Blaenavon Heritage Voluntary Controlled Primary School



SCIENCE POLICY

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CoG:

INTRODUCTION
This document sets out the policy of Blaenavon Heritage Voluntary Controlled Primary School in respect of teaching and learning of Science.

AIMS
At Blaenavon Heritage VC Primary School we believe that science is about developing children's ideas and ways of working that enable them to make sense of the world in which they live through investigations, as well as using and applying processing skills.

We aim to:
- Prepare our children for a life in an increasingly scientific and technological world.
- Foster concern about, and active care for, our environment.
- Develop the skills of investigation, including observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Develop the use of scientific recording, language and techniques.
- Develop the use of LNF and DCF through science.

WIDER SCHOOL AIMS/ETHOS
The policy is underpinned by the school's vision, aims and values.

CONSULTATION
This policy was written in consultation with the Head Teacher and staff.

TEACHING
Science is a core subject in the National Curriculum of 2008 at Key Stage 2 whilst, in the Foundation Phase, science is taught through knowledge and understanding of the world.

We base our teaching and learning style in science on the key principles that good teaching in science allows children to plan, investigate and evaluate a concept to extend their understanding of how the world works. Through this, we actively teach the language of science, along with different scientific techniques.

Our teaching and learning styles in science enable children to build on their own experiences and extend their knowledge and understanding of the world whilst developing their scientific skills.

The school follows the Collective Learning Scheme of Work in Key Stage 2, where each year group will study a new scientific unit each term, covering 3 different units across the year. In the Foundation Phase, science is taught through learners' topics as part of the knowledge and understanding of the world area of learning.

DIFFERENTIATION
The expectation of children's scientific understanding will be diverse across a key stage, and this will be taken into account when the teacher is preparing the lesson. There will be differentiation in teaching method and in outcome, as appropriate, to ensure access to the curriculum for all children. We take into account the targets set for individual children, ie literacy targets in their Individual Education Programmes (IEPs).

In order to provide for children of different abilities within each class, we endeavour to differentiate tasks in a suitable way by:

- Questioning - by level of questioning appropriate to ability.
- Recording - using a variety of methods according to the differing abilities of the children.
- Text - pupils dealing with the same topic but stimulus material at different levels of difficulty.
- Support - varying levels of support by teaching.
- Task - same text but a variety of tasks set, eg:
  Group 1 answer questions;
  Group 2 writes commentary.
- Organisation - organising resources in classroom to allow for many of the above approaches (different skills learned/ group work).

DEVELOPING SKILLS ACROSS THE CURRICULUM

Pupils should be given opportunities, where appropriate in their study of science, to develop and apply:

Literacy

Learners are helped to develop their oracy, reading and writing skills using planned opportunities from the LNF (Literacy Numeracy Framework) which will enable them to transfer their skills across the curriculum.

In science, learners will communicate ideas and information in a variety of ways, depending on the nature of the task, audience, purpose and learners' own preferences, including the use of IT at times.

Numeracy

Learners will develop a variety of different numeracy skills across the curriculum as set out by the LNF. Skills such as data handling and measuring will be developed through investigations.

Developing Digital Competence

Where appropriate, learners will be given the opportunity to develop the 4 strands of the Digital Competency Framework (DCF): (1) Citizenship, (2) Interacting and Collaborating, (3) Producing, and (4) Data and Computational Thinking. These 4 strands are designed to develop pupils' digital skills for the ever changing digital world in which we live.

1. Citizenship (which includes):
   - Identity, image and reputation
   - Health and well-being
   - Digital rights, licensing and ownership
   - Online behaviour and cyberbullying.

2. Interacting and collaborating (which includes):
   - Communication
   - Collaboration
   - Caring and sharing.

3. Producing (which includes):
    - Planning, sourcing and searching
    - Creating
    - Evaluating and improving.

4. Data and computational thinking (which includes):
    - Problem solving and modelling
    - Data and information literacy.

STEM (Science, Technology, Engineering & Mathematics)

The aim of teaching STEM is to inspire and engage children. Children are provided with the foundations required to understand the world around them and the impact advances in science has upon technology. Through building up a body of foundational knowledge, pupils are encouraged to develop a sense of excitement and curiosity about natural phenomena. We teach children to partake in different types of scientific enquiries and to pose and answer scientific questions about the world around them. We then demonstrate how that knowledge can be applied in real life engineering situations to pose a solution to a problem. Children are then able to use their knowledge, gained through scientific research, to their own design and technology projects in a practical environment.

The aims of STEM teaching:

- To prepare children for a STEM focussed future;
- To inspire and engage children in STEM subjects;
- To inspire future scientist and engineers.

Science

- To teach children to ask question and planning lines of investigative enquiry;
- To extend children's natural curiosity and wonder about the world;
- To help children make decisions concerning environmental, moral and social issues;
- To develop scientific strategies and skills;
- To work co-operatively and communicate scientific ideas to others;

Technology and engineering

- To develop an understanding of technological processes, products, and their manufacture and contribution to our society;
- To develop imaginative thinking in children and to enable them to talk about what they like and dislike when designing and making;
- To enable children to talk about how things work, and to draw and model their ideas;
- To encourage children to select appropriate tools and techniques for making a product, whilst following safe procedures;
- To explore attitudes towards the 'made' world and how we live and work within it;
- Children should learn to understand and apply the principles of nutrition and learn how to cook.

THE EQUALITIES ACT 2010

As a school we are committed to carrying out our statutory duties to actively support and ensure the school community complies with the requirements of the new Act. We therefore:

- Are committed to providing a teaching environment conducive to learning. Each child is valued, respected and challenged regardless of ability, race, gender, religion, social background, culture or disability.
- More able children will be challenged and motivated by differentiated work given by the teacher appropriate to his or her needs. Teachers will also use questions that allow the more able child to maintain their involvement in the lesson and demonstrate their knowledge and abilities.
- Most science lessons are appropriate for all children, since the teacher will differentiate, as necessary, for those children with additional learning needs. A pupil whose difficulties are severe or complex may need to be supported by a Teaching Assistant, in addition to appropriately differentiated tasks given by the teacher.

MARKING OF WORK

Science will be marked in accordance with the Marking & Feedback Policy of the school.

THE ROLE OF THE SCIENCE CO-ORDINATOR

- To take the lead in policy development and the production of schemes of work.
- To produce long term and medium term planning in consultation with the other staff.
- To support the staff in the development of weekly teaching plans and the general implementation of the science scheme.
- To monitor the teaching process.
- To liaise with the Head Teacher on the purchase of resources.
- To keep up to date with developments in science, to attend appropriate INSET and to disseminate information to colleagues.

MONITORING, EVALUATION AND REPORTING

- The class teacher will evaluate the teaching and learning opportunities in their own class, using the weekly planning pro forma. Evaluations will feed the teacher's future planning and any concerns should be raised with the curriculum leader.
- The curriculum leader and senior management team are responsible for the monitoring of standards in science.

ASSESSMENT, RECORDING AND REPORTING

As a core subject, science is formally moderated as a cluster in year 6, with a level of achievement reported to parents at the end of year 6. Through this formal assessment process exemplar pieces of level 4 and 5 work are moderated - firstly by school staff in staff meetings and secondly as an education cluster, to ensure consistency of levels.

Assessment in science is ongoing and formative with a variety of strategies used, such as observation, discussion, marking and questioning. Assessment for learning, which is becoming embedded in the school, encourages children to be more involved in their learning in science.

The most significant source of evidence for children's achievement will come from the ongoing evaluation of lessons and INCERTs.

Information from assessment is used to inform the teacher's short term planning and to help the teacher identify ways forward for the pupils' learning.

Pupils' progress in science is recorded using INCERTs and teacher's marking.

HEALTH AND SAFETY

Please see policy, together with Appendix 1 below (Health and Safety in Good Practical Science).

RESOURCES

We have sufficient resources in our school to be able to teach all our science topics.

HEALTH AND SAFETY IN GOOD PRACTICAL SCIENCE

A policy statement, originally drawn up in December 2009 by the Association's Safeguards in Science Committee stating the Association's position on health and safety in relation to practical work.*
*****Association for Science Education***

The Association promotes and supports good practical work in science education in schools and colleges.

To provide pupils with an effective, broad, balanced, rich and developmental practical science experience, teachers are required to use a wide range of chemicals, materials, living and once-living organisms and equipment. Some of these will be hazardous or will generate hazardous products. Some situations, eg activities in fieldwork, or the design of a building, may also present hazards.

Teachers and technicians cannot, and should not, avoid such hazards but should take them into account, minimise the risks from them, and balance any remaining risks against the benefits of potential learning.

A process of risk assessment is essential for teachers and technicians to review and minimise risks to pupils and staff. The duty of issuing risk assessments rests with the employer who generally fulfils this by providing science departments with model risk assessments. The ASE supports this in several ways: by publishing model risk assessments in some of its books and journals; through the work of the Safeguards in Science Committee; and by collaboration with its partners, CLEAPSS and SSERC, and the organisations to which its members belong.

The ASE believes that there are few science resources or activities where the risks cannot be effectively controlled and managed. Managing health and safety need not be onerous, nor should it inhibit effective and exciting science teaching and learning. The Association vigorously refutes the argument that health and safety legislation inhibits exciting practical work. In reality, almost any practical activity which was carried out in schools in the past is still legal and possible, perhaps with a few modifications or additional precautions. Staff may need to be given adequate guidance, preparation time and training.

Science teachers should also use the opportunities presented by practical science to teach pupils about hazards and risks, and how the latter can sensibly be controlled. Educating children about risks and risk management is a vital component of preparation for adult life.

The ASE supports the publication Practical Work in Science: A Report and Proposal for a Strategic Framework (2008), including the definition of practical work, from The Science Community Representing Education (SCORE).