

Panshanger Primary School Science Policy

Aims:

Through our work in science we aim to teach an understanding of natural phenomena and to help children to develop an awareness of the world around us, stimulating their curiosity in finding out why things happen in the way they do.

Objectives:

The aims will be achieved by enabling children to:

- increase their knowledge and understanding of scientific concepts;
- 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.

Teaching and learning style:

At Panshanger School a variety of teaching and learning styles are used in science lessons in order to develop children's knowledge, skills, and understanding. This may be done through whole-class teaching, group work or enquiry-based research activities. The children are involved in a wide variety of problem-solving activities and are encouraged to ask, as well as answer, scientific questions and are given the opportunity to use a variety of data, such as statistics, graphs, pictures, and photographs. ICT is used in science lessons where it enhances learning. 'Real' scientific activities are planned where possible, for example, researching a local environmental problem or carrying out a practical experiment and analysing the results, which are presented in a variety of ways. Emphasis is placed on providing practical activities to provide real experiences for the children within science lessons and giving the children opportunities to design their own investigations. Wherever possible children are encouraged to use and apply their learning in other areas of the curriculum.

Planning for Science:

The school uses the National Curriculum for science as the basis of its curriculum planning. Long-term plans have been drawn up to map the scientific topics studied in each year group during each key stage. Medium-term plans give details of each unit of work, building on prior learning and ensuring continuity and progression. These are then adapted to suit the learning needs of the class being taught, showing the learning objective and activities for the week's lessons. Activities are designed to encourage the development of scientific enquiry as well as to impart knowledge and skills. Scientific enquiry includes collecting evidence through observations and measurements, planning, hypothesising, organising and presenting evidence, evaluating findings and drawing conclusions. Science is taught as a discrete subject although at times scientific study is combined with work in other subject areas. The science subject leader regularly monitors and reviews plans to ensure breadth, balance, continuity and progression through each stage.

Foundation Stage:

Science is covered under the 'understanding of the world' area of learning identified in the Early Learning Goals, which underpin curriculum planning for children aged three to five, and through the characteristics of effective learning which develop the skills needed for scientific enquiry. Planned activities offer children opportunities to investigate and explore scientific concepts through play, such as experimenting to see which objects float and sink when placed in water. Children are encouraged to ask questions and talk about what they have found out. Some activities will be child chosen, and some directed by the teacher, but clear learning objectives are set out for all activities and records are kept to track children's choices and ensure a balance of activities.

Social, Moral, Spiritual and Cultural:

Science is about looking for meaning and purpose in natural and physical phenomena. Children develop their sense of wonder about what is special about life and an awareness of the scale of living things from the small micro-organism to the largest creature. Children develop their curiosity and want about the living world, the vastness of space and the interdependence of all living things and materials of the Earth. Children develop open-mindedness as they consider the opinions of others and how scientific developments may give rise to moral dilemmas.

Collaboration and teamwork is an important part of our practical work. Children need to take responsibility for their own and other people's safety. In lessons children build on their understanding of the effect science has on the quality of our lives and consider the benefits of scientific developments and the social responsibility involved.

Children learn about scientific discoveries by a wide range of men and women in many different cultures. There are opportunities to consider the environmental issues that are central to science.

Inclusion:

Children of all abilities are entitled to have their needs met and to have barriers to their learning minimised. Learning opportunities are provided for all children by matching the challenge of the task to the ability of the child. This is achieved in a variety of ways:

- setting common 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.

Special Educational Needs:

Learning opportunities are provided which enable all pupils to make progress by setting suitable learning challenges and responding to each child's different needs, as stated under inclusion. Assessment against the National Curriculum enables the teacher to consider children's attainment and progress against age related expectations. When progress falls significantly outside the expected range, the child may have special educational needs. The assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that some additional or different action can be taken to enable the child to learn more effectively. This ensures that teaching is matched to the child's needs.

Intervention through School Action and School Action Plus will lead to the creation of an Individual Learning Plan (ILP) for children with special educational needs. The ILP may include, as appropriate, specific targets relating to science.

Gifted and Talented:

Children who are identified as Gifted and Talented are listed on the whole School register and provision is noted in teacher's short term planning. For these children teachers make sure they plan activities that are suitably challenging, not simply doing more of something but at a higher level.

Assessment and Recording:

In Science we assess children's knowledge and understanding within a topic and their working scientifically skills. The children's work is assessed by making informal judgements during lessons and through marking against the learning objective which will be shared and discussed at the outset of a lesson. Success criteria displayed in each lesson also help pupils to achieve by focusing on the specific expectations for that task. Children involved in assessment for their abilities and achievements in the short term through self/peer marking and discussion of their work using these success criteria. At the end of a unit of work, summary judgements are made about the work of each pupil and these are used to inform the annual reports. The information is also passed on to the next teacher at the end of the year. At the end of Key Stage 1 and Key Stage 2, children's work in science is formally assessed by the teacher using the teacher assessment framework.

Resources:

The school is well resourced to enable children to study all science teaching units. Resources are kept in a central store, where there is a box of equipment for each topic or area of work. There is a dedicated working scientifically cupboard containing general resources required for carrying out investigations. The library contains a good supply of science topic books and computer software to support children's individual research. The use of Smart boards in each classroom allows children access to a wide variety of interactive and online resources to enhance learning. The school also has interactive data loggers and microscopes which can be linked to computers and the Smart board.

Monitoring and review:

The science subject leader, together with the Headteacher, monitors the standards of children's work and the quality of teaching in science. The science subject leader is also responsible for supporting colleagues in the teaching of science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. The science subject leader has specially-allocated time for reviewing samples of children's work and visiting classes to observe teaching in the subject.

Success Policy:

Indicators used to determine the success of this policy include end of year and key stage results, assessment data, reports, samples of work, lesson evaluations, marking and discussions with staff and pupils.