St Herbert's RC Primary School

SCIENCE POLICY

Approved by Governors on: 21st March 2022

Date to be reviewed: Spring 2025

Signed on behalf of the Governing Body: *P Devine* (Chair)

St. Herbert's R.C. Primary School

The most beautiful experience we can have is the mysterious - the fundamental emotion which stands at the cradle of true art and true science.

ALBERT EINSTEIN

This policy is set within the context of the School Mission Statement:

"Strong in Faith, Hope and Love, for the Common Good"

and the School Ethos:

"By loving one another as God loves us, we can achieve spiritually and academically"

This policy outlines the guiding principles by which St. Herbert's RC Primary School will implement Science in the National Curriculum (2014) in England

1. Our rationale for teaching science

Science is a body of knowledge built up through experimental testing of ideas. Science is also methodology, a practical way of finding reliable answers to questions we may ask about the world around us. Science in our school is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigation, as well as using and applying process skills.

We believe that a broad and balanced science education is the entitlement of all children, regardless of ethnic origin, gender, class, aptitude or disability. Our aims in teaching science include the following.

- Preparing our children for life in an increasingly scientific and technological world.
- Fostering concern about, and active care for, our environment - referred to as God's creation.
- Helping our children acquire a growing understanding of scientific ideas.
- Helping develop and extend our children's scientific concept of their world.
- Developing our children's understanding of the international and collaborative nature of science.

Attitudes

- Encouraging the development of positive attitudes to science.
- Building on our children's natural curiosity and developing a scientific approach to problems.
- Encouraging open-mindedness, self-assessment, perseverance, and responsibility.
- Building our children's self-confidence to enable them to work independently.
- Developing our children's social skills to work cooperatively with others.

- ❑ Providing our children with an enjoyable experience of science, so that they will develop a deep and lasting interest and may be motivated to study science further.

Skills

- ❑ Giving our children an understanding of working scientifically.
- ❑ Helping our children to acquire practical scientific skills.
- ❑ Developing the skills of investigation - including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- ❑ Developing the use of scientific language, recording and techniques.
- ❑ Developing the use of IT in investigating and recording.
- ❑ Enabling our children to become effective communicators of scientific ideas, facts and data.

2. Our teaching aims

- ❑ Teaching science *(National Curriculum Science 2014)* in ways that are imaginative, purposeful, well managed and enjoyable.
- ❑ Giving clear and accurate teacher explanations and offering skilful questioning.
- ❑ Making links between science and other subjects.

3. How science is structured through the school

Working scientifically runs through each unit. Please see the table overleaf for the school's organisation.

Cycle A

	Autumn		Spring	Summer	
KS1 (Class 2,3 and 4)	**Seasonal change** (Knowing about seasonal change) Physics		**Animals** (Habitats and Food Chains) Biology	**Plants** (Knowing parts of plants and trees) Biology	
LKS2 (Class 5,6 and 7)	**Electricity** (simple circuits & switches; conductors and insulators) Physics	**Rocks and Magnets** (Fossil formation, soil; forces and magnets) Physics	**States of matter** (Solids, Liquids & Gases) Chemistry	**Animals including humans** (Skeleton, muscles, exercise & health) Biology	
UKS2 (Class 8,9,10)	**Animals including humans and their habitats** (Life cycles, reproductive processes, classification & reasons for it; changes as humans develop from birth to old age) Biology		**Properties and changes in materials** (Compare properties, soluble & dissolving, reversible and irreversible changes) Chemistry	**Forces** (Gravity, friction, forces in motion, mechanical devices) Physics	**Light** (How light travels, reflection, ray models of light) Physics

Cycle B

	Autumn		Spring	Summer 1
KS1 (Class 2,3 and 4)	**Animals** (classifying animals and life cycles of animals) Biology	**Humans** (exercising and keeping healthy) Biology	**Everyday materials** (Naming different materials and using materials for different tasks) Chemistry	**Plants** (How do plants grow/keeping plants healthy) Biology
LKS2 (Class 5,6 and 7)	**Light and Dark** (Reflectors & shadows) Physics	**Sound** (Vibrations, pitch & volume) Physics	**Animals and Humans** (Digestive System & Teeth) Biology	**Plants and Animals** (Basic Structure & functions of life cycle & transportation of water; classification of plants and animals)
UKS2 (Class 8,9,10)	**Earth and Space** Physics	**Evolution and Inheritance** Biology	**Animals including humans** (Circulatory system, water transportation, impact of exercise on the body) Biology	**Electricity** (electrical components, simple circuits, fuses & voltage) Physics

At St Herbert's we aim to stimulate our children's curiosity of the world around them. We strive to give all children a strong understanding of God's world whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of science, today and for the future.

We are working closely with Focus Education to develop our own unique curriculum ensuring that teaching the skills necessary for discovery of scientific knowledge is at the heart of the children's learning. Scientific enquiry skills are embedded in each topic the children study, and these topics are revisited and developed throughout their time at school. Topics, such as Animals and Humans, are taught in Key Stage One and studied again in more detail throughout Key Stage Two. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory.

Science lessons are planned to maximise opportunities for fun, practical activities, to challenge and motivate our pupils, and to ensure that they develop a confidence to ask questions and wonder 'what if…? Within each lesson, children are encouraged to develop and use a range of skills including reading, observations and planning investigations. Scientific vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Concepts taught are reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

Children in the foundation stage are taught the science elements of the Early Years Curriculum through one of the areas of learning, Understanding the World.

Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of the National Curriculum Science and Science in the Foundation stage. Science teaching in the school is about wonder and enjoyment. We adapt and extend the curriculum to match the unique circumstances of our school, with reference to the school's catholic education policies and RSE scheme.

In KS1 and KS2, Science is taught following a two-year rolling programme (see above) which has recently been adopted by the school. In Early Years, time is spent across the week teaching and learning Science, during focused activities and continuous provision and play.

4. Our approach to science

The essential elements describing how Science is taught in our school are described below:

- We have developed a primary science scheme from Focus Education, which is adapted to our circumstances to meet the needs of our pupils.
- Teachers' resources and pupil task sheets are networked and are available on the Google Shared drive.
- Teachers' notes and pupil task sheets have been adapted to the needs of our children.
- We use IT for enquiry work, including microscopes with digital cameras, video capture of images and activities, and data logging.
- We use the Google Shared drive to share generalised science resources.
- Other resources include selected video and wall chart resources, short video sequences and other teaching resources have been networked for interactive displays.
- The school combines these secondary sources with first-hand scientific enquiries, building children's science skills.
- We actively teach science skills and reinforce learning with selected enquiry simulations.
- We encourage children to ask and answer their own questions as far as practicable.
- Children complete enquiries each term, taking increasing responsibility for their planning, carrying them out and recording/interpreting the results.

5. Equal opportunities in Science

Science is taught within the guidelines of the school's equality policy:

- We ensure that all our children have the opportunity to gain science knowledge and understanding regardless of gender, race, class, physical or intellectual ability.
- Our expectations do not limit pupil achievement and assessment does not involve cultural, social, linguistic or gender bias.
- We aim to teach Science in a broad global and historical context, using the widest possible perspective and including the contributions of people of many different backgrounds.
- We value Science as a vehicle for the development of language skills, and we encourage our children to talk constructively about their science experiences.
- In the Early Years Foundation Stage, Science is linked to outdoor play and experiences.
- We recognise the particular importance of first-hand experience for motivating children.
- We recognise that Science may strongly engage children, and we aim to challenge and extend them through assessment.

- We exploit Science's special contribution to developing children's creativity; we develop this by asking and encouraging challenging questions and encouraging original thinking.

6. Assessment, recording and feedback in Science

Teachers fully endorse the whole school feedback policy when teaching science.

What is specific to science teaching?

We use assessment to inform and develop our teaching.

- Topics begin with an assessment of what children already know.
- We assess for learning (AfL). Children are involved in the process of self-improvement, recognising their achievements and acknowledging where they could improve. Activities during, and at the end of each topic record achievement and celebrate success.
- There is continuous assessment of children's work, much of which is informal. This assessment is used to inform teaching throughout the school.
- Reports to parents are made in the end of year report, describing each child's attitude to Science, and in Yr 6 and Yr 2, his/her progress in working scientifically and understanding of the content of science.

7. Monitoring and Review

We monitor teaching and learning in the same way as we do all the other subjects that we teach in the school. The coordination and planning of the Science curriculum are the responsibility of the subject leader and curriculum leader, who also:

- Support colleagues in their teaching, by keeping informed about current developments in Science, and providing a strategic lead and direction for this subject.
- Gives the headteacher an annual summary report in which the strengths and weaknesses in Science are evaluated, and areas for further improvement are indicated.

The quality of teaching and learning in Science is monitored and evaluated by the Science Leader as part of the school's agreed cycle of monitoring and evaluation.