

ST EDMUND'S CATHOLIC PRIMARY SCHOOL

Consideration, Care and Courtesy

SCIENCE POLICY

PURPOSE OF STUDY

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.

PROCEDURES

TEACHING GUIDELINES

The school will teach science in accordance with the requirements of the National Curriculum. We recognise the importance of:

- The early learning goals at the 'foundation stage' of learning in nurturing knowledge and understanding the world.
- The *Breadth of Study* requirements which accompany each key stage particularly with regard to health and safety.

We use the 'subject content' for teaching science and implement these units through the commercial scheme 'STAR Science'. This identifies opportunities for developing links with other areas of the curriculum particularly Literacy, Numeracy and other subjects.

PLANNING

The science long term plan identifies how the units have been distributed across the years of both key stages in a sequence that promotes curriculum continuity and progress in children's learning. The units reflect the balance of the programme of study. They may be linked with work in another subject.

Medium term planning show the sequence of a unit of study linked to the estimate of time each unit will take. The teaching objectives linked to the programmes of study are identified on a planning grid. These are met through a variety of activities planned on a four base rotation in KS2.

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In KS2 each class has a science afternoon where the children are split into groups to engage in scientific activities on 'bases'. The number of groups range from two in KS1 to four separate groups in Year 6. There are given around 20 minutes per base, to encourage productivity, interest and enjoyment. The bases could involve the explanation of a scientific principle by the class teacher, an interactive website or a written activity. A semi-specialist support assistant works with a group on investigative work in 'talking teams'.

In KS2 there are separate short science sessions to consolidate the learning that has taken place on the 'bases', practice SATs questions created using the Test-base program and to mark science homework from the CGP Science scheme.

The Senior Management Team evaluates the medium-term plans to ensure there is consistency within the units and progression throughout the key stages.

Short term planning is the responsibility of individual teachers, who build on their medium-term planning by taking account of the needs of children in a particular class and identifying the way in which ideas might be taught in the class.

To accomplish our aims in science education we shall plan carefully, monitor children's progress and provide a variety of teaching approaches and resources.

We will keep the teaching of science under regular review, as part of our on-going school development plans and monitor the effectiveness of this policy.

Inclusion, assessment, recording and reporting achievement will be the responsibility of all teachers in accordance with our other school policies.

Scientific knowledge and conceptual 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.

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The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

Spoken language

The national curriculum for science reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. They must be assisted in making their thinking clear, both to themselves and others, and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

School curriculum

The programmes of study for science are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage if appropriate. All schools are also required to set out their school curriculum for science on a year-by-year basis and make this information available online.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

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

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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. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

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