

Science Policy

Mission Statement

*As one family working together
to be the best that we can be,
we live, love and learn with Jesus.*

Introduction

Science is the process for which individuals develop their understanding of the world around them. It can be regarded as a way of looking at our surroundings. Science involves a variety of processes including observing, classifying, inferring, and raising questions, experimenting, investigating, researching and prediction. The results of scientific work over a long period of time have resulted in the development of a large body of scientific knowledge. Science Education must emphasise ways of working scientifically as well as the facts and content of science. It should encourage respect for others, respect for life, curiosity, originality, perseverance, open-mindedness and responsibility.

Aims and Objectives

The aims of science are to enable children to:

- ask and answer scientific questions
- plan and carry out scientific investigations, using equipment, including computer
- know and understand the life processes of living things
- know and understand the physical processes of materials, electricity, light, sound and natural forces
- know about the nature of the solar system, including the earth
- evaluate evidence and present their conclusions clearly and accurately

Teaching and Learning styles

- We use a variety of teaching and learning styles in science lessons. However, science should be taught by individual teachers choosing the most appropriate strategy to suit the purpose of a particular learning situation. Our principal aim is to develop children's knowledge, skills, and understanding. Sometimes we do this through whole class teaching, while at other times we engage the children in an enquiry-based research activity. We encourage the children to ask, as well as answer, scientific questions. They have the opportunity to use a variety of data such as statistics, graphs, pictures and photographs. They use ICT in science lessons where it enhances their learning. To implement peer teaching, wherever possible, they take part in role-play and discussions and they present reports to the rest of the class. They engage in a wide variety of problem-solving activities. Science teaching also takes place in school grounds, visits to Nature Centres and Science Museum.
- 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 students 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 that are open-ended and can have a variety of responses and/or setting tasks of increasing difficulties. This will help to identify different ability groups.
- setting tasks for each ability group and providing resources of different complexity matched to ability of the group.
- using classroom assistants to support the work of individual or group of children.

Curriculum Planning

- The school uses the National Scheme of work for science in conjunction with the QCA learning units as the basis for its curriculum planning.
- We carry out our curriculum planning in 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 leader works this out in conjunction with teaching colleagues in each year group. In general, students study science as a discrete subject, but we also combine the scientific studies with work in other subject areas. See Appendix A for Cross-Curricular Opportunities.
- Our medium-term plan, which we have based on the QCA Scheme of Work in Science gives details of each unit of work for each term. The science subject leader keeps and reviews these plans.
- The class teacher is responsible for writing the daily lesson plans for each lesson (short-term plan). These plans list the specific learning objectives for each lesson. The class teacher keeps these individual plans, and s/he and the science subject leader often discuss them on an informal basis.
- We have planned the topics in science so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build progression into the science scheme of work, so that the children are increasingly challenged as they move up through the school.

Foundation Stage

We teach science in reception class as an integral part of the topic work covered during the year. As the reception class is part of the foundation stage of National Curriculum, we relate the scientific aspects of the children's work to the objective set out in the Early Learning Goals (ELGs) which underpin the curriculum planning for the children aged 3 to 5. Science makes a significant contribution to the objectives the ELGs of the developing a child's knowledge and understanding of the world.

English as an Additional Language

At St Augustine's we encourage all our children to achieve the highest possible standards. We do this through taking account of each child's life experiences and needs. A number of our children have particular learning and assessment requirements, which are linked to their progress in learning English as an additional language.

When delivering the Science curriculum we ensure we meet the full range of needs of those children who are learning English as an additional language. This is in line with the requirements of the Race Relations Act 1976 and our Equal Opportunities Policy.

The Science curriculum can create different language demands which we identify and address. (See EAL Policy)

Special Educational Needs (SEN)

Children with SEN are involved in all work planned at an appropriate level which help each child reach their full potential; booster-classes (year 6)/integration assistants will be provided if necessary. Teacher's weekly plans show how the activities/supports have been adapted or extended for children of different abilities.

Equal Opportunities

Children should be given opportunities to work as individuals, in pairs, in groups and also as a whole class when appropriate. The organisation of groups may be, for example, mixed ability, same ability, mixed gender, same gender or area of concern (specific to school such as race, language, and mental/physical disabilities...). Every effort should be made to ensure that science activities and investigations are equally interesting for both boys and girls.

Assessments

We assess the children's work in science by making informal judgements as we observe them during lessons. Their work is assessed regularly using a variety of strategies. These include informal and formal observation, peer group assessment and many others. However, on completion of a piece of work, the teacher marks the work using the school's marking policy. Following these formative and summative assessments it will result in the grouping and targeting of individuals and groups of individuals.

The learning objectives are introduced at the beginning of every lesson and are used to assess the children in the plenary to guide the teacher's further planning.

Children take the national tests in science at the end of Key Stage 2. Teachers make an assessment of the children's work in science at the end of Key Stage 1. We report the results of these tests to parents along with the teacher assessments which we make whilst observing the work of children throughout the year. We use practice science tests in Key Stage 2 to assess children's progress on an annual basis. End of unit tests are also used to assess progress.

Resources

Resources are stored centrally in the Resources Room. It is the responsibility of the class teacher to ensure that equipment is used safely and correctly and that equipment/books are returned to the appropriate place after use. If we are lacking any pupil/teacher resources please approach the science co-ordinator.

Please refer to Appendix C - Audit List

Monitoring/Review/Evaluation

It is the responsibility of the science leader to monitor the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. Monitoring of work (6 samples from each class; 2 above average, 2 average, 2 below average) and planning will be carried out by the science co-ordinator in line with the MER Policy. This is to help monitor standards of teaching and learning in science. The science subject leader gives the headteacher summary reports in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further improvement. The science subject leader has specially-allocated time for fulfilling the vital task of reviewing samples of children's work and visiting classes to observe teaching in the subject.

Cross-curricular links

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 Hour are of a scientific nature. The children develop the oral skills in science lessons through discussions (for example of the environment) and through recounting their observations of scientific experiments. They develop their writing skills through writing reports 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 and learn to use and apply number. Through working on investigations they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions.

Information and communication technology (ICT)

Children use ICT in science lessons where appropriate. They use it to support their work in science by learning how to find, select and analyse information on the internet and by accessing a wide range of science-based options available on the school network. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

Personal, Social and Health Education (PHSE) and Citizenship

Science makes a significant contribution to the teaching of Personal, Social and Health Education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare. For example, children study the way people recycle material and how environments are changed for better or worse. Secondly, children benefit from the nature of the subject in that it gives them the opportunities to take part in debates and discussions. They organise campaigns on matters of concern to them, such as helping the poor or homeless. 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 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.

MONITORING AND EVALUATION

This policy will be reviewed annually by staff and governors or earlier if local or national directives are received