

Eveline Day School

Science Policy

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Rationale:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and it is vital for the world's future and prosperity. All children should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, children should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. Children should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes. Children will be working as scientists to explore through hands on activities to create a sense of awe and wonder about the world they live in. Science should encourage rich questioning which stimulates thinking and makes children want to find out the answers to these 'real life' problems. In order for children to achieve well, they must not only acquire the necessary knowledge but also understand its value, enjoy the experience of working scientifically and sustain their interest in learning it. Children need to be exposed to all five types of scientific enquiry: observation over time, research, pattern seeking, classifying and identifying and comparative/fair testing. Children need to learn about scientists who have made a difference in society and think about the role they play in the real world. They are then more likely to continue to study science and use that learning for work, for family and to contribute as informed citizens.

Aims:

- ❖ To develop a love of science; to enthuse children and make learning fun.
- ❖ To build on children's curiosity and sense of awe in the natural world.
- ❖ To ensure children experience all five scientific enquiries: observation, testing, research, classifying and identifying and pattern seeking by becoming scientists in the classroom.

- ❖ To make learning purposeful, to make cross curricular links and for children to experience 'real life' concepts. (Maths, English, Computing in particular)
- ❖ To increase children's scientific vocabulary and the language of science.
- ❖ To ensure children use a range of equipment accurately and safely through hands on investigations and observations.
- ❖ To develop learning in the outdoors; to increase children's confidence and natural curiosity of the world around them.
- ❖ To give children varied opportunities, through active participation - all children are exploring and following their own lines of enquiry; at times investigations are child-led.
- ❖ To make sense of the world they live in and understand the processes and reasons why things happen. To understand and make a difference to the world e.g. how to look after the environment, how to stay fit and healthy.
- ❖ To develop a range of skills through the working scientifically strand of the curriculum: measuring, analysing, presenting and reasoning.
- ❖ To develop children's aspirations of potential careers in science through talking about the work of scientists and how they can make a difference to others.
- ❖ To introduce STEM (Science, Technology, Engineering and Maths) into the curriculum so that children can work on project based investigations which involve a range of skills across the curriculum.

Teaching and Learning:

Science is taught in each year group based on the 2014 National Curriculum objectives. Science lessons should be rich in questioning to develop a deeper understanding of concepts, engaging and exciting. Learning should be inclusive for all learners, where differentiated activities or teacher/TA support is planned to ensure all children make progress. Children who grasp concepts quickly will be challenged through application activities/questions, using Blooms taxonomy and open-ended tasks. This will give children opportunities to reason, explain and demonstrate their learning. Children should have a range of group and individual tasks, where children are solving problems, communicating with their peers and participating in hands on practical science. All lessons should be purposeful. All lessons should be focused around the knowledge objectives of the National curriculum and also the working scientifically skills - how are children going to grasp the concepts in the lesson? Where possible, links to real life should be made and children should be working as scientists to promote independence in problem solving and thought processes. Opportunities for cross-curricular learning and Science, Technology, Engineering and Maths (STEM) activities are encouraged, as well as opportunities for children to learn through discovery and play. Children should be able to pose questions and have time to find the answers to these questions for themselves- deciding what line of enquiry they need to take. Some lessons may involve inviting in scientists, specialists and visitors to inspire the children and learn about potential careers in the science field to raise aspirations.

Foundation Stage

We teach Science in the Reception classes as an integral part of the topic work covered during the year. As the Reception class is part of the Foundation Stage of the National Curriculum, we relate the scientific aspects of the children's work to the objectives set out in the Early Learning Goals (ELGs), which underpin the curriculum planning for children aged three to five. Science makes a significant contribution to the objectives in the ELGs of developing a child's knowledge and understanding of the world, e.g. through investigating what floats and what sinks when placed in water.

Key stage one and two

Science is taught as a discrete lesson and as part of cross-curricular themes when appropriate. Science has links with other areas of the curriculum including Geography, English, Numeracy, Art and Design Technology.

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.

The Learning Environment:

The learning environment should be stimulating with a range of recorded work and evidence of the different enquiry types on working walls with focused vocabulary and scientific language. Children should be subject to a safe learning environment, where equipment is stored safely and easily accessible. Equipment should be selected by the children at times, so they can make decisions about the best materials to use for each task. Children should be posing questions and have access to higher order thinking activities to stimulate their curiosity and awe of the subject.

A science display must be visually appealing, include essential vocabulary and everyday language, questions generated by children and ones to get children thinking like a scientist. Ideally it will be interactive.

Assessment and Marking:

The children's knowledge and understanding are assessed before each unit of work, this can take many forms such as: discussion, mind maps, KWHL charts (knowledge – what I know already, what I want to know, how I will find it out and what I have learnt) and concept maps. This summarises knowledge and understanding of the key topic. These key points are used to refine and identify the starting points and level of challenge for the children's lessons. These initial assessments are revisited at the end of the unit and new knowledge and understanding is added. Assessment for learning is continuous throughout the planning, teaching and learning cycle. We focus on assessing one topic at a time, and we assess children's work in science by making judgments as we observe children during lessons, question, talk and listen to children, and review their written work. We also make use of quizzes 'pre-topic and end of Topic' to support our judgments. Alongside lesson by lesson assessment for learning, teachers will decide whether children are working below, at or above the National Curriculum expectations for their year group. Assessment in Science is based upon scientific knowledge and understanding, rather than achievement in English or Mathematics. In the Foundation Stage we assess children's knowledge and understanding according to the EYFS Learning and Development Stages.

Teachers plan and assess from the National Curriculum, which includes a breadth (knowledge) and a working scientifically objective. Children's work is evidenced in a variety of ways in their science books and class displays which demonstrate their key understanding and skills they have acquired. The WALTs (we are learning to...) in the book are highlighted in a yellow highlighter if the children have fully understood the concept and dashed if they have not understood fully. Mastery opportunities are also planned for the children, which gives them the chance to apply their learning to deepen their knowledge. These are shown in books with a specific sticker. Open-ended questions, based on Blooms Taxonomy higher order questioning, are used for this purpose. All written work must be marked regularly, or verbal feedback given, and children must have clear learning points and next steps to move them forward, if appropriate. Marking must be in line with the school's marking policy. Children will be asked to reflect on their work using tools such as self or peer- assessment.

Teachers may set children work at home, which focuses on these next steps, in order to further embed their learning.

Role of the Subject Leader:

- To be enthusiastic about science and demonstrate good practice.
- Track progress and attainment through the school and hold staff accountable for progress of all children.
- Monitor displays and science learning opportunities throughout the school.
- Conduct book scrutinies and ensure books show progression, support opportunities for children to master and apply their learning.
- Co-ordinate assessment procedures and record keeping so as to facilitate progression and development through the school.
- Ensure the quality of teaching and learning in the school is of a good or better standard.
- Maintain resources and order new equipment/resources to support teachers teaching the curriculum
- To coordinate external science visitors and plan science weeks.
- Support staff with providing science CPD and updates, encourage staff by sharing good ideas and organising in-service and external training where required.
- Be aware of national and local developments through reading relevant materials and attending courses and hub meetings.
- Liase with science coordinators from other schools to compare and share good practice.
- Facilitate parental involvement.
- Work to achieve equality of opportunity throughout the school.
- Look for opportunities for children to be involved in science weeks and joint school events.
- Promote STEM and cross curricular learning through the school.
- Ensure science policy is reviewed and updated reguarly.
- To inspire children and raise their aspirations in science based careers.
- Ensure teachers are providing safe practice through their lessons and seek advice where needed.

Health and Safety:

Children will be taught to use scientific equipment safely during practical activities. Class teachers and teaching assistants will check equipment before use to enusure it is safe to use, all damages will be reported to the science lead and the defective equipment will be taken away from children. A simple risk assessment will be carried out for all practical activities and any precieved hazards will be actioned appropriately. Safe practice must be promoted at all times. The Association of Science Education (ASE) publication, "Be Safe!" has been adopted as the school's safety policy in science.

Monitoring and Evaluation

This policy reviewed by S. Brightley (Science Lead) January 2020

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