

A Policy for the Teaching of Science at St. Edmund's Catholic Primary School, Skelmersdale.

1 Aims and objectives

1.1 Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

1.2 The aims of science are to enable children to:

- ask and answer scientific questions;
- plan and carry out scientific investigations, using equipment, including computers, correctly;
- 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.

2 Teaching and learning style

2.1 We use a variety of teaching and learning styles in science lessons. 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. 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. Wherever possible, we involve the pupils in 'real' scientific activities, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results.

2.2 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 children 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);
- grouping children by ability in the room and setting different tasks for each ability group;
- providing resources of different complexity, matched to the ability of the child;
- using classroom assistants to support the work of individual children or groups of children.

3 Science curriculum planning

The school uses the national scheme of work for science as the basis of its curriculum planning. The national scheme has been adapted to the local circumstances of the school in that we make use of the local environment in our fieldwork and we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.

Science Directions Scheme

At St. Edmund's we use the Collins Science Directions Scheme of work for pupils aged 3-11. It complies fully with the requirements of the Foundation Stage as specified in the Early Learning Goals and with the Science National Curriculum programmes of study for Key Stage One and Two. Science Directions is also matched to the schemes of work produced by the Qualifications and Curriculum Authority (QCA).

The key feature and central aim of Science Directions is to develop skills, knowledge and understanding through the careful choice of activities and context. Ideas are revisited to consolidate and extend pupils' understanding. Many of the activities are drawn from the QCA schemes of work and others are different to extend the range of experiences for children.

The Aims of Science Directions are as follows:

1. To provide a rich and stimulating scientific experience that will foster a fascination and interest in science.
2. To present science as an essentially practical experience based largely on first hand experiences in relevant contexts.
3. To develop investigative approaches to scientific enquiry that build the confidence necessary to tackle problems with increasing levels of independence.
4. To encourage discussion of scientific ideas and the abilities to question and to justify.
5. To create a sense of scientific curiosity and the development of appropriate levels of knowledge and understanding.

3.2 We carry out our curriculum planning in science 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 some cases we combine the scientific study with work in other subject areas, especially at Key Stage 1; at other times the children study science as a discrete subject.

3.3 Our medium-term plans, which we have based on the national scheme of work in science, give details of each unit of work for each term. The science subject leader keeps and reviews these plans. As we have some mixed-age classes, we do our medium-term planning on a two-year rotation cycle. In this way we ensure complete coverage of the National Curriculum without repeating topics.

3.4 The class teacher is responsible for writing the daily lesson plans for each lesson (short-term plans). These plans list the specific learning objectives of each lesson. The class teacher keeps these individual plans, and s/he and the science subject leader often discuss them on an informal basis.

3.5 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.

4 Foundation Stage

4.1 We teach science in reception 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 Early Learning Goals (ELGs) which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to the objective in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

5 The contribution of science to teaching in other curriculum areas

5.1 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 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.

5.2 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.

5.3 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 on CD-ROMs. Children use ICT to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. They also intend to use e-mail to communicate their mathematical findings with other children in other schools and countries.

5.4 Personal, social and health education (PSHE) 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 opportunities to take part in debates and discussions. They organize campaigns on matters of concern to them, such as helping the poor or homeless. Science promotes the concept of positive citizenship.

5.5 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.

6 Teaching science to children with special needs

6.1 We teach science to all children, whatever their ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We provide learning opportunities that are matched to the needs of children with learning difficulties. Our work in science takes into account the targets set in the children's Individual Education Plans (IEPs).

7 Assessment and recording

7.1 We assess children's work in science by making informal judgements as we observe them during lessons. On completion of a piece of work, the teacher marks the work and comments as necessary. At the end of a unit of work s/he makes a summary judgement about the work of each pupil in relation to the National Curriculum level of attainment. The teacher records the attainment grades in a mark book. We use these grades as the basis for assessing the progress of each child and we pass this information on to the next teacher at the end of the year.

7.2 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.

8 Resources

8.1 Science materials and equipment are stored in blue boxes in the two labelled cupboards outside Year 34's classroom. Science books are stored on shelving in the Junior area. Staff and pupils are responsible for replacing equipment when they have finished working with it. If there are difficulties in finding resources the coordinator will offer assistance where possible.

9 Monitoring and review

- 9.1** It is the responsibility of the science subject 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. The science subject leader has responsibility for long term planning and monitoring in science. She supports staff with concerns and organises science resources. She attends science INSET and keeps up to date with developments in the science curriculum. The Headteacher encourages staff to teach science effectively and ensures that the policy is implemented, reviewed, monitored and evaluated. This policy was produced in September 2001 and will be reviewed in September 2002.

Signed:

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