Milton Road Primary School Science Policy

Introduction

At Milton Road Primary School, we believe that science plays a fundamental role in our everyday lives. In order to develop confidently in a scientific society, children need to be given the opportunities to develop their conceptual understanding of the world around them as well as procedural understanding in terms of scientific skills and the development of spoken scientific language and vocabulary. These function closely together and form the basis of scientific teaching and learning. We believe they are best developed based on first hand exploration of everyday materials, environments and situations, and the ability to create science based questions in a collaborative framework.

1 Aims

1.1 We aim to provide a practical science programme based on exploration and demonstration. The objectives of teaching science are to enable children to:

- acquire an enthusiasm for science;
- understand the relevance of science to the times we live in. (corona virus)
- appreciate the way in which science will affect the future on a personal, national and global level;
- develop an enquiring, creative mind and a scientific approach to problem solving;
- plan and carry out scientific investigations, using equipment (including computers) correctly;
- evaluate evidence, and present their conclusions clearly and accurately;
- adopt good Health and Safety practices;
- develop their ICT, literacy and numeracy skills within a scientific context.
- see a pathway into their potential future in science.

2 Teaching and learning style

The way in which the teaching and learning of science is promoted at our school is underpinned by our focus on our 6 key values of:

Respect Responsibility Kindness Creativity Curiosity Confidence

In keeping with our key values, we recognise that an exciting and engaging science curriculum supports the development of, and the expression of, curiosity as children develop the skills to enquire and discover more about the world and how it works. In turn, undertaking experiments supports the children in developing their responsibility as they carefully use resources and follow a process with their peers. Often science lessons will require children to work in pairs or small groups and this enables the children to show respect for each other and their ideas as they work together.
A developing understanding of the natural world also encourages children to not only show respect for it, but to take responsibility for caring for it. In turn, children can develop their confidence as they use appropriate scientific language to explain and promote their ideas.

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. Appropriate ICT resources are used to enrich learning. The children may 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 children in real scientific activities, for example, 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 seek to 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);
- grouping children by ability in the room, and setting different tasks for each ability group;
- using mixed ability groups to encourage peer support;
- 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.
- where relevant, using marking as an opportunity to address gaps or challenge children's understanding.

3 Science curriculum planning

3.1 At Milton Road Primary School, we use the national curriculum scheme of work for science as the basis of our curriculum planning. We make use of the local environment and local expertise to enrich the science curriculum, as well as visits further afield.

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. In some cases we combine the

scientific study with work in other subject areas; at other times the children study science as a discrete subject.

3.3 Our medium-term plans come in a variety of formats which are based on the national curriculum as well as resources from reputable sources. They will often give details of each unit of work for each half-term.

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 and expected outcomes of each lesson.

3.5 We have planned the topics in science so that 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 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 four and five. Science makes a significant contribution to developing a child's knowledge and understanding of the world.

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. We encourage opportunities for cross curricular links between English and Science. The children develop oral skills in science lessons through discussions 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 by giving children experience in the use and application of number. Through working on investigations they learn to estimate and predict. They develop accuracy in their observation and recording of results. Many of the investigations include the use of number, data handling and measuring.

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

Science makes a significant contribution to the teaching of PSHE and citizenship. The subject matter lends itself to raising matters of citizenship, social welfare and health. It also gives children numerous opportunities to debate and discuss.

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 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 Science and ICT

6.1 Information and communication technology enhances the teaching of science. Children have the opportunity to use ICT in a variety of ways within the science curriculum. 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.

7 Science and inclusion

7.1 At Milton Road Primary School, we teach science to all children, whatever their 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 aim to meet the needs of those pupils with special educational needs, those with disabilities, 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 for learning process looks at a range of factors – classroom organisation, teaching materials, teaching style, and differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against age-related expectations allows us to consider each child's attainment and progress. This helps ensure that our teaching is matched to the child's needs. Intervention through quality first teaching and, where appropriate, additional support ensures that children are supported in making progress; the formulation of specific targets for individual children helps them to achieve in science.

7.3 Each teacher has the responsibility to provide effective learning opportunities for all pupils regardless of their gender, race, and religious beliefs. This is achieved by setting suitable learning challenges, responding to pupils' diverse learning needs and overcoming potential barriers to learning (e.g. gender stereotypes).

7.4 Where children are to participate in activities outside the classroom (a trip to a science museum, for example) we carry out a risk assessment prior to the activity, to ensure that the activity is safe and appropriate for all pupils.

8 Assessment for learning

8.1 Assessment is built into long, medium and short term plans and includes end of key stage tests, periodic end of unit assessment and on-going teacher assessment through marking and discussion. Feedback to the children and parents is given both orally and in writing and may include children's own self-assessments. Teachers' own records allow them to adjust their teaching plans according to the pupils' progress and form a basis for informing parents and the next teacher of the children's strengths and targets.

8.2 The subject leader will monitor progress, attainment and coverage through regular work scrutinise, learning walks, pupil voice and regular contact with other members of staff.

9 Resources

9.1 The science subject leader is responsible for ordering, replacing, updating and storing resources for all the units addressed by all year groups. The school has access to quality texts that are modern, relevant and age appropriate. We use a wide range of multi-media in science and up to date quality resources.

10 Health and Safety

'Be Safe', the Association of Science Education publication on health and safety is available in the staff room, and staff are familiar with it. The scheme of work highlights potential hazards and staff will carry out risk assessments when planning practical activities. Risks are not only highlighted to the children, but pupils are taught how to take action to control the risks for themselves by recognising the hazards and taking steps to reduce the danger.

11 Professional Development

Professional development for staff is addressed through the use of INSET and strategic support enabling improvement to take place. This may be led by the science subject leader or by an external provider. Staff are given the opportunity to highlight professional development needs within their performance management and this may include science training.

12 Monitoring and review

12.1 Teachers have a responsibility for evaluating the effectiveness of their own classroom teaching on a day to day basis.

12.2 The subject leaders are committed to effective monitoring and improvement cycle to inform development in science. This will include book scrutinise, lesson observations, learning walks, pupil voice and surveys.

12.3 The subject leader is also responsible for supporting their colleagues in their teaching and for being informed about current developments in the subject. The subject leader seeks to provide a strategic lead and direction for science in the school.

13 Policy Review

This policy will be reviewed at least every two years.