Eastcroft Park Primary School

Science Policy

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What is science?

Science is a particular way of understanding the physical world, which requires precise approaches and ways of thinking.

The importance of science in the curriculum

Science stimulates and excites pupils' curiosity about phenomena and events in the world around them, encouraging them to find out about why things happen the way they do. It also satisfies their curiosity with knowledge. Science links direct practical experience with ideas and it engages learners at many levels. It teaches methods of enquiry and investigation to stimulate creative thought. Through science, pupils understand how major scientific ideas contribute to technological change – impacting on industry, business and medicine and improving the quality of life. They learn to question and discuss science-based issues that may affect their own lives, the direction of society and the future of the world.

The aims of science

We aim to develop understanding of the nature, processes and methods of science, enabling children to:

- Ask and answer scientific questions;
- Plan and carryout scientific investigations using appropriate equipment correctly;
- Acquire and refine the practical skills necessary to investigate ideas and questions safely;
- Develop their own ideas on how to investigate an idea or phenomena;
- Develop skills of sorting, classifying, planning, predicting, questioning, inferring, observing, exploring, researching, pattern seeking, concluding and evaluating, through investigative activities;
- Make informed decisions based on evidence and their own experiences and be able to apply scientific knowledge to new situations;
- Co-operate with each other in setting up experiments and attempting to solve problems;
- Evaluate evidence and present their conclusions clearly and accurately.

We aim to develop scientific knowledge and understanding of important scientific ideas teaching them to:

- Be curious about the things they observe, experience and explore relating to the world around them;
- Use their experiences to develop understanding of key scientific ideas including the life processes of living things, physical processes of materials, electricity, light, sound, natural forces and the nature of the solar system including the Earth;
- Develop effective ways of thinking, finding out about and communicating scientific ideas and information.
- Describe associated processes and key characteristics in common language, but children should also be familiar with, and use, technical terminology accurately and precisely.

National Curriculum Coverage

At Eastcroft Park school we ensure that the Science curriculum meets the requirements of the National Curriculum and we aim to deliver these requirements in an exciting and purposeful way.

Science at Eastcroft Park Primary School in Key stages 1 and 2 is, wherever possible, taught through the cross-curricular class topic. As such, there is no set model for the amount of time given over to the teaching of science on a weekly basis and the time spent on science may vary from term to term and in each topic that is taught. All teaching staff choose, at their own discretion, how they allocate the amount of time needed to cover the strands of the National Curriculum. Where links to topics cannot naturally be made, the children will be taught science units through a series of discreet science lessons, delivered as stand-alone lessons or as blocked periods. The responsibility of ensuring adequate coverage of the National Curriculum for science lies with the subject coordinator and the individual class teacher. However, in both key stages, teachers allocate an average of two hours weekly for science. At Foundation Level, science is an integral part of topic work and teachers plan challenging and exciting scientific activities, making a significant contribution to the objectives set out in the Foundation Stage Curriculum ensuring each child has a greater knowledge and understanding of the world.

Teaching and Learning

As well as ensuring that children acquire the key knowledge and understanding of a scientific aspect, we also ensure that there is a practical basis to the science curriculum. This is designed to enable children to enquire, explore, observe, predict and then look for links and patterns in their studies. We aim for children to seek out information for themselves before recording their ideas. They learn to devise and conduct fair tests and to draw tentative conclusions, using appropriate methods of recording. Children are helped to

understand the contribution science makes to every-day life and every effort is made to stimulate the child's natural curiosity and desire to understand. Whenever possible, the children are given the 'wow' factor through exciting scientific starting points that are then developed further. The children are involved in challenging, exciting and motivating activities which extend learning.

All lessons have clear learning objectives and success criteria (in the form of WALT and WILF) which are shared and reviewed with the pupils effectively. 'Big Bang' week is dedicated to science experiments and investigations, to develop children's scientific knowledge and inspire scientists of the future.

We use a variety of teaching and learning styles in science lessons in order to develop children's knowledge, skills and understanding. Sometimes this is done 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 statistics, graphs, pictures and photographs. They also use ICT in science lessons where it enhances their learning. Additionally they take part in discussions and they present reports to their peers. Also the children engage in a wide variety of problem-solving activities. Wherever possible, the science curriculum is supported by trips and enhanced by visitors in the school.

For more information regarding how the teaching and learning of Science is organised, please refer to the Year Group Overviews, Topic plans and individual lesson plans in the Science Curriculum File.

Assessment

All assessments will be used to inform teaching and will take place at three levels: short term, medium term and long term. A variety of strategies, including questioning, discussion, concept mapping and marking (according to the schools marking policy), are used to assess progress as an informal part of each lesson. Medium term assessments will take place at the end of each unit of work; teachers will use the MINISATS to assess children's individual progress in science throughout the year. Long term assessments will take place towards the end of the year. Teachers will draw upon their end of unit assessments and formative assessments to produce a summative record.

Developing Key Skills in Science

As stated before, in each year group Science is taught in an imaginative and largely practical and investigative way. The children benefit from whole class or group teaching as well as being encouraged to work individually: finding out information, practising skills or thinking

scientifically by themselves. Science lessons have no imposed formal structure but may contain the following elements that foster the development of key skills:

Communicating: discussing their ideas about an area, knowledge of what they already know, what they have learnt so far and what they will be finding out about next with peers, the teacher or other appropriate adults. Recording their ideas and findings through writing, charts, diagrams or other media.

Application of Number: using mathematical skills to estimate, measure and compare during scientific investigations. Using number operations in scientific conclusions and recording findings in tables and graphs.

Information and Communication Technology: using computers, and other ICT based equipment, to find, analyse, interpret and present information.

Working with Others: to work as a team leader or team member when carrying out investigations. Learning how to work well with others, by developing their social skills of cooperation and compromise.

Improving Own Learning and Performance: evaluating their learning in science and understanding what they need to do next in order to improve an aspect of their work.

Problem Solving: solving problems by working in groups or individually, practising scientific skills, finding out answers and being encouraged to think scientifically.

Cross-Curricular Links

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 language and oral skills in science lessons through discussions and through recounting their observations. They develop their writing skills through explaining scientific concepts, writing reports and projects, planning and recording information.

Mathematics

Science contributes to the teaching of mathematics in a number of ways. At both key stages the pupils are expected to use their knowledge and understanding of measurement and data handling at appropriate levels. In science, they should be applying their mathematical

skills similar to those which they are using in their maths work. Maths vocabulary will be promoted within the science curriculum.

Computing

At both key stages pupils' computing skills are used to locate and research information (CD ROM, internet); record findings (using text, data and tables); log changes to the environment over time (sensing equipment – when available); gain confidence in the use of calculators, digital camera and tape recorder as well as computer. Where available, children and staff may also access a variety of activities and resources using the IWB (Interactive Whiteboard) as this is a useful tool for delivering a range of teaching aids and can be used to support activities and enhance the learning of scientific concepts.

Personal, Social, Health Education (PSHE) and Citizenship

We encourage all children to take an active part in the life of their school and its neighbourhood. Science can provide opportunities for children to gain the knowledge, skills and understanding they need to lead confident, healthy and independent lives and to become informed, active and responsible citizens. Through science, children learn:

• that people and other living things have needs and that they have a responsibility to meet them;

• what might improve or harm their local, natural and built up environments and some of the ways people look after these resources;

• how to make simple choices that improve their health, including healthy diet and exercise and sexual development;

• that medicines are helpful but can also be harmful if not used properly.

Inclusion and Equal Opportunities

We teach science to all children, whatever their needs. We ensure that all our children have the opportunity to gain science knowledge and understanding regardless of gender, race, class, physical or intellectual ability. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. We recognise that the children in all classes have widely diverse needs and abilities and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the tasks to the ability of the child. We achieve this in a variety of ways, these include:

- Setting common tasks which are open-ended and can have a variety of responses;
- Setting group tasks of increasing difficulty, scaffolding where appropriate;
- Grouping children by ability and setting different tasks for each ability group;
- Providing resources of different complexity, matched to the ability of the child;

- Using classroom assistants, wherever possible, to support the work of individual children or groups;
- Challenging and motivating more able children.

Health and Safety

Safe practice is promoted at all times. In their planning of activities, teachers will anticipate likely safety issues, taking into account any health and safety and child protection issues, particular attention must be given to avoiding the use of anything which aggravates individual pupils' allergies. Teachers will also explain the reasons for safety measures and discuss any implications with the children. When undertaking scientific activities, children should always be encouraged to consider safety for themselves, others, the environment and the resources they use.

Monitoring and Review

It is the responsibility of the science coordinator to monitor the standards of children's work and the quality of teaching in science. This subject coordinator gives the headteacher an annual summary report in which s/he evaluates strengths and weaknesses in the subject and indicates areas for further development and training.

Resources

Science equipment and resources to be used across the age range are stored in the science cupboard. These resources are organised and updated after an audit of resources and on an on-going basis when teachers identify need.

Kelsey Walton

Science Coordinator