

St Aidan's Catholic Primary School



Science Policy 2023 - 2024

The aims of our Science Curriculum:

To:

- encourage the child to use Science as a means of investigating the natural world;
- give the child understanding which helps him/her to appreciate the scientific and technological aspects of everyday life;
- further each child's knowledge and understanding of the world around them;
- develop attitudes of curiosity, enquiry and original thought through practical experience;
- develop the skills of reasoning and evaluation of data leading to reasoned judgements based on available evidence;
- develop the child's ability to question, predict and argue rationally;
- foster the child's skills of observation, recording and in oral and written communication;
- provide opportunities for a child to work individually or with others to conduct investigations and experiments;
- develop the child's scientific language;
- encourage a sense of achievement and independence;
- give the child opportunities to use reference materials to find out about scientific ideas;
- provide safe, sound Science that is relevant and interesting

Intent- What we want our children to learn....

At St Aidan's Catholic Primary School we believe that every child can succeed in Science to become a self-assured and skilled Scientist equipped with the knowledge of the world around them and the ability to investigate scientifically. We teach Science in all year groups using a scheme of worked developed by the trust and our teaching staff which covers the National Curriculum (2014) year group expectations. We teach our Early Years children through a play based curriculum in which they can explore and learn the natural world. Opportunities for developing their scientific understanding are readily available through continuous and enhanced provision.

Meaningful links or connections are made with other subjects wherever appropriate, including: Art, Music, History, English, Maths and Geography and these links develop our overarching Learning Journeys.

Schemes of Work are coherently planned and sequenced towards sufficient substantive and disciplinary knowledge for future learning.

Substantive Knowledge: this is the concepts, laws, theories and models which are referred to in the national curriculum as 'scientific knowledge and conceptual understanding'.

Substantive knowledge is organised into the 3 subject disciplines: biology, chemistry and physics.

Disciplinary Knowledge: this is referred to in the national curriculum as 'working scientifically' and it includes knowing how to carry out practical procedures.

By learning substantive and disciplinary knowledge, pupils not only know 'the science'; they also know the evidence for it and how this evidence is gained.

New knowledge is built on what has been previously taught while working towards clearly defined end points. When units are repeated throughout the school, vocabulary and knowledge is revisited and it progresses to challenge the children's thinking further as well as introducing new ideas and material.

Our scheme of work develops children's ability to work scientifically and have a hands-on, enquiry based approach to their Science learning. Teachers are given ownership to use the scheme to create fun and engaging lessons to excite and enthuse the children to meet the needs of all.

Within the scheme the use of precise, technical scientific language is consistent across all year groups as the vocabulary used in each unit is specified. This enables children to develop the appropriate vocabulary to discuss, reason and explain their scientific understanding more clearly and precisely. Our skills and progression map further supports the children's development of vocabulary through clearly outlined expectations for all previous and future year groups. This allows teachers the opportunity to revisit what the children have learnt and also have an understanding on what they will be progressing onto.

At St Aidan's, we are developing our grounds so that we can provide our children the opportunities to explore the outside world safely. We have many families that are local to us and therefore have significant experience in the environment, but also have families that lack such experiences. Therefore, the Science curriculum learning at St Aidan's is inclusive to all of our children, allowing them the chance to familiarise themselves with the world around them and discover how the world works.

Our Science Knowledge and Skills Progression Map

This document sets out the **substantive knowledge** for each year group. This is the knowledge that involves concepts which form the underpinning structure of the subject e.g. respiration, evolution and the idea of a force. The list of substantive knowledge for science in KS1 and 2 is substantial and aims to create 'big idea' thinking in the fundamental areas of biology, chemistry and physics.

We need to frequently practice retrieving the knowledge that builds these concepts, or else we forget them, so we recap knowledge learnt in previous lessons and topics to support pupils remembering and understanding.

The document also sets out the **disciplinary knowledge**. This is the knowledge scientists need so they can collect, understand and evaluate scientific evidence – it's the scientific method and involves the development of skills such as observing, measuring, testing and recording. For example, changing one variable whilst keeping everything else the same and seeing what happens.

Implementation- What does learning in science look like?

At St Aidan's, teachers create a positive attitude to Science learning within their classrooms and reinforce an expectation that all pupils are capable of working scientifically through a hands-on, enquiry based approach to learning. Our whole school approach to the teaching and learning of Science involves the following:

- Science is taught consistently, once a week for an hour, but is discretely taught in many different contexts throughout all areas of the curriculum. Teachers take opportunities to use high quality texts to support their Science teaching.
- In EYFS, Science is developed through purposeful play based experiences which are represented in a variety of indoor and outdoor environments. The Long term plan focuses on the expectations from Development Matters / Early Years Outcomes. Photographic evidence, observations and discussions with the children are a main aspect of Science learning in EYFS.
- Using our developing Scheme of Work, teachers create fun and engaging lessons that excite and enthuse the children to meet the needs of all.
- Vocabulary is taught explicitly and reviewed every lesson.
- Existing knowledge, vocabulary and understanding is reviewed at the beginning of each topic to ensure that the children's starting points inform teaching and that it takes account of pupil voice, incorporating children's interests and needs.
- Throughout each area of Science, the children will be working scientifically, ensuring that the emphasis is on the children learning by doing. Teachers will plan and provide activities that will enable the children to test their previously held ideas.
- We build upon the knowledge and skill development of the previous years by referring to our whole school skills and knowledge progression map. As the children's knowledge and understanding increases, they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- We follow an enquiry-based approach, which involves problem-solving opportunities that allow children to apply their knowledge, and find out answers to their questions themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom.
- Teachers use precise questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning. Tasks are selected and designed to provide appropriate challenge to all learners, in line with the school's commitment to inclusion.
- Teachers demonstrate how to use scientific equipment/ resources, and various skills in order to embed scientific understanding. Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and workshops with experts.
- Teachers, children and parents will have access to knowledge organisers. Teachers will use knowledge organisers to check for progression and continuity both within and across curriculum subjects and to ensure standards and expectations for learning are being implemented. Pupils will review, revise and quiz themselves using their knowledge organisers. Parents will have a clear and easy way to be more aware of what their children are learning at primary school and thus to support them.
- Teachers will assess children against their knowledge, understanding of key vocabulary and also their ability to work scientifically. A variety of formative assessment strategies will be carried out such as: questioning, mind-mapping, concept cartoons, KWL grids, drawings, annotated diagrams, quizzes/ word games and children's communication of science ideas – oral, posters, 'if the answer is... what was the question'.

- Children are also offered visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class.
- Regular events, such as Science Week will inspire, motivate and enthuse children to celebrate all sciences and their importance in our everyday lives. These events often involve families and the wider community.

IMPACT

At St Aidan's, the impact of this is to ensure children not only acquire the appropriate age related knowledge, but also skills which will provide the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Teachers will assess children at the end of each unit and this will be passed up with the cohort so future teachers are aware of the strengths and weaknesses of the class. This gives teachers a strong understanding of whether certain objectives may need revising before knowledge is built on.

All children will have:

- A wider variety of skills linked to scientific knowledge and understanding, and scientific enquiry/investigative skills.
- Children will be able to refer to prior knowledge to support their learning in each year group and as a result, they will apply this to scientific enquiry/investigation.
- A richer vocabulary which will enable to articulate their understanding of taught concepts.
- High aspirations, which will see them through to further study, work and a successful adult life.

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