Science Policy

This policy was created in May 2017 by Miss Conroy, the science subject leader, in conjunction with teaching staff and school governors.

1 Aims

1.1 The national curriculum for science aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

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

- Work scientifically, asking and answering questions in a variety of ways.
- Plan and carry out scientific investigations; observing, preforming, classifying, gathering, analysing and recording data.
- Know and understand the life processes of living things, their habitats, evolution and inheritance.
- Know and understand the physical processes of materials, electricity, light, sound, states of matter and natural forces;
- Know about the nature of weather, seasonal changes, rocks, earth and space;
- Evaluate evidence, and present their conclusions clearly and accurately.

2 Teaching and learning style

2.1 At the Glebe Primary School 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 because 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, investigating a local environmental problem, or carrying out a practical experiment and analysing the results.

2.2 At the Glebe Primary School, 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 such as:

- 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;
- 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

3.1 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 that make use of the local environment in our field work, although we choose a locality where the physical environment differs from that which predominates in our immediate surroundings.

3.2 We carry our curriculum planning in science in two phases (long-term and medium-term). The long-term plan maps the scientific topics studied in each term during the key stage. The science subject leader is responsible for this in conjunction with teaching colleagues in each year group. 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, which we have based on the national curriculum for science, give details of each unit of work for each term. The science subject leader keeps and reviews these plans. We ensure complete coverage of the National Curriculum throughout the school.

3.4 Medium term plans list the specific learning objective and expected outcomes of each lesson. The class teacher keeps these individual plans, and discusses them in an informal basis.

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 nursery and reception classes as an integral part of their topic work covered during the year. Children investigate scientific ideas through adult led activities and independent play. This comes under the specific area of 'The World'. In the foundation stage pupils relate the scientific aspects of the children's work to the objectives 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 learning about similarities and differences, patterns and changes. Pupils learn about places, objects, materials and living things. They talk about features of the environment and how it can be varied. They make observations, comments and ask questions through a variety of methods and play based activities. Pupils learn to care for living things.

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 and speaking and listening. Some of the texts that the children study in Literacy 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. 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 involve numbers. Pupils present their work using chart, tables and graphs based on the national curriculum objectives for mathematics in their specific year group.

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.

5.5 Science and I.C.T.

Information and communication technology enhances the teaching of science in out 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 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 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, for example, Espresso and Revisewise.

6 Science and Inclusion

6.1 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 reasonable steps to achieve this. For further details see individual whole-school policies: Special Educational Needs; Disability Non-Discrimination; Gifted and Talented; English as an Additional Language (EAL).

6.2 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, and differentiation – so that we can take some additional or different action to enable the children 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.

6.3 Intervention through School Action and School Action Plus will lead to the creation of a School Support Plan (SSP) for children with special

educational needs. The SSP may include, as appropriate, specific targets relating to science.

6.4 We enable all pupils to have access to the full range of activates involved in learning science. 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.

7 Assessment for learning

7.1 At the Glebe Primary School, 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 work.

7.2 At the end of a unit of work, teachers make a summary judgement about the work of each pupil in relation to the National Curriculum levels of attainment. The teacher records their assessment using the terms 'emerging', 'expected' and 'exceeding' based on the outcomes for each year group; on an assessment sheet. This is done at the end of each school term. We use this as the basis for assessing the progress of each child. Where a child is not making the required progress we use the assessment sheet to inform teaching and intervention. We pass this information on to the next teacher at the end of the year.

7.3 Teachers make an assessment of the children's work in science at the end of each year group and key stage. This is reported to parents through school reports. Assessment sheets are used to monitor children's progress throughout the year. This takes into account the ability at which a child enters a class and records their progress through the year. Assessment informs specific groups of children and work is set according to ability.

7.4 The science subject leader keeps samples of children's work in a portfolio, and uses these to demonstrate the expected level of achievement in science for each age group in the school.

7.5 The success that is achieved in science is celebrated. Certificates are given termly in whole school celebration assembly and children are praised and awarded team points for effort and achievements in their work. Best pieces of work in science are given to the head teacher termly to be recognised in celebration assembly.

7.6 The Glebe Primary School promotes curriculum related off timetable weeks. Science weeks explore the fun side of scientific investigations and allow the children to experience a wide variety of science related activities.

8 Resources

8.1 At the Glebe Primary we have sufficient resources for all science units in the school. Most resources are kept in a central store, where there is a box of equipment for each topic. The science subject leader regularly checks and updates the resources. Key Stage teams also purchase and store some of their own science resources. The school library contains a good supply of science topic books and computer software to support children's individual research.

9 Monitoring and review

9.1 At the Glebe Primary it is the responsibility of the subject leader to monitor the standards of children's work and the quality of teaching in science. The subject leader is 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 leader gives the head teacher and governors a summary each term about the developments in science. The head teacher and the science subject leader termly analyse progress in science, in all areas of school and identify strengths and areas for further improvement. The subject leader has specially allocated time for fulfilling the vital task of reviewing samples of children's work, and visiting classes to observe science teaching and learning.

9.2 This policy will be reviewed every two years.