity, progression and coverage across all year groups. Science is taught in projects which match the National Curriculum e.g. The Properties and Changes of Materials is taught within a project called Frozen Kingdoms.

The science projects are sequenced to develop the children's knowledge and understanding and if possible make links to other subjects. For example, in Year 3, the projects Plant Nutrition and Reproduction and Light and Shadows are taught alongside the design and technology project Greenhouse and the art and design project Beautiful Botanicals. These links allow for children to embed their knowledge in new and often real-life contexts. The sequencing of projects ensures that children have the knowledge and vocabulary to comprehend subsequent projects fully.

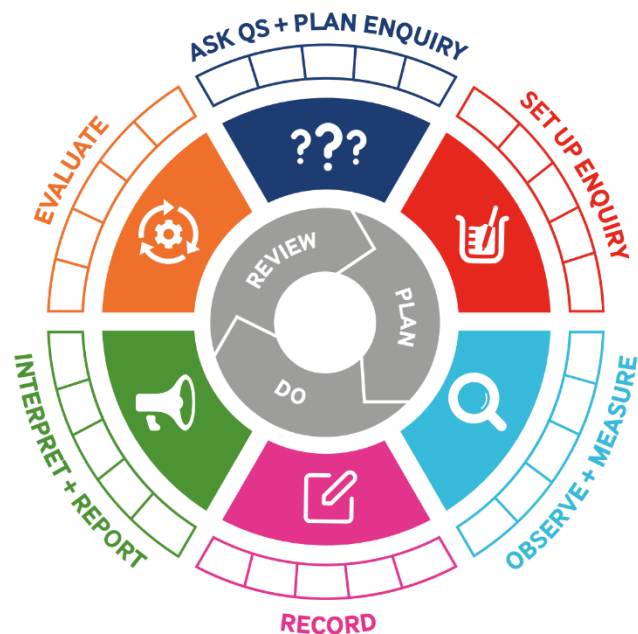
Each project's place in the year has also been carefully considered. For example, projects that involve growing plants or observing animals are positioned at a suitable time of year to give children the best possible opportunity to make first-hand observations. Also, each project is carefully sequenced so that the children develop the skills to work scientifically e.g. In Year 1 Animal Parts children ask simple questions and recognise that they can be answered in different ways and in Year 3 in Animal Nutrition they ask relevant questions and using different types of scientific enquiries to answer them. This progresses to UKS2 where children plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Each project is knowledge and vocabulary rich.

Children are given knowledge organisers that contain the core knowledge and vocabulary at the start of each project. These are referred to throughout the projects. Most lessons have clear and precise knowledge notes and essential vocabulary to scaffold learning. Using Curriculum Maestro tools, previous teaching is identified. Each lesson begins with retrieval practise to draw upon and embed previous knowledge.

In Early Years, children engage in scientific activities through their study and acquirement of Understanding the World (UW). Reception pupils follow the Early Years Curriculum for UW and are assessed initially against Development Matters criteria, moving to the Early Years Profile towards the end of their Reception year.

To ensure the pupils at St Andrew's are prepared for the next steps of their science learning journey and develop an inquisitive mind, they are explicitly taught the skills of enquiry in accordance with the Primary Science Teaching Trust:

TAPS Working Scientifically Cycle



Additionally, St Andrew's Primary offers wider opportunities to promote the love of science such as, gardening club, nature club and regular forest school opportunities.

Impact:

As a result of our curriculum, children at St Andrew's develop a love of science and an increased understanding of the impact that the subject can have on their own and others' lives. They can demonstrate a clear progression of knowledge and skills in Science and have an understanding of how Science can be used to benefit society. Our teaching ensures that they become resourceful learners who develop independent thinking and questioning skills by the time they leave our school and they go to secondary school with a good scientific knowledge on which to base their deeper learning. In addition, our children also develop an understanding of the importance of caring for the environment sustainably on a variety of levels, including in their own locality and in relation to communities around the world.

Teachers measure the impact of science learning through formative assessment usually in the form of discussion and questioning. This allows for misconceptions and gaps to be addressed immediately and also informs future planning. Strategies such as pupil books studies, drop ins, staff and pupil voice are used by leaders to measure impact throughout the school. Pupils should leave school with the foundations for understanding the world around them.

The expected impact of science learning at St Andrew's is that children will:

- Demonstrate a love of science work and an interest in further study and work in this field.
- Retain knowledge that is pertinent to Science with a real life context.
- Be curious about the world around them and ask questions to deepen their understanding.
- Articulate their understanding of scientific concepts and be able to reason scientifically use rich language linked to science.
- Work collaboratively and practically to investigate and experiment.
- Use their mathematical knowledge to collect, record and interpret results.
- Achieve age related expectations in Science at the end of their cohort year.
- Meet the end of Key Stage 2 stage expectations outlined in the national curriculum for Science.

Cycle A

	Autumn Term	Spring Term	Summer Term	
Acorn Class (EYFS)	Lets expore Marvellous machines	Long ago Ready steady grow	Animal safari At the beach	
Acorn and Willow Class (Y1 and Y2)	Everyday Materials This project teaches children that objects are made from materials. They identify a range of everyday materials and their sources. Children investigate the	Seasonal Changes This project teaches children about the seasons, seasonal changes and typical seasonal weather and events. They learn about measuring the weather and the role	Animal Parts This project teaches children about animals, including fish, amphibians, reptiles, birds, mammals and invertebrates. They identify and describe	

	properties of materials and begin to recognise that a material's properties define its use. Human Senses This project teaches children that humans are a type of animal known as a mammal. They name and count body parts and identify similarities and differences. They learn about the senses, the body parts associated with each sense and their role in keeping us safe.	of a meteorologist. Children begin to learn about the science of day and night and recognise that the seasons have varying day lengths in the UK.	their common structures, diets, and how animals should be cared for.
Maple Class (Y3 and Y4)	Animal Nutrition and the Skeletal System This project teaches children about the importance of nutrition for humans and other animals. They learn about the role of a skeleton and muscles and identify animals with different types of skeleton.	Electrical Circuits and Conductors This project teaches children about electrical appliances and safety. They construct simple series circuits and name their parts and functions, including switches, wires and cells. They investigate electrical conductors and insulators and identify common features of conductors. It also teaches children about programmable devices. They combine their learning to design and make a nightlight.	Forces and Magnets This project teaches children about contact and non-contact forces, including friction and magnetism. They investigate frictional and magnetic forces, and identify parts of a magnet and magnetic materials.
Oak Class (Y5 and Y6)	Forces and Mechanisms This project teaches children about the forces of gravity, air resistance, water resistance and friction, with children exploring their effects. They learn about mechanisms, their uses and how they allow a smaller effort to have a greater effect. Earth and Space	Human Reproduction and Ageing This project teaches children about animal life cycles, including the human life cycle. They explore human growth and development to old age, including the changes experienced during puberty and human reproduction.	Properties and Changes of Materials This project teaches children about the wider properties of materials and their uses. They learn about mixtures and how they can be separated using sieving, filtration and evaporation. They study reversible and irreversible changes, and

	This project teaches children about our Solar System and its spherical celestial bodies. They describe the movements of the Earth and the other planets relative to the Sun, the Moon relative to Earth, and the Earth's rotation to explain day and night.		use common indicators to identify irreversible changes.
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Cycle B

	Autumn Term	Spring Term	Summer Term
Acorn Class (EYFS)	Let's explore Marvellous machines	Long ago Ready steady grow	Animal safari At the beach
Acorn and Willow Class (Y1 and Y2)	Human Survival This project teaches children about the basic needs of humans for survival, including the importance of exercise, nutrition and good hygiene. They learn how human offspring grow and change over time into adulthood. Habitats This project teaches children about habitats and what a habitat needs to provide. They explore local habitats to identify and name living things and begin to understand how they depend on one another for food and shelter	Animal Survival This project teaches children about growth in animals by exploring the life cycles of some familiar animals. They build on learning about the survival of humans by identifying the basic needs of animals for survival, including food, water, air and shelter.	Plant Survival This project teaches children about the growth of plants from seeds and bulbs. They observe the growth of plants firsthand, recording changes over time and identifying what plants need to grow and stay healthy. Uses of Materials This project teaches children about the uses of everyday materials and how materials' properties make them suitable or unsuitable for specific purposes. They begin to explore how materials can be changed.

Maple Class (Y3 and Y4)	Plant Nutrition and Reproduction This project teaches children about the requirements of plants for growth and survival. They describe the parts of flowering plants and relate structure to function, including the roots and stem for transporting water, leaves for making food and the flower for reproduction. Light and Shadows This project teaches children about light and dark. They investigate the phenomena of reflections and shadows, looking for patterns in collected data. The risks associated with the Sun are also explored.	States of Matter This project teaches children about solids, liquids and gases and their characteristic properties. They observe how materials change state as they are heated and cooled, and learn key terminology associated with these processes. Grouping and Classifying This project teaches children about grouping living things, known as classification. They study the animal and plant kingdoms and use and create classification keys to identify living things.	Food and the Digestive System This project teaches children about the human digestive system. They explore the main parts, starting with the mouth and teeth, identifying teeth types and their functions. They link this learning to animals' diets and construct food chains to show the flow of energy. Sound This project teaches children about sound, how sound is made and how sound travels as vibrations through a medium to the ear. They learn about pitch and volume and find out how both can be changed.
Oak Class (Y5 and Y6)	Circulatory System This project teaches children about the transport role of the human circulatory system, its main parts and primary functions. They learn about healthy lifestyle choices and the effects of harmful substances on the body.	Electrical Circuits and Components This project teaches children about electrical circuits, their components and how they function. They recognise how the voltage of cells affects the output of a circuit and record circuits using standard symbols. It also teaches children about programmable devices, sensors and monitoring. They combine their learning to design and make programmable home devices.	Light Theory This project teaches children about the way that light behaves, travelling in straight lines from a source or reflector, into the eye. They explore how we see light and colours, and phenomena associated with light, including shadows, reflections and refraction. Evolution and Inheritance This project teaches children how living things on Earth have changed over time and how fossils provide evidence for this. They learn how characteristics are passed from parents to their offspring and how variation in offspring can affect their survival, with changes (adaptations) possibly leading to the evolution of a species.

