Discovery Primary School

Science Policy

Purpose

The purpose of this policy is to describe our practice in Science education and the principles upon which this is based.

Aims

The objectives of teaching science are to enable children to:

- ask and answer scientific questions;
- plan and carry out scientific investigations, using equipment (including computers) 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.

Principles and values

This policy is based on our commitment to learning about Science through exploration, questioning and practical investigation.

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.

Equal opportunity

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 classroom assistants to support the work of individual children or groups of children.

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.

Intervention through School Action and School Action Plus will lead to the creation of an Individual Education Plan (IEP) for children with special educational needs.

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.

Consultation

This policy was written by Lucy Kennedy, subject leader for science, in consultation with teaching staff in a staff meeting, Jan 16.

Sources and references

Science Programme of Study. DFE Sept 2013. Reference: DFE-00182-2013

Rising Stars Switched on Science Curricula - purchased by the school and available online with a teacher account. http://www.risingstars-uk.com/series/switched-science

Planning

The school uses Rising Stars Switched On Science curricula (see above) in Key Stage 1 and 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 year group. 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.

Our medium-term plans are part of the Rising Stars Switched On Science and are available on the Rising Stars website when teachers log in with an account. They give details of each unit of work for each term. The science subject leader keeps and reviews these plans.

The class teacher is responsible for short-term plans. These plans list the specific learning objectives and expected outcomes of each lesson. They are part of the Edison Weekly plan. The class teacher keeps these individual plans, and s/he and the science subject leader discuss them on an informal basis. These plans are uploaded weekly on to the Learning Platform.

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.

In the Foundation Stage we relate the scientific aspects of the children's work to the objectives set out in the Early Years Foundation Stage Framework which underpin the curriculum planning for children aged three to five. Science forms part of Understanding of the World strand of the EYFS. We plan science in foundation stage classes as an integral part of the topic work covered during the year. Children are encouraged to explore and investigate, drawing on their own personal experiences and observing closely using their senses.

Teaching

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.

The contribution of science to teaching in other curriculum areas: 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 English lessons 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.

The contribution of science to teaching in other curriculum areas: Maths

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 data in events. Many of their answers and conclusions include using graphs, tables and numbers.

The contribution of science to teaching in other curriculum areas: 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.

The contribution of science to teaching in other curriculum areas: 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.

The contribution of science to teaching in other curriculum areas: Computing

Information and communication technology enhances the teaching of science in our school significantly, because there are some tasks for which computing 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 impracticable to do directly in the classroom. Children use technology 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.

Organisation

Across the school 7 - 10% of time is allocated to teaching science. This amounts to 54 hours at KS1 and 72 hours at KS2 per year.

Time allocated for the teaching of sex, drug and some health education is accounted for in the teaching of science at both key stages.

Homework / parent partnership

Science homework is set by teachers as required, usually to support the introduction of topic work in a particular area. Information is explained to parents in the tasks sent home with the child. See Homework Policy.

Resources

We have ample resources for all science teaching units in the school. We keep these in a central store in the tall white cupboards near the staffroom where there are labelled trays containing the everyday science equipment. 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. I-pads in each classroom support the research and teachers look for suitable apps to use. Everyone who uses the resources is responsible for them. The science leader is responsible for managing the purchase and maintenance of them.

Assessment

Teachers will assess children's work in science by making informal judgements during lessons using the principles of Assessment for Learning (AfL). 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. Teachers make an assessment of the children's work in science at the end of each year and these are passed on to the next teacher. In years 2 and 6, these levels will be reported to parents.

Monitoring and evaluation

The monitoring of the standards of the children's work and of the quality of teaching in Science is the responsibility of the subject leader and SMT. 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 an annual summary report in which s/he evaluates strengths and weaknesses in science, and indicates areas for further improvement. The subject leader has specially-allocated time for fulfilling the vital task of reviewing samples of children's work, keeping these in a portfolio; visiting classes to observe

science teaching, monitoring weekly planning and evaluating standards of teaching and learning.

The governor with responsibility for science is primarily responsible for monitoring the implementation of this policy. This will be through annual discussion with the subject leader and consideration of the evidence included in the subject leader portfolio. The governor will report on this to the curriculum committee annually. The work of the subject leader will also be subject to review by the head teacher as part of performance management arrangements.

Other documents and appendices

The Science policy should be read in conjunction with our policies for curriculum, learning and assessment, and sex and relationship education.

There are appendices to this policy:

Appendix 1: list of current science resources

Appendix 2: curriculum map for science

Appendix 3: key vocabulary for science by year group

Reference other policies:

- British Values
- SEN policy
- Equal opportunity
- Marking policy

Governor approval and review dates

This policy was ratified by the full governing body in March 2016

It is due for review in Spring 2017.