Science Policy

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 that 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 in which science will affect the future on a personal, national and global level.

1.2 Our objectives in the teaching of science are to:

- task and answer scientific questions;
- plan and carry out scientific investigations, with the correct use of equipment (including computers);
- know about life processes;
- know about materials, electricity, light, sound, and natural forces;
- know about the nature of the solar system, including Earth;
- know how to evaluate evidence, and to present conclusions both clearly and accurately.

2 Teaching and learning

2.1 We use a variety of teaching 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, such as investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

2.2 We recognise that in all classes, children have a wide range of scientific abilities, 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:

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

3 Science curriculum planning

3.1 Science is a core subject in the National Curriculum. The school uses the national programme of study for science as the basis of its curriculum planning adapting it to the local circumstances of our school. We make use of the local environment in our fieldwork.

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 Key Stage. 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 in science draw on the Switched on Science programme. Daily and weekly lesson plans (short term plans) are the responsibility of the class teacher.

3.4 At the moment each teacher uses their own format, but this under review and a format will be decide on by all staff in the next review. The class teacher keeps these individual plans, and often discusses them on an informal basis with the science subject leader.

3.5 We have planned the topics in science so that, where possible, they build on 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 The Early Years Foundation Stage

4.1 We teach science in reception classes as an integral part of the topic work covered during the year. The reception class is part of the Early Years Foundation Stage. We therefore relate the scientific aspects of the children's work in the Knowledge and Understanding of the World area of learning 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 developing a child's knowledge and understanding of the world, for example. 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 (e.g. 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. When the children use weights and measures, they are learning to use and apply number.

Through working on investigations, they learn to estimate and predict. They develop accuracy in their observation and recording of events. Many of their answers and conclusions include numbers.

5.3   Humanities subjects

Science contributes significantly to the teaching of humanities. For example, there are many overlaps with geographical understanding as children learn about their environment and how it has changed over time. Some important people important to the development of science are studied in history lessons. Teachers will take opportunities that arise in science lessons to explore issues of awe and wonder in the natural world.

5.3   Personal, social and health education (PSHE) and citizenship

Science makes a significant contribution to the teaching of PSHE and citizenship. 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 in which people recycle material and how environments are changed for better or worse. Secondly, the subject gives children numerous opportunities to debate and discuss. They can organise campaigns on matters of concern to them, such as helping poor or homeless people. Science thus promotes the concept of positive citizenship.

5.4   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 in which we manage 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   Science and ICT

6.1   ICT enhances the teaching of science in our school significantly, because there are some scientific investigations where ICT can be particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software is used to animate and model scientific concepts, and to allow children to investigate processes which it would be impractical to do directly in the classroom. Data loggers (to be purchased) are used to assist in the collection of data and in producing tables and graphs. Children use ICT to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to find, select, and analyse information on the Internet and on other media. They also use e-mail to communicate on their scientific findings with children in other schools and countries.

7   Science and inclusion

7.1   At our school, we teach science to all children, whatever their ability and individual needs. Science forms part of the school curriculum policy to provide a broad and balanced education to all children. Through our science teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this.

7.2   When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. This ensures that our teaching is matched to the child's needs.

7.3   The work done by a child in science may contribute towards their targets as set out in their RAISEN. Teachers will have regard for these targets when planning and designing tasks for science lessons.

7.4   We enable all pupils to have access to the full range of activities involved in learning science. Where children are to participate in activities outside the classroom (e.g. a trip to a science museum), we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

8   Assessment

8.1   Teachers will assess children's work in science by making informal judgements during lessons. On completion of a piece of work, the teacher assesses it, and uses this assessment to plan for future learning. Written or verbal feedback is given to the child to help guide progress. Older children are encouraged to make judgements about how they can improve their own work.

8.2   At the end of a unit of work, the teacher makes a summary judgement about the work and progress of each pupil against the science programme of study for each year group. We use this information as the basis for assessing the progress of each child over the academic year and we pass this information on to the next teacher at the end of the year.

9   Resources

9.1   We are reviewing the resources for all science teaching units in the school to ensure that they are adequate and meets the needs of all pupils. We keep these in a central store, where there is a box of equipment for each unit of work. There is also a collection of science equipment which the children use to gather weather data. The library contains a good supply of science topic books and computer software to support children's individual research.

10   Monitoring and review

10.1   The coordination and planning of the science curriculum are the responsibility of the subject leader who also:

- supports colleagues in their teaching, by keeping informed about current developments in science and providing a strategic lead and direction for this subject;
- keeps the headteacher informed of the strengths and weaknesses in science, which are evaluated and areas for further improvement decide on.

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

10.3   This policy will be reviewed annually or sooner if necessary.

Signed: Gary Margerison

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