

Halfway Nursery Infant School



Science Policy

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HALFWAY NURSERY INFANT SCHOOL

SCIENCE POLICY

PURPOSE OF STUDY

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 is vital to the world's future prosperity, and all pupils 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, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims of our Science Teaching

We aim to:

- build on children's natural curiosity and enjoyment in learning
- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- 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
- ensure children are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.
- encourage them to investigate and question, seeking explanations and thinking critically about claims and ideas
- enable the children to acquire skills to investigate questions safely; using models to represent things they cannot directly experience
- develop an ability to work in a systematic way, planning investigations and recording results appropriately
- develop skills of predicting, asking questions, making inferences, concluding and evaluating, based on evidence and understanding
- enable the children to have a sympathetic understanding of the world we live in and our relationship with it, showing care, concern and a sense of responsibility
- develop a respect for scientific evidence and ideas for each other and for their own health and safety.

The Early Years Foundation Stage, The National Curriculum Programmes of Study and Attainment Targets

We teach science throughout the Early Years Foundation Stage. In the EYFS we relate the scientific aspects of the children's work to the objectives set out in the Ages & Stages and Early Learning Goals and Early Years Foundation Stage documents, which underpin the curriculum planning for children aged from birth to five, particularly through Understanding the World.

In Key Stage 1 we use the National Curriculum 2014, alongside our own skills progressions as the basis for implementing the statutory requirements of the programme of study for science.

How we plan our Science

We plan from topics. This ensures that our Science contains cross-curricular links. We use agreed topics for each year group. We plan our topics as year groups in our medium term planning and weekly plans. By careful reference to either the Early Years Foundation Stage guidance or National Curriculum Programmes of Study we aim to cover all statutory requirements in our agreed topics. However, where mini topics are seen to be necessary to ensure total coverage, these may be done from time to time and any links with other curriculum areas are exploited.

Often the Science activities include aspects of Maths and Literacy, especially when conducting scientific investigations.

We practise mathematical skills in real contexts; counting, ordering numbers, measuring, drawing and interpreting graphs and bar charts.

We think creatively about science, using opportunities to extend learning in Information Communications Technology.

We use the excellent opportunities afforded for language development.

Children are encouraged to talk and write about their work, presenting their own ideas, using scientific and mathematical language. They are encouraged to read and find information from non-fiction texts.

Continuity and Progression

We plan our choice of Topics according to the Whole School Topic and Concept Framework. They are half-termly Topics, which offer opportunities for Science work within the Topic. Each half-term each year group works on the selected topic which will contribute to the children's understanding of a concept chosen to be developed throughout the whole school. Our plan ensures that the children experience a variety of topics, whilst maintaining a continuity of concepts and developing progression in their learning. We plan to build on children's earlier experiences in scientific learning.

Topics are evaluated at the end of each half-term using the planning sheets to show what experiences the children have had. This helps to inform our future planning and demonstrate 'next steps' in learning.

Teaching

We believe that the best way to learn is through first-hand experience. However, children should be helped to make sense of this experience through discussion and application of their learning to new situations. A combination of child and teacher-led investigations are carried out. Teachers will make suggestions and help in planning investigations.

Children are also grouped in pairs, small groups, larger groups or work as individuals as appropriate for each particular activity.

We also strive, where possible, to provide extra-curricular activities to enhance the teaching and learning of science in our school. For example, after school clubs, visiting theatre productions and parent/child open evenings.

Our principal aim is to develop children's knowledge, skills and understanding in Science through the use of the EDUcate approach (Experience, Develop, Use):

Experience/Engage: Children should be exposed to and engaged in a concept/idea in as many different ways to gain experience of it. This is an essential part of the learning process. If children haven't seen, heard or felt part of a genre or style then they can't possibly claim to have any experience of it. A child with limited or no experience of something cannot possibly develop learning to enable them to use this concept/idea in real life. It is our role as teachers to provide exposure to and experience of a whole range of notions, ideas and concepts to enable children to understand them and use them appropriately in the real world. Whilst providing experience its essential that teachers assess children as individuals' starting points will be very different. AfL at this stage will provide a valuable insight into what future learning needs to take place for children to gain a true understanding.

Develop: Once children have gained some experience of a concept/idea/genre and teachers have activated prior learning and clearly identified gaps in learning, then together, teaching can be shaped to develop skills and knowledge to fill gaps in understanding and move learning on. It is in this stage where children should make most progress in developing basic skills and teachers should be constantly reflecting on learning and shaping (and re-shaping lessons) teaching to maximise progress for all children.

Use: Once children have developed skills and knowledge and can confidently use them in isolation, it is important we provide children with opportunities to use and apply these newly developed skills and knowledge in real life, purposeful and meaningful situations. It is only in these situations that children will truly show a genuine understanding of a concept/idea, as they should be able to transfer skills/knowledge in the real world, explaining what they have been learning, why they have been learning it and what use it is to them!

Equal Opportunities and Differentiation

We believe that children of all abilities can benefit from the study of Science. Both boys and girls are encouraged to take an active part in scientific investigations. We plan groupings to enable each child an equal chance to participate, offering starting points which will appeal to both sexes. We strive to meet the needs of all children and regularly examine our provision to ensure that children with Special Educational Needs or those who are Gifted and Talented children are catered for.

Resources for Science

A selection of resources is kept in each classroom. Other resources are kept centrally and grouped in topic categories. We agree to return equipment when we have finished using it. There is provision made for the reasonable use of expendable materials necessary to carry out scientific investigations. We have a right to expect the resources for Science to be kept in good condition and to be replaced when worn. Good quality provision will enable us to encourage children to care for and value the school's equipment.

Books for Science are available from the School's Library and the Topic Boxes. There are science-based non-fiction texts available for shared and guided reading and in the book collections in each classroom. Some fiction texts can be used to provide opportunities to stimulate scientific investigation and learning.

Outdoor resources within the school's grounds include a woodland area and large tubs for planting and growing.

There are places within the grounds which provide opportunities for investigations into plants, trees, birds and minibeasts.

Teachers may use the resources that the children's own homes may have to offer by encouraging children to find out more about a topic or by collecting information which can then be used in school. Any electrical equipment, however, must be PAT tested.

Parents or people in the community may be invited into school to share their expertise and experiences (e.g. mothers and babies, farmers, miners, vets, nurses).

Safety in Science Activities

We accept a responsibility to plan safe activities for Science and ensure safe working practices.

Where in doubt about safety we refer to "Be Safe" from the ASE or consult with the Science Co-ordinator or Headteacher.

Assessment

Each teacher will use their assessment of the children in their class to plan appropriate scientific work. Assessment of Science will be "on-going" and planned for throughout each year and not left to the end of Key Stage 1.

In the Early Years Foundation Stage, science is assessed using observations in the Foundation Stage Profile on an ongoing basis. Samples of work, photographs, child comments and observations are used to record assessments of the children's 'Understanding of the World'. These samples are placed in each child's Special Book, which records the child's learning throughout their time in the EYFS.

Every term science will be assessed in Key Stage 1 through the use of a scientific investigation. This investigation is then placed in the child's Special Book. Teachers are then responsible for marking and levelling this piece of work. Teachers will ensure that all attainment targets are covered through the use of an investigation during the school year.

End of Key Stage 1 Assessments will be done according to Government requirements.

The Role of the Headteacher

The Headteacher has a vital role in encouraging colleagues to teach effective Science. He has a responsibility for ensuring that the policy is used and for bringing the Policy to staff for periodic updating.

The Role of the Science Co-ordinator

The Co-ordinator, working alongside the Headteacher, has the responsibility for progression and co-ordination of teaching the Science Curriculum.

They have the responsibility for the day to day maintenance of the Science equipment and alongside the Head, for the purchase of new equipment and materials.

They will try to support colleagues who are planning Science activities. They will attend Science courses and, as far as possible, be a resource of Science knowledge for all the school, reporting back any new developments and initiatives in Science.