Our Lady's Catholic Primary School

Science policy

The Nature of Science

'Science is a way of exploring and investigating the world around us, both natural and man-made, with the aim of learning more about it and understanding it better. One way to increase the ability to investigate and understand is to increase knowledge, but scientific knowledge on its own is not science…Science is not only a way of knowing: it is also a way of doing, and each shapes the other.' (Wenham, M, 1995, Understanding Primary Science.)

Our Philosophy of Science

For young children, science is an introduction to the world of living things, materials and energy. It is our belief that practical activities should form the basis of the teaching and learning of science at all levels, in order to develop a spirit of enquiry. The relevance of science is made by the application of these activities to the children's everyday lives and situations.

Aims

Our aims in teaching science are that the children will:

- Retain and develop their natural sense of curiosity about the world around them
- Develop a set of attitudes which promote scientific ways of thinking, including perseverance, objectivity and a recognition of the importance of team work
- Understand the importance of scientific methods involving careful observation, design of fair and controlled tests, making and testing

hypotheses and the drawing of conclusions through critical reasoning and evaluation of evidence

- Be able to communicate their ideas effectively thus promoting self confidence and personal development
- Build up a body of scientific knowledge which will serve as a foundation for future enquiry
- Carry out work in a safe, secure environment. This also includes the outdoor environment.
- Acquire knowledge and methods which will equip them for the fast changing technological society

Science in the National Curriculum 2014

Scientific knowledge and conceptual understanding

The programmes of study describe a sequence of knowledge and concepts. While it is important that pupils make progress, it is also vitally important that they develop secure understanding of each key block of knowledge and concepts in order to progress to the next stage.

Pupils should be able to describe associated processes and key characteristics in common language, but they should also be familiar with, and use, technical terminology accurately and precisely. They should build up an extended specialist vocabulary. They should also apply their mathematical knowledge to their understanding of Science, including collecting, presenting and analysing data.

The nature, processes and methods of science

'Working scientifically' specifies the understanding of the nature, processes and methods of Science for each year group. It should not be taught as a separate strand.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Coverage of the National Curriculum requirements for science is ensured via a process of whole school planning.

Planning for Coverage, Progression and Continuity

Planning in science is a process in which all staff are involved. This enables us to:

- Cover all parts of the Programmes of Study
- Give children a breadth and balance of experience in science
- Allow for concepts to be revisited on a number of occasions, in different contexts
- Give due attention to progression and differentiation

At Our Lady's, we are also undertaking a creative curriculum approach to learning using the Cornerstones scheme. Many science topics are included but teachers will be informed of which units are not covered to ensure there are no gaps.

When planning, consideration is given to:

- The key ideas to be addressed and the most appropriate context in which to investigate them;
- Activities which will encourage children to think and express ideas about the concepts being explored;
- The possible ideas the children might express;

- The provision of opportunities for children to develop skills and processes of science alongside their understanding of the concepts
- The nature of and possibilities for assessing and recording children's progress
- Classroom management and organisation, including safety considerations

Differentiation

The class teacher is responsible for identifying and planning for different needs and levels of ability. Differentiation may be by outcome of task or activity or through the provision of specific activities for varying levels of difficulty to match individual ability.

Science in the Foundation Stage

The Foundation Stage teachers currently plan for science through topics, taking care to cover the guidelines set out in the Early Years Foundation Stage document. Science falls into the category of Understanding the World. "This involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment." (Statutory Framework for the Early Years Foundation Stage, 2014)

Teaching Methods

There is no single method for teaching science. Whilst the emphasis is should principally be on first-hand experience, it is the responsibility of the individual teachers to exercise their professional judgement in

identifying the most appropriate strategy to suit the purpose of each learning situation. They include:

- Whole class
- Teacher demonstration
- Group work of varying sizes
- Circus of experiments with different activities taking place simultaneously
- Individual research and exploration

Strategies for Learning

Children construct their own ideas which help them to make sense of the world around them. It is therefore a tenet of science teaching in this school that the current knowledge and beliefs of the children be determined before commencing work and at various stages in each topic.

In our science curriculum, we aim to develop the processes, skills and attitudes which will aid children in learning and understanding science.

Processes:

- question raising;
- collecting information and hypothesising;
- experimenting;
- decision making;
- communicating and recording;

- applying findings;
- organising;

From these processes, certain skills are developed.

- Observing
- Hypothesising
- Comparing and classifying
- Predicting
- Estimating and measuring
- Testing
- Planning
- Interpreting information

Certain attitudes need also to be developed which are not only specific to science but are relevant to life both in and out of school:

Attitudes

- Curiosity
- Co-operation
- Perseverance
- Open-mindedness
- Self-analysis
- Responsibility
- Independent thought

- Self-discipline

Within the classroom, teachers look for opportunities to praise co-operation and safe, considerate behaviour. Achievement in science is celebrated in display and the verbal and written communication of scientific findings.

Assessment

Assessment opportunities will be identified within schemes of work. Class assessment sheets will be completed at the end of each topic and shared with the subject leader.

At Key Stage 1 the only statutory assessment for science is teacher assessment and therefore assessments will be recorded appropriately. End of topic assessments may be used if deemed appropriate, for example those from Sigma Science. Class or floor books may also be used as evidence of teaching and learning.

At Key Stage 2 similar arrangements will be followed. The school may be also be selected for national sampling, which is undertaken by DfE. Levels awarded will be related to the National Curriculum level descriptions. Data will be entered onto the online school tracking system at the end of each school year. (SPTO)

It is important to note that testing is only one method of assessing and each teacher also uses their own judgement based on observation in lessons, discussions with the child and written work. These, along with test results, are used to determine a child's level of attainment. Results are shared with the assessment and science lead teacher.

Marking for Improvement

Much of the work done in science lessons is of a practical or oral nature and, as such, recording will take many varied forms. It is, however, important that written work is marked regularly and clearly, as an aid to progression and to celebrate achievement. When appropriate, pupils may be asked to self or peer assess their own or other's work. Marking for improvement comments in a child's book must be relevant to the learning objective to help children to better focus on future targets.

Resources

Most resources are kept in the central resource area in labelled trays, although some are kept in the classrooms. The science subject leader will administer the allocated budget for science.

There are several published and online schemes which are currently available for teachers to refer to. These include: the LCP scheme for each year group; Hamilton trust planning and resources; and Sigma Science; and we also have elements of Ginn and Collins science schemes available.

Teachers are consulted during science specific staff meetings about the resources needed or indeed which resources may need replacing.

Information and Communications Technology

The application of ICT plays an important role in developing research, communication and data handling skills across the science curriculum and is incorporated into science lessons when appropriate.

Health and safety

Pupils will be taught to use scientific equipment safely when using it during practical activities. Class teachers, teaching assistants and the subject Leader will check equipment regularly and report any damage, taking defective equipment out of action. The ASE book 'Be Safe' should be consulted when necessary. If an activity is not covered by 'Be Safe' then we will contact CLEAPSS (School Science Service Helpline 01895251496) for further advice.

MONITORING AND EVALUATION

This will take place through:

- monitoring and evaluation of pupils' work
- lesson observations
- pupil questionnaires

Equal Opportunities

Every effort is made to ensure that science activities and investigations cater for all children and that they are as interesting and engaging for girls and boys.

Children with special educational needs are involved in all work planned at an appropriate level to enable them to achieve their full potential.

Review

This policy will be reviewed annually.

Written by Mrs Karen Kelly- science subject lead