Science Policy

Introduction

This policy outlines the teaching, organisation and management of Science taught and learnt at Queensway Primary School, Banbury.

At Queensway, we believe that Science should be an engaging and practical subject, making use of a variety of resources to provide hands on experiences for all children. Science lessons at Queensway reach principles of scientific enquiry, giving the children practical opportunities to apply their communication, teamwork, problem solving, mathematics and literacy skills, as well as helping them develop an open and enquiring mind.

Science at Queensway Primary School is about developing children's ideas and ways of working that enable them to:

- Think critically and communicate their understanding;
- Have opportunities to apply their scientific skills in different contexts across the curriculum;
- Develop enquiry skills useful for science and across the curriculum.

This policy has been drawn up as a result of staff discussion and has the full agreement of the Governing body. The implementation of this policy is the responsibility of all teaching staff.

Our Aims

At Queensway School we aim to:

- Prepare children for life in an increasingly scientific and technological world.
- Foster concern about, and take active care for, our local and global environment.
- Provide opportunities for children to think scientifically.
- To encourage/develop interest, enjoyment and enthusiasm in all pupils.
- To develop an enquiring mind and a scientific approach to problem-solving, through a range of interesting and enjoyable experiences.
- To encourage an awareness of continuing scientific advances and their impact on society.
- To relate science to everyday life through the use of everyday materials and situations.
- To develop positive attitudes of curiosity, tolerance and perseverance.
- To develop a systematic method of communicating and recording.
- To evaluate results and draw appropriate conclusions.
- To acquire and apply relevant scientific skills and knowledge.
- To learn to work safely and carefully.
- To develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- To 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.
- To ensure that children are equipped with the scientific knowledge required to understand the uses and implications of science, in the past, today and for the future.

Through Science we can:

- Improve and develop children's skills in literacy, ICT and maths.

- Develop children's thinking and discussion skills by asking questions and exploring ideas and concepts.
- Develop children's ability to work co-operatively with others.
- Promote an enquiring mind, encouraging children to ask "big questions" about the world around them and providing them with tools to help find the answers.

Planning

Science is a core subject in the National Curriculum. At Queensway Primary School, the teaching of Science will be in line with the teaching and learning policy.

Our Science teaching is based on the National Curriculum Programme of Study and our Progession of Skills document, giving children the opportunity to work scientifically. This ensures progression and development of scientific skills as the children move through the school. Teachers use the long term plan (based on the National Curriculum) to write medium term plans for each term. Most terms, the science topic will change, however for some year groups the science topics will be taught over two terms to allow the children to explore the topic in enough depth. There are weekly science lessons which are well-sequenced and include differentiation, as well as opportunities for prior learning to be discussed. Lesson should include photos, resources, videos and demonstrations to support the learning (Explorify).

Teaching and learning

The children in KS1 and KS2 will be taught to work scientifically across the year. As stated in the National Curriculum the children will focus on the disciplines of biology, chemistry and physics. The children will focus on the following areas-

Years 1 and 2: Animals including humans, plants, seasonal changes, everyday materials and their uses, living things and their habitats.

Years 3 and 4: Animals including humans, light and sound, rocks, plants, forces and magnets, electricity, states of matter, living things and their habitats.

Years 5 and 6: Animals including humans, all living things and their habitats, Earth and space, forces and motion, light and how it travels, electricity, properties and changes in materials, inheritance and evolution.

Scientific investigations are carried out regularly, as opportunities for working scientifically are built into each unit of work. The stimulus for these science investigations might be based on a story, real-life issues, photo, video or a Concept Cartoon and should allow the children to follow different forms of enquiry. These include planning experimental work, obtaining evidence and considering evidence. To aid the planning of experiments and investigations and record their findings, children may use the 'house planning frame' (annex 1), teachers may also use alternative planning frames to suit the needs of their class. The children should also be making predictions as well as recording their findings in the form of a table, graph or conclusion as part of the investigation process. When the children are discussing their ideas, they should use the STEM sentence guidance to help them develop their understanding and vocabulary, as well as encourage children to talk in full sentences.

They will begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Similarly, scientific words are introduced, revised and displayed, within each unit, so children develop an increasingly wide scientific vocabulary, which they are encouraged to use to explain their findings and demonstrate their knowledge. These are key factors in developing their scientific vocabulary and articulating scientific concepts clearly and precisely. Cross-curricular links are made with writing to apply key scientific vocabulary, develop recording techniques and show understanding and meaning in other areas of the curriculum.

- In the EYFS, science is taught through the 'Understanding the World' section of the Foundation Stage Curriculum and aims to develop children's curiosity and passion for science and general team working skills. Science at Queensway is introduced indirectly through activites that encourage every child to explore, problem-solve, observe, predict, think, make decisions and talk about the world around them. These activities are delivered in numerous ways, for example through Continuous Provision, Enhanced Provision ('Busy Bird' time), teacher-led inputs (whole class and in small groups) and spontaneous learning. This will build a firm foundation to develop scientific learning when they enter KS1.

- In Key Stage 1, children will begin to be introduced to scientific concepts through practical experiments. Science should enable children to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. Children should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information. They will start to build up scientific vocabulary to talk about what they have found out and communicate their ideas in a variety of ways. They should start to record the results of their experiments in an appropriate format. Most of the learning about science will be done through the use of first-hand practical experiences, but there will also be some use of appropriate secondary sources, such as books, photographs and videos.

- In lower Key Stage 2, the teaching of Science should enable children to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language to talk and write about what they have found.

- In upper Key Stage 2, children build upon the skills learnt to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. In upper Key Stage 2, children should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. Children should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out fair tests and finding things out using a wide range of secondary sources of information. Children should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and vocabulary explain their findings.

Resources

Most school science resources are kept centrally, however specific topic-based resources can be found in classroom cupboards. An audit of resources will be completed annually and a list will be updated, and distributed to staff with a copy kept by the Science Co-ordinator. Should staff be unable to find what they need, they should consult the Science Co-ordinator. Staff will also be consulted regarding the purchasing of new items. The coordinator will endeavor to keep resources in good

working order, and to assist with this, staff are requested to report any breakages or significant wear and tear. We also promote science through links with local industries, parents with specialist knowledge, vists and exhibitions, competitions and events whenever possible.

ICT

Teachers ensure that children have the opportunity to use ICT and apply their skills through their work in Science. The use of ICT is noted in the medium term plans produced by teachers, and is incorporated whenever possible. Examples of ICT used may include electronic microscopes, data loggers, microphones as well as use of the computers to access virtual experiments and video clips to aid understanding.

Assessment

Assessment for learning should occur throughout the entire science lesson, enabling teachers/teaching assistants to adapt their teaching/input to meet the children's needs. This can be done through contributions to discussions, answers to questions, the marking of work, photographic and video evidence. Staff will formally assess the children after each Science unit and record this at the end of the Medium Term Plan (MTP). The class teacher at the end of the year will judge which children are working towards, at expected or working above the age-expected level in science overall. In EYFS, children are assessed against the Early Learning Goal (ELG) in the 'Understanding the World' area of learning. At the end of KS2, teacher assessments are recorded and communicated to parents and are also submitted to the Local Authority. This information is also shared with the Senior Leadership Team and Governors.

Monitoring, Evaluation and Review

In collaboration with the Head Teacher, the subject co-ordinator is responsible for an annual development plan for Science and for monitoring and evaluating the quality of teaching and learning within the school. Children's work will be assessed, scrutinised and monitored in line with the Teaching and Learning Policy and the school's Marking Policy.

The Role Of The Science Lead

The Science Lead will support other teachers in delivering quality teaching and learning through giving advice and ensuring that teachers have the necessary training and support to feel confident in delivering an appropriate Science curriculum. The Science Lead will keep up to date with any changes to the Science curriculum and communicate these to other members of staff, updating the Long Term Plan, as well as the progression of skills to ensure it remains relevant and appropriate. The Science Lead will attend subject leader network meetings and disseminate new information. The Science Lead will take responsibility for ensuring that resources meet the needs of the curriculum and that suitable adaptaions have been made to support and improve children's learning, utilising the advice and support of the Inclusion Manager.

Review

This policy will be reviewed every three years by the Senior Leadership Team as delegated from the Qualoity of Education Committee.

Head Teacher …… Date ……