

St Anne's CE (Aided) Primary School



Science Policy

Our School Vision

St Anne's CE (Aided) Primary School is a happy vibrant school where diversity and individuality are celebrated. We are passionate in our pursuit of excellence in all aspects of school life. We nurture and inspire children to develop confidence and resilience in an environment where efforts are valued and all children flourish.

Rationale

This policy reflects our school's commitment to an inclusive, creative and exciting curriculum, based on our Quality First Teaching Commitment. We believe that Science makes a valuable and distinctive contribution to children's education. Learning about scientific methods and concepts helps pupils understand and contribute to the world in which they live.

Purpose of Study (National Curriculum 2014)

A high-quality science education provides 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.

Aims

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.

Knowledge and Understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage. Insecure, superficial understanding will not allow genuine progression: pupils may struggle at key points of transition (such as between primary and secondary school), build up serious misconceptions, and/or have significant difficulties in understanding higher-order content.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of science, including collecting, presenting and analysing data. The social and economic implications of science are important but, generally, they are taught most appropriately within the wider school curriculum: teachers will wish to use different contexts to maximise their pupils' engagement with and motivation to study science.

Subject Content

EY

Understanding the world

The world: children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.

Key Stage 1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study.

Key stage 2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study.

Science Curriculum Implementation

At St Anne's a topic-based approach to curriculum planning is employed within the school. The teaching of Science is organised through half-termly topics.

We start with the Science: Progression in Knowledge, Skills and Understanding- Appendix 1

Coverage is balanced with an enquiry based approach to teaching and learning. Opportunity is given for study “in depth” in each half termly plan (MTP). Across each Key Stage, half termly plans provide experience of different sources as starting points for scientific enquiry including investigations, educational visits and opportunities for observations.

Teaching should clearly focus on one or more of the key elements to identify objectives for learning:

Children should be taught to secure knowledge and understanding of key scientific concepts.

Children should be taught to describe key processes and characteristics of scientific concepts and to articulate their understanding with a developing subject specific vocabulary.

Children should be taught to collect and analyse data and to present it in a range of formats appropriate to the task.

Children should learn to work scientifically in a wide range of ways incorporating different forms of investigation.

Teaching and Learning Strategies

Teachers should provide balance in teaching approaches and identify suitable progression in knowledge, understanding and skills across each planning stage to continue to challenge pupils.

Teachers should make links between units of work and encourage children to use previous knowledge in approaching new work.

Children should be given opportunity, where possible, to use ICT to communicate and handle information including simulation software.

A variety of teaching methods best suited to the topic and to the interests of the children will be used.

These may include:

- observing over time
- pattern seeking
- identifying
- classifying and grouping
- comparative and fair testing
- individual, group and whole class investigations
- use of secondary sources (e.g. film, books, presentation material)
- ICT
- fieldwork, visits to museums and other sites.

Resources

Resources specific to individual topics are kept in classrooms.

Visits

Visits and visitors are excellent tools to stimulate children’s scientific enquiry and curiosity. Appropriate visits and visitors are planned in at the beginning of a topic.

Assessment

School policies on assessment and feedback apply to science. Refer to Assessment and Feedback Policies for procedures regarding daily tasks. Assessment of science at both KS1 and KS2 will be based on teachers' judgments and all recording should be simple and straightforward. Progress will be measured against performance indicators given on the Progression of Knowledge, Skills and Understanding document and the Target Tracker assessment system will allow for recording and monitoring of progress within and across year groups.

Subject Leadership

The Science Subject Leader is responsible for monitoring curriculum coverage and reviewing medium-term plans for each year group as appropriate. Monitoring of the quality of science education is carried out by the subject leader through an allocation of support and development time. The subject leader produces an annual action plan identifying targets for future action which may form part of the School Impact Plan.

Equality

In accordance with the school's SEN Policy and our Quality First Teaching Commitment all children are given work suitable to their age, aptitude and ability.

Children can:

- Be helped to understand scientific concepts and methods.
- Be taught concepts through discussion, concrete examples and practical activities.
- More able pupils may need open-ended tasks which enable them to tackle more complex issues.
- Understand more difficult concepts.
- Deepen and broaden their knowledge and understanding of the scientific concepts they are studying.
- Use a wider and more demanding range of resources and methods.

SMSC and British Values

Science provides an underpinning to understanding the world and its physical, chemical and biological processes. Through studying concepts such as plants, animals, habitats and humans as well as the properties of materials and the way they change, pupils deepen their understanding of the world and its environment, informing their development as responsible citizens and providing an objective platform upon which moral issues can be later discussed and debated.

In terms of their spiritual development, aspects of the science curriculum offer pupils an opportunity for a sense of enjoyment and fascination in learning about themselves, others and the world around them.

CPD

CPD is determined by the needs of staff and the availability and suitability of courses offered.

Cross Curricular

When and where appropriate, opportunities may arise to promote scientific learning across the curriculum. This could be through links with:

- Literacy – e.g. report writing, speaking & listening
- Computing – e.g. using research tools, word-processing, graphs and charts

Science Curriculum Overview

Yellow Class R/Y1	Animals inc. Humans: Human Focus (Year 1&2)	Seasonal Change (Year 1&2)	Animals inc. Humans: Animal Focus (Year 1&2)	Everyday Materials (Year 1&2)	Plants (Year 1 & 2)	Seasonal Change (Year 1&2)
Green Class Y1/2	Everyday Materials (Year 1&2)	Seasonal Change (Year 1&2)	Living things and their habitats (Year 2)	Plants (Year 1 & 2)	Seasonal Change (Year 1&2)	Animals inc. Humans (Year 1&2)
Blue Class Y2	Living things and their habitats: Animals Focus (Year 2)	Living things and their habitats: Plant Focus (Year 2)	Everyday Materials (Year 2)	Animals inc. Humans: Human Focus (Year 2)	Animals inc. Humans: Animal Focus (Year 2)	Plants (Year 2)
Orange Class Y3	Forces and Magnets Year 3	Rocks (Year 3)	Light (Year 3)	Plants (Year 3)	Animals inc. Humans (Year 3)	
Lime Class Y3/4	Electricity (Year 4) Light (Year 3 short)	Animals inc. Humans (Year 4 and Year 3 short)	Living things and their habitats (Year 4)	Rocks (Year 3 short) States of Matter (Year 4)	Sound (Year 4)	Plants (Year 3 short) Forces and Magnets (Year 3 short)
Lilac Class Y4/5	Forces and magnets (Year 5) States of matter (Year 4 short)	Properties and changes of materials (Year 5)	Living things and their habitats (Year 4)	Earth and Space (Year 5)	Sound (Year 4 short) Electricity (Year 4 short)	Animals inc. Humans (Year 5 & Short Year 4)
Turquoise Class Y5/6	Animals inc. Humans (Yr6 and short 5)	Evolution and inheritance (Year 6)	Properties and changes of materials (Year 5 short)	Light (Year 6) Electricity (Year 6)	Forces and Magnets (Year 5 Short) Earth and Space (Year 5 Short)	Living things and their habitats (Year 6 and short 5)
Purple Class Y6	Physics topics Light Electricity Sound Forces	Physics topic Magnetism Motion Earth and space Energy	Biology topic Cells Organs and systems Life cycles Keeping healthy	Biology topic Green plants Living things and habitat Evolution and inheritance	Chemistry topic Grouping and classifying materials Changing materials	Chemistry topic Separation Chemical reactions

