SCIENCE POLICY

Probus C P School, Probus Pre-School and Probus Kids' Club

(Reviewed 19.02.18)

Note: When reference is being made to Probus C P School, this policy refers to Probus Pre-School and Probus Kids' Club.

Science Policy

1 Aims

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

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1.2 The objectives of teaching science are to enable children to:

- ask and answer scientific questions;
- plan and carry out scientific investigations, using equipment 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;
- understand the uses and implications of science today and for the future.

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 conceptual 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 formulate, ask, and 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 such as recording and plotting data or using iPads to create photographic records because it enhances their learning. They take part in role-play and discussions and 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, investigating a local environmental problem, or carrying out a practical experiment that is relevant to them 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);
- grouping children by ability in the room, when appropriate, and setting different tasks for each ability group;
- grouping children in mixed abilities so they can learn from each other;
- 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;
- differentiating by effective questioning.

3 Science curriculum planning

3.1 The school uses the Cornerstones scheme of work for science as the basis of its curriculum planning. The scheme has been adapted to the local circumstances of the school in that 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 within each year group, recorded in the subject tracker. In nearly all 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 give details of each unit of work for each term. The science subject leader reviews these plans termly to ensure thorough subject coverage.

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

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 through the school.

3.6 Science planning is included on each year group's half termly topic planner. There is no requirement to teach science on a weekly basis, rather it is linked closely to the relevance within the topic, therefore making it more meaningful to pupils. Where possible we link science teaching to national events, such as Healthy Eating Week and National Science Week. During these times, the emphasis on Science across the curriculum is made more strongly.

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 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 or by examining healthy and non-healthy foods.

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. Many of the texts that the children study within Literacy are of a scientific nature such as writing information texts on eating a balanced diet or explaining how day and night are formed. 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. When the children use weights and measures, they are learning to use and apply number. Equally, they record their results using a range of data handling methods. 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 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 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 the poor or homeless. 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 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 in our school significantly, because there are some tasks for which ICT is particularly useful. It also offers ways of impacting on learning which are not possible with conventional methods. Software, including iPad apps are 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 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

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 Our assessment 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 a child who is making slower progress 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 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 (a trip to a science museum or the local environment, 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 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 his/her 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 class teacher makes a summary judgement about the work of each pupil in relation to the National Curriculum levels of attainment and record the attainment grades obtained. 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.

8.3 Teachers make an assessment of the children's work in science at the end of Key Stage 1 and Key Stage 2. Children take the national tests in science at the end of Key Stage 2 if selected. All teacher assessment data is recorded and reported to the LEA.

9 Resources

9.1 We have sufficient resources for all science teaching units in the school kept in a well labelled central store. 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 It is the responsibility of the subject leaders to monitor the standards of children's work and the quality of teaching in science. The subject leaders are also responsible for supporting colleagues in their teaching, for being informed about current developments in the subject, and for providing a strategic lead and direction for science in the school. The subject leaders give the head teacher an annual summary report in which s/he evaluates strengths and weaknesses in science, and indicate areas for further improvement.

10.2 This policy will be reviewed at least every two years.

Signed: Mrs Mary Arthur

Signed: Mrs Lisa Jones

Date: 19.02.18