Parklee Community School

Science Policy

Updated March 2017

Policy on Science

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 for all our children:

- to ask and answer scientific questions;
- to plan and carry out scientific investigations, with the correct use of equipment (including computers);
- to know about life processes;
- to know about materials, electricity, light, sound, and natural forces;
- to know about the nature of the solar system, including the earth;
- to know how to evaluate evidence, and to present conclusions both 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 computing technologies 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, e.g. 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);
- 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 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 Focus scheme of work for science as the basis of its curriculum planning. Teachers use the scheme to plan creatively; providing learning experiences that are exciting, yet scientifically rigorous. The school makes use of the local environment for fieldwork.

3.2 Curriculum planning, where possible, includes cross-curricular links to develop further interest in scientific ideas and deepen scientific understanding. Science may also be taught as discrete units and lessons, where needed, to ensure complete coverage.

3.3 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. The class teacher keeps these individual plans, and s/he and the science subject leader often discuss them on an informal basis.

3.4 We plan 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 three to five. Science makes a significant contribution to 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. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. In science they develop precision of speaking, using scientific vocabulary to explain complex ideas. They develop their writing skills by writing scientific reports and projects and by recording information.

5.2 Mathematics

Science contributes to the teaching of mathematics in a number of ways: use of data tables in the collection and interpretation of data; reading and comparing of graduated scales during investigation; observation and calculation using weights and measures and also statistical calculation. Scientific investigations provide opportunities to estimate and predict and to use and apply number in real-life situations and also promote the development of a range of skills including accuracy of measurement and recording.

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

Science makes a significant contribution to the teaching of PSHE and citizenship. Children study the way in which humans impact their environment, either for better or for worse. An understanding of materials science helps children to consider the effects of using finite resources and the importance of recycling, in an effort to reduce waste, including vital resources such as water and generated electricity. In turn this can lead to debate and discussion around their moral and ethical responsibilities as citizens, from an informed perspective. 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, alcohol and drugs on the human body 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 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 Computing Technologies

6.1 Computing technologies enhance the teaching of science in our school significantly. There are some tasks for which they are particularly useful offering ways of impacting on learning which are not possible with conventional methods. A variety of software applications are used to animate and model scientific concepts, and to allow children to investigate processes that would be impractical or hazardous to do directly in the classroom. Visiting selected educational websites gives the children opportunities to carry out wider investigation, research and data collection, whilst learning how to find, select, and analyse information on the internet. Children use computers and tablets to record, present and interpret data; to review, modify and evaluate their work and to improve presentation.

7 Science and inclusion

7.1 At Parklee, 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. For further details, see individual whole-school policies: Special Educational Needs; Disability Discrimination; Gifted and Talented Children; English as an Additional Language (EAL).

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, and 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. This ensures that our teaching is matched to the child's needs.

7.3 Children who have specific needs may have an IEP. The IEP may include, as appropriate, specific targets relating to science.

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 (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 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, s/he makes a summary judgement about the work of each pupil in relation to the National Curriculum year group expectations. The teacher records the attainment progress within the year group expectations in the schools coverage and assessment document. We use these levels of attainment as the basis for assessing the progress of each child against the National curriculum expectations, and we pass this information on to the next teacher at the end of the year.

9 Resources

9.1 We have sufficient resources for all science teaching units in the school. 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 school has a supply of science topic books to support children's individual research. Sets of laptop computers are available for whole class activities such as research and virtual investigation.

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;
- gives the headteacher an annual summary report in which s/he evaluates the strengths and weaknesses in science and indicates areas for further improvement;
- uses specially allocated regular management time to review evidence of the children's work and develop the science curriculum, as required.

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

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

Signed:

Date: