Science Policy

Shirland Primary School

October 2022

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Written By Reviewed By	Louise Needham Chair of Governors
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Science Curriculum Policy

Intent

At Shirland Primary School, we encourage children to be inquisitive about the world around them and promote respect for the living and non-living. The children acquire and develop key knowledge, as well as a range of scientific enquiry skills. The 'Working Scientifically' skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings. Throughout children's time at our school they progressively build a rich scientific vocabulary.

Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. At Shirland Primary School, we use the 'Developing Experts' scheme to plan lessons and ensure all children learn and retain knowledge throughout the programmes of study. In each lesson, pupils are given key facts and knowledge. Each lesson includes direct teaching of ***Rocket Words*** which are key scientific vocabulary and meanings which are used, displayed and revisited throughout the unit. Children practice a broad range of 'Working Scientifically Skills' throughout the curriculum in order to embed scientific understanding. Children are encouraged to develop an understanding of their surroundings by accessing outdoor learning. Wherever possible, we involve children in 'real' scientific activities, for example, investigations over time, researching the local environment or carrying out practical investigations and analysing the results. As well as each child having an individual science book and knowledge organiser, each classroom has a science floor book which records whole class and individual scientific thoughts, ideas and responses. These floor books can be recorded in and shared with the children, promoting that notion of science being all around us and not just during science lessons. Science lessons build upon the learning and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence. Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. There is a whole school science day each year which provides broader provision and the acquisition and application of knowledge and skills.

Science curriculum planning in Key stages 1 and 2

The children study Science as a discrete subject and also via topic related work. Where possible and appropriate, the school links Science with other curriculum areas and makes use of the local environment in our fieldwork. The long term plan for Science maps the scientific topics studied by each class in each term throughout the year. This is based on the Science programme of study for KS1 and 2 from the National Curriculum 2014. Class teachers use the Developing Experts scheme alongside the long term plan to plan their topics to meet the needs of their class. The Science topics build up on prior learning and encourage progression, and increasingly challenge the children as they move up through the school.

Foundation Stage (Reception pupils):
Science in the Reception class is taught as an integral part of the topic work covered during the year. Science is taught through the strand of, 'Understanding the World' and is also linked to the other strands of The EYFS framework for learning. By adapting the DE EYFS plans alongside the PLAN EYFS matrices, teachers provide opportunities to ensure children are gaining first hand experiences to investigate, make observations and discover knowledge about their world. They ensure children are able to comment upon and raise their own questions about the world around them. Children are encouraged to be creative and inquisitive as they participate in activities. Pupils are encouraged to use their natural inquisitiveness, while taking part in exploratory play in specific scientific areas as well as areas that link across the EYFS framework.

Cross Curricular Links
Cross curricular links are encouraged in Science as a way of enriching learning experiences and developing the children's understanding of the subject via other curriculum areas. For example, Science contributes to the teaching of English in our school by actively promoting the skills of reading, writing, speaking and listening. When recording, children use their growing knowledge of spelling patterns and rules. In Maths, children develop the skills of accurate observation, measurement and recording of information. Children use Computing in Science lessons where appropriate by learning how to find, select, and analyse information from the Internet. Data handling equipment is used to collect data and children also use Computing to record, present and interpret data and to review, modify and evaluate their work and improve its presentation. We encourage children to ask and answer questions and to apply their scientific understanding in the real world. Children learn about the lives of some famous scientists for example, Carl Linnaeus, Charles Darwin, Isaac Newton, Galileo Galilei and Neil Armstrong.

Differentiation
Through our Science teaching, we provide learning opportunities that enable children of all abilities to develop their skills and knowledge in each unit. We do this by setting suitable learning challenges and responding to each child's different needs. We recognise that there are children of widely different scientific abilities in all classes and we ensure that we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. Teachers use precise questioning in class to test conceptual knowledge and skills and assess children regularly to identify those children with gaps in learning, so that all children keep up. Intervention programmes are used when the need arises as accessed by the class teacher. IEPs may include, as appropriate, specific targets relating to Science.

Resources
We have sufficient resources for all Science topics taught in school. Planning and teaching resources are stored in designated areas which are accessible and available to all staff. The library contains a good supply of Science topic books, whilst laptops and I-pads provide apps, computer software and internet access to support children's research.

Impact

The Developing Experts scheme enables the teachers to plan and deliver lessons that are pitched so that children with different starting points can access them. This provides an engaging, high-quality science education, that provides children with the foundations and knowledge for understanding the world. Further to this, engagement with the local environment ensures that children learn through varied and first hand experiences of the world around them. The expert films ensure that children have access to positive role models within the field of science from a range of science disciplines and Stem related

industries. We aim to ensure every child enjoys science which results in motivated learners with sound scientific understanding.

Assessment and recording

We assess children's work in Science by making informal judgements based on observations, questioning and discussions with children, as well as written evidence. Written work is marked by the teacher, who makes notes as necessary regarding what has been achieved and gives verbal feedback to children. This formative assessment will then inform the planning for the following lessons. Before teaching a unit of work, the children take quiz which informs teachers of the children's prior knowledge and informs their planning. At the end of a unit of work, the teacher uses the end of unit assessment from Developing Experts to inform their summary judgement about the work of each child in relation to the National Curriculum. Class teachers track children's progress through teacher assessment six times a year.

At the end of KS1 and KS2, teachers make an assessment of each child based on practical work which has been observed, discussions with the child, questioning and evidence from written work and unit tests. These judgements are important indicators of progress at the end of each Key Stage. Pupil progress is shared with parents via the end of year report.
Marking is in line with the school's marking policy. Pupils will also have verbal feedback.

Monitoring and review
It is the responsibility of the Science Subject Leader to monitor the standards of children's work and the quality of teaching and learning in Science. The Science Subject Leader is also responsible for supporting colleagues in the teaching of Science, for being informed about current developments in the subject and for providing a strategic lead and direction for the subject in the school. Each year, the Science Subject Leader devises an action plan outlining the foci for the year and this is incorporated into the School's Improvement Plan. Reports are made to the governors on the progress of Science provision.

Health and safety
The general teaching requirement for health and safety applies in this subject. All planning takes into account safety issues relating to the topic. Children will be shown how to use scientific equipment safely and safety glasses will be used where appropriate. We teach children how to follow proper procedures for food safety and hygiene. Where children are to participate in activities outside the classroom we carry out a risk assessment prior to the activity to ensure that the activity is safe and appropriate for all children.