



**St. Wilfrid's
Church of England
Primary Academy**

Executive Headteacher: Mr S. Colothan



Science Policy

Updated January 2022

'I can do all things through Christ who strengthens me.'

Phillippians 4:13

Our Christian Vision

'I can do all things through Christ who strengthens me.' Philippians 4:13

1. Our **children** will be rooted in strong faith and academic foundations to thrive and succeed, knowing that Jesus is with them, every step of their journey.
2. Our **staff** will have the highest expectations and aspirations for our children, knowing that together, we can achieve anything through Christ.
3. Our **school** will be a place where children can grow in strength, to be unique and flourish in the presence of God.



Our Mission Statement



at St Wilfrid's we can

We will ensure that our children **achieve** exceptionally well.

We will nurture our children to **believe** in themselves and each other.

We will create a culture of love, **care** and respect for one another.

At St. Wilfrid's, we can do all things through Christ who gives us strength.

Our Aims

1. To provide a distinctly Christian ethos, underpinned by our Christian Values and Scripture, where children can grow spiritually and become reflective decision-makers.
2. To provide a 'literacy-rich' curriculum of the highest quality, that engages and challenges all children in our school community.
3. To provide an environment that excites and stimulates learning, fosters personal growth and responds to the individual needs of all children.
4. To provide a rich and broad education, with enrichment and extra-curricular opportunities, and unique experiences, that prepare our children socially and mentally for their future.

Our Christian Values

Our Christian Values, which are rooted in scripture, are threaded through our school, our decision making and everything that we do.

Love is at the heart of our Christian Values and all members of our school community aim to 'live out' our Christian Values in our actions and choices.



Intent

Our Science curriculum aims to provide the foundations for understanding the world through the specific disciplines of biology, chemistry and physics.

The national curriculum for science aims to ensure that all pupils:

- 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 knowledge required to understand the uses and implications of science, today and for the future.

We aim to motivate and inspire children through a curriculum that stimulates, engages and challenges all learners. Our curriculum aims to develop key scientific knowledge and concepts, whilst instilling a sense of excitement and curiosity about natural phenomena.

Science at St Wilfrid's is designed to deepen knowledge and develop skills, with literacy at the heart, ensuring effective progression across all year groups. Specialist vocabulary for science units is taught and built upon, and effective questioning to communicate ideas is encouraged.

Our Christian Values and Distinctiveness, alongside our School Mission Statement of 'Achieve, Believe and Care', are at the heart of our curriculum and all that we do at St. Wilfrid's.

Implementation

In Science, we implement an inclusive curriculum that meets the statutory requirements of the National Curriculum.

Our curriculum is well-planned and provides literacy-rich, cross-curricular opportunities. This allows the children to also apply their mathematical knowledge to enhance their understanding of Science. Working scientifically skills are built into lessons, in order to embed scientific understanding.

At the beginning of each Science unit, children demonstrate their prior knowledge, which informs planning and teaching. A series of stimulating lessons are planned, with clear knowledge and skills - based learning objectives and subject-specific vocabulary, which is included on the termly knowledge mats. Post learning tasks are planned to demonstrate progress, knowledge and understanding. Teachers assess learning in Science against knowledge-based and skill-based learning objectives.

Our curriculum is delivered through highly effective 'quality first teaching'. Enrichment opportunities, including outdoor learning, inspirational visitors and exciting educational visits, provide our children with rich experiences and enhance teaching, learning and knowledge.

Impact

Our well-planned Science curriculum ensures that children are given essential knowledge, skills and concepts to understand how science can be used to explain what is occurring, how things behave and to analyse causes.

All pupils' learning is progressive, developmental and most of all stimulating to their general interest. Children develop the skills of creativity, perseverance and co-operation to enhance their ability to learn confidently in the whole curriculum.

Rationale

Science makes an increasing contribution to all aspects of life. Children are naturally fascinated by everything in the world around them and Science makes a valuable contribution to their understanding.

Children learn by investigating and exploring the world around them. They pick up clues about what they see, touch, smell, taste and hear in order to make sense of it all. Eventually they come to conclusions which they match up with all the experiences they have had.

At St Wilfrid's we base our teaching on the 2014 National Curriculum Programmes of Study and this is particularly helpful with ensuring that there is continuity and progression.

The National Curriculum document for Science sets out a clear, full and statutory requirement for all children. It determines the content of what will be taught, and sets attainment targets for learning. The programmes of study set out what should be taught at Key Stage 1 and 2 and The Foundation Stage programmes of study for Understanding of the World are set out in the EYFS.

We believe that science for children is an introduction to the exploration of phenomena in order to gain knowledge, skills and understanding about the world around in which they live. Children will be taught how to learn from science in a logical and creative manner using investigative skills as opposed to merely learning a collection of scientific facts.

Science at St. Wilfrid's will enable children to:

- develop skills of prediction, asking questions, making inferences, drawing conclusions and giving evaluations based on evidence and their scientific understanding;
- practice mathematical skills e.g. counting, ordering numbers, measuring to an appropriate number of decimal places, drawing and interpreting graphs and bar charts in real contexts;
- learn why numerical and mathematical skills are useful in science;
- work with others, communicating their own ideas, listening to those of others and treating each person with respect;
- understand the importance of science in everyday life, including their own personal health and safety as well as respect for the environment and all living things.

Science Subject Leadership

Subject Leaders are responsible for raising attainment and improving the standards of teaching and learning in their subject. They ensure that a carefully planned, broad and balanced curriculum is implemented for Science, champion the subject and demonstrate its importance to pupils and staff.

Subject Leaders demonstrate a good understanding of how Science progresses over time and how it connects with the school's curriculum as a whole. Science Leaders have high levels of subject pedagogical content knowledge for the age range that they are teaching, and an understanding of the critical endpoints that come before and after.

Subject Leaders at St. Wilfrid's Church of England Primary Academy, work alongside other schools within The Learning Together Trust. This provides opportunities to work collaboratively and creatively with colleagues across the key stages, thus moving the Science curriculum forward, and further developing the subject. Subject Leaders lead by example, setting high standards in their own teaching and ensuring that high-quality teaching and learning of Science takes place across the school, with the achievement and engagement of all pupils being their utmost priority.

Science Subject Leaders will:

- raise the profile of Science at St. Wilfrid's Primary Academy
- lead and manage the Science effectively and have an 'expert' knowledge of the Science curriculum overview, including all unit/topics across the whole school
- confidently articulate the Science curriculum design and have a clear and ambitious vision for Science (Intent, Implementation and Impact)
- monitor, evaluate and enhance the quality of teaching, learning and assessment in Science
- ensure that there is clear progression in knowledge, skills and vocabulary in Science, across school
- support, guide and motivate colleagues in their CPD, as well as build capacity across the school
- identify the subject's needs in the context of whole school priorities and produce a Science School Development Plan annually, reviewing this termly
- audit Science resources and identify resource needs and costings in Science School Development Plans, managing allocated budgets effectively.
- provide strategic direction and development of Science across the school.
- develop their own expertise through training and evidence-based research and investigate how implementations are embedding
- effectively communicate with the Science link Governor, sharing and celebrating Science
- review and update the Science Policy, as necessary

Science Curriculum

The study of science is twofold; firstly, the development of scientific enquiry and secondly the acquisition of knowledge and understanding.

Curriculum planning in science has three phases, long-term, medium-term and short-term. The long-term plan maps the scientific topics studied in each term during the key stage. The science subject leaders have ensured that all National curriculum units are covered across the school. We often combine the scientific study with work in other subject areas so that it becomes part of a creative context for learning. At other times the children study science as a discrete subject.

The class teacher is responsible for writing short-term plans. These include:

- the key learning objectives
- opportunities for exploring, observing, classifying, researching and obtaining first hand experiences of the topic being taught
- a focused investigation or pattern seeking survey experiences
- opportunities for outdoor learning
- observations over time

We ensure that children are increasingly challenged as they move up through the school.

Where possible, the teaching of science is enhanced by the use of outside specialist staff who may deliver workshops to individual classes/year groups or through school trips.

Early Years and Foundation Stage

We teach science in Reception and Nursery classes as an integral part of the topic work covered during the year. As the reception class is part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in the Development Matters and Early Learning Goals, which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to the objective of developing a child's knowledge and

understanding of the world, e.g. through investigating the natural world around them and making observations of animals and plants.

Delivery of Science within our Curriculum

We use a variety of teaching and learning styles in science lessons. Our main aim is to develop children's scientific knowledge and understanding through the use of problem solving, observations, and practical based activities. Thinking skills play an important part in these processes. We do this through whole-class teaching, individual research and group work. We encourage the children to use appropriate scientific vocabulary and language and ask, as well as answer, scientific questions. The children have the opportunity to use a variety of data, such as statistics, graphs, pictures, and photographs. Children take part in discussions, research and problem-solving activities.

We recognise that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all, by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- setting common tasks which are open-ended and can have a variety of responses;
- setting tasks of increasing difficulty (we do not expect all children to complete all tasks); and
- grouping children by ability and setting different tasks for each ability group.

Some children with specific difficulties may, on occasion, require and receive additional support or modified tasks to suit their individual needs.

Science across the Curriculum

English

Science contributes significantly to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. Some of the texts that the children study in the literacy are of a scientific nature. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports, letters and projects and by recording information.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures, use and apply number operations and read scales off a variety of measuring instruments. They learn to estimate and predict, when working on scientific investigations. They develop the skills of accurate observation and the recording of events in tables and charts. Numbers are used in many of their answers and conclusions. Often children collect data as part of an investigation and this is displayed in graphs, tables and charts.

Computing

Where possible, children use ICT in science lessons where appropriate. They use it to support their work by learning how to find, select, and analyse information on the internet. It is also used to record, present and interpret data particularly when they are completing a problem solving or data handling data activity.

PSHE

Science makes a significant contribution to the teaching of personal, social and health education. Healthy life styles are encouraged through the study of nutrition and also through studying how to keep healthy. Children also study the way materials decay and how environments are changed for better or worse. Children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. Science promotes the concept of positive citizenship.

Spiritual, moral, social and cultural development

Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of smoking and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

Inclusion

At St. Wilfrid's Church of England Primary Academy, we teach Science to all children, whatever their ability and individual needs. Science forms part of our school curriculum policy, to provide a broad and balanced education to all children. We are very mindful of the learning needs of all of our children and those with Special Educational Needs are supported via effective planning, quality first teaching and assessment, differentiated activities as necessary, high expectations, suitable resources and recording formats. We consider the targets set for individual children in their Individual Education Plans (IEPs) and Education Health and Care plans (EHCPs).

Through our Science teaching, we provide learning opportunities that enable all pupils to make good progress within each lesson.

We strive to meet the needs of pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this.

We believe that the curriculum should be accessible to all children. This is made possible through scaffolded support, small group work, use of Knowledge Organisers and word banks, or extra time to complete learning tasks.

Advice is sought from outside agencies as appropriate, to ensure an inclusive approach. If teaching staff require additional support to meet the needs of any child, they consult our SENDCo.

Equal Opportunities and Diversity

All children at St. Wilfrid's Church of England Primary Academy, are offered a broad and balanced curriculum, differentiated to meet their needs as necessary. There is equality of access to the whole curriculum. No child is denied access to any part of the curriculum unless specific physical needs or religious/cultural considerations make it inappropriate.

At St. Wilfrid's, we are committed to providing all children with a curriculum that provides equality of opportunity and freedom from discrimination. Staff ensure that all children are treated fairly, equally and with respect. We do not discriminate against any child. All staff challenge any incidents of prejudice or racism. We record any serious incidents on CPOMS and draw them to the attention of the Executive Headteacher.

We plan Science lessons and activities to challenge and involve all pupils appropriately, according to age and capability, ethnic diversity, gender, culture, race, special educational needs or disability, and language background. Teachers use a range of strategies to ensure inclusion, and to maintain a positive ethos where children demonstrate positive and respectful attitudes towards others. Care is taken when selecting resources to ensure that a range of perspectives and viewpoints are represented, including those of men and women from different racial, national and religious groups. Careful consideration is taken to avoid stereo-typing, and bias, towards race, gender, role or disability. Through the teaching of Science, we aim to develop awareness of ethnic, cultural and economic diversity of human society and to foster positive attitudes to all people.

We deal with any issues clearly and sensitively, if they arise.

Resources

There is a range of resources to support the teaching of science units in the school. We keep these in a central store in each Key Stage. There is also a good supply of science topic books in the library.

Assessment and Recording

Assessments are made in line with the school's assessment policy and are used to inform and develop science teaching and planning. At the start of each topic children's prior knowledge is assessed. This aids planning and teaching of the topic. In addition, Ipads are used for individual research topics, as appropriate. Additionally, assessment for learning techniques are used throughout lessons where children are involved in assessing their own learning through self-assessment. From time to time children will be provided with supplementing questions, following marking for deeper learning. In Key Stage 2, past SATs questions are given to the children to apply their scientific knowledge.

We assess children's work in science using a number of relevant learning objectives appropriate to unit being taught. These levelled objectives are used by the teachers when making informal judgments during lessons through observations and when marking work completed by the child.

At the end of the school year each pupil's level of attainment, across the units taught, is summarised and recorded on Target Tracker. We pass this information on to the next teacher to enable continuity and progression.

The science subject leader reviews a sample of children's science work to ensure consistency and progression throughout the school. Samples of children's work is also retained in a Portfolio and used to demonstrate what the expected level of achievement is in science for each age group in the school.

Monitoring and Evaluation

Monitoring and evaluation will be carried out by the:

- Senior Leadership Team
- Head of School Improvement
- Science Subject Leaders
- Science Governor
- Class teachers

All teachers are responsible for monitoring standards in their class. Science Subject Leaders, under the direction of the Senior Leadership Team, take the lead in this. Monitoring will take place according to current school cycle. Using whole school priorities, identified by the Senior Leadership Team, subject leaders are responsible for producing a School Development Plan for Science, to allow for progression and development of the subject.

Science Subject Leaders will also monitor children's work books and long term and medium-term plans, to ensure that the Programmes of Study are being effectively taught and match the needs and abilities of the pupils. Subject leaders have curriculum release time and directed time, in which to fulfil their role.

Science subject leaders are responsible for:

- monitoring the standard of work and the quality of teaching and learning in Science and pupils' progress and standards
- supporting colleagues in the planning, teaching and assessment of Science (through the use of 'book looks', pupil voice, lesson observations, discussion with teachers, subject audit, data analysis, and other monitoring activities that may be required), providing a strategic lead and direction for the subject in school
- monitoring and reviewing the implementation of policy and units of work
- ensuring there are rigorous assessment systems in place to enable teachers and pupils to monitor progress and attainment in Science
- monitoring and analysing assessments, holding teachers to account
- liaising with the Executive Headteacher and Governors to feedback on the monitoring and impact of Science across the school

Staff Support and Training

St. Wilfrid's Church of England Primary Academy believes that all staff should be involved in a continuing process of improvement. Our school is committed to fostering a positive ethos of continuous learning. Continuing Professional Development (CPD) is the means by which a school is able to motivate and develop its staff community. CPD is intended to support teachers and to equip them with the skills and knowledge required to keep pace with the rapidly changing educational and professional environment.

This development takes place at a number of levels: individual, team, whole school and through wider networks. CPD supports and reflects the ethos, Christian Values and vision of the school.

The Science subject leader's role is to provide professional leadership and management for the subject to secure high-quality teaching, effective use of resources and improved standards of learning and achievement for all pupils.

Health and Safety

It is the duty of all staff to take reasonable care for the health and safety of themselves and others in line with the school's Health and Safety Policy. Class teachers will take responsibility to plan safe, scientific activities. Teachers will explain the reasons for safety measures and discuss any implications with the children. Children should always be encouraged to consider safety for themselves, others, the environment and the resources they use when undertaking scientific activities.

Links with other Policies

This policy is linked to the following school policies:

- PSHE and RSE
- PE
- Design Technology

Subject Leaders: Mrs. S. Waterworth, Mrs. H. Pearce Mrs. L. Rooney and Miss. E. Massey

Executive Headteacher: Mr. S. Colothan

Date: January 2022