



Dishforth CE Primary School



Science

Intent

At Dishforth CE Primary School, we are mindful that we are living in an increasingly scientific and technological age where our children need to acquire the knowledge, skills and understanding to prepare them for life in the 21st century. Science, in our school, helps our children to know more, remember more and understand more about the subject. We stimulate our children's interest and enjoyment in the area of science by encouraging them to offer their own suggestions and to be creative in their approach to science. We enable our children to develop co-operation skills through working with others and we encourage them to explore science in forms which are relevant and meaningful to them.

Here, the teaching of science develops our children's understanding of natural phenomena and stimulates their curiosity to find out why things happen in the way they do whilst treating the living and non-living environment with respect and sensitivity.

Our children ask scientific questions and learn how to investigate these by developing a variety of methods of scientific enquiry to stimulate creative thought. Through this, they are encouraged to collect relevant evidence, to question outcomes and to persevere. We help them to develop the scientific skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesising with an increased use of precise measurement skills and ICT.

Our children are taught how to recognise and assess risks to themselves and to others when working with living things and materials and to take action to control these. Our science in school develops an appreciation of the way science will affect their future on a personal, national and global level.

Key Principles:

Our school has developed ten school-wide Principles for Teaching and Learning Science, which have been created through an amalgamation of contributions from staff parents and pupils, and are displayed in each classroom:

- Our teachers are knowledgeable and enthusiastic about science and deliver creative lessons in stimulating environments.
- Our children are encouraged to ask lots of questions about science and supported to try to find the answers.
- Our children carry out science work sensibly and happily within different groups.
- Our children investigate safely using the five different types of enquiry.
- Our children use the outdoor environment as often as possible to help them with their science work.
- Our children use a wide range of resources including good quality equipment to find out about science.
- Our children approach science with open minds and persevere with challenging work.
- Our children know what they are good at in science and what they need to do to get even better.

- Our children take care about how they present their science work and do this in a variety of ways, using the correct scientific vocabulary.
- Our children are excited to find out about their world during science sessions and enjoy making links to science beyond the classroom.

These key principles are summarised in this child-friendly version:

We have fun.
 We ask questions.
 We work together.
 We investigate.
 We go outdoors.
 We use good equipment.
 We persevere.
 We record well.
 We evaluate.
 We find out about our world.

Implementation

There is a whole school approach to planning and assessment, using the National Curriculum and organised using the North Yorkshire Science Scheme of Learning (NYSSoL). We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Through the Programmes of Study in the Science National Curriculum, children will acquire and develop these skills throughout their Primary years.

We believe that science promotes communication in a specific and precise language involving mathematical and logical thinking. It allows children to develop ways of finding out for themselves and gives them practice in problem solving.

In science, pupils are encouraged to be open-minded and to try and make sense of what they see and find out.

Scientific enquiry should include: observations over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing and research using secondary sources.

Children are given opportunities to:

- Take increasing responsibility for their work.
- Work independently and in groups.
- Be involved in tasks of varying duration.
- Undertake teacher directed and child-initiated tasks.

Children undertake a range of activities designed to enhance their scientific knowledge and understanding including:

- Planning experimental work, obtaining, considering and presenting evidence.
- Using ICT where appropriate.
- Evaluating their work.
- Taking part in investigative activities both in the local and wider environment.
- Undertaking trips and visits where appropriate.

Early Years Foundation Stage

We teach Science in our Early Years Foundation Stage as an integral part of the topic work covered during the year. We relate the scientific aspects of the children's work to the descriptors set out in the Statutory Framework for the Early Years Foundation Stage.




Children are provided with many opportunities to investigate the world around them by playing and exploring, active learning and creating and thinking critically. The specific areas for Learning and Development, **Understanding the World (The Natural World)**, provides important contexts for our Early Years children to develop essential scientific skills and knowledge.

KS1 & KS2 Content:

Statutory requirements, as laid down in the Science National Curriculum, are delivered based on North Yorkshire Science Scheme of Learning.

For KS1 there is one 2-year planning cycle:




During this KS1 2-year cycle, Year 1 key concepts in the areas of PLANTS, ANIMALS INCLUDING HUMANS, EVERYDAY MATERIALS and SEASONAL CHANGES are covered, along with Year 2 key concepts in the areas of PLANTS, ANIMALS INCLUDING HUMANS, USES OF EVERYDAY MATERIALS and LIVING THINGS AND THEIR HABITATS.

	AUTUMN 	SPRING 	SUMMER 
Ks1 (repeat yearly)	Everyday materials and their uses	Animals, including humans	Plants Living things and their habitats
	← Seasonal changes →		




For KS2, there are two 2-year planning cycles – Lower KS2 and Upper KS2.

In KS2, we follow the NYCC recommended plan of visiting ALL topics at least twice, to allow progress to be made and shown, especially for those pupils who did not meet 'expected' the first time they encountered the topic.

During the Lower KS2 2-year cycle, emphasis is put on the Year 3 key concepts in the areas of PLANTS, ANIMALS INCLUDING HUMANS, ROCKS, LIGHT and FORCES AND MAGNETS along with Year 4 key concepts in the areas of ANIMALS INCLUDING HUMANS, LIVING THINGS AND THEIR HABITATS, STATES OF MATTER, SOUND and ELECTRICITY.

	AUTUMN 		SPRING 		SUMMER 	
Year A	Animals, including humans (4)	<i>Earth and space</i>	Forces and magnets	Sound	Plants	Living things and their habitats
Year B	Rocks	States of matter (Materials)	Electricity	Light	Animals, including humans (3)	<i>Living things and their habitats</i>

During the Upper KS2 2-year cycle, emphasis is put on Year 5 key concepts in the areas of ANIMALS INCLUDING HUMANS, LIVING THINGS AND THEIR HABITATS, PROPERTIES AND CHANGES OF MATERIALS, EARTH AND SPACE and FORCES, along with Year 6 key concepts in the areas of ANIMALS INCLUDING HUMANS, LIVING THINGS AND THEIR HABITATS, EVOLUTION AND INHERITANCE, LIGHT and ELECTRICITY. Scientific knowledge covered in LKS2 is revisited.

	AUTUMN 		SPRING 		SUMMER 	
Year A	Light	Earth and space	Living things and their habitats (5)	Properties and changes in materials	Animals, including humans (6)	<i>Sound</i>
Year B	Electricity	Forces and magnets	<i>Plants</i>	Living things and their habitats (6)	Rocks and Evolution and Inheritance	Animals, including humans (5)

Working Scientifically is embedded within the above content. Over the course of each term, eight PLAN, DO and REVIEW skills are focused on in turn. This allows for the progress in each skill to be regularly assessed.

For each science topic covered, planning covers:

- Working Scientifically PLAN, Do and REVIEW skills
- A range of the 5 different types of enquiry: observations over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing and research using secondary sources
- Topic related key concepts
- Links with other areas of the curriculum
- Vocabulary to be developed
- Resources required to deliver the work
- Teaching activities
- Health and safety points and risk assessments

Equal Opportunities:

At Dishforth C of E Primary School we are committed to providing all children with an equal entitlement to scientific activities and opportunities regardless of race, gender, culture or class.

Inclusion:

In school we aim to meet the needs of all our children by differentiation in our science planning and in providing a variety of approaches and tasks appropriate to ability levels. This enables children with learning and/or physical difficulties to take an active part in scientific learning and practical activities and investigations and to achieve the goals they have been set. Some children will require closer supervision and more adult support to allow them to progress whilst more able children will be extended through differentiated activities. By being given enhancing and enriching activities, more able children will be able to progress to a higher level of knowledge and understanding appropriate to their abilities.

Dyslexia friendly: In order to accommodate the individual's particular learning style, lessons will be planned wherever possible in a multi-sensory way so that the various activities will cater for all pupils in the spirit of inclusion. There will also be a consideration of how to record lesson outcomes so that each pupil is offered a variety of methods and is not inhibited by any specific difficulty.

Cross Curricular Links:

Teachers will be committed to linking the children's learning in science to other curricular areas. Speaking and listening will be actively promoted during scientific investigations. The children develop many of their non-fiction reading and writing skills in science. Mathematical skills such as weighing and measuring are an important part of science lesson. Where appropriate, children will record their findings using charts, tables and graphs using ICT.

Assessment and recording:

Assessment for learning is continuous throughout the planning, teaching and learning cycle. We focus on assessing one science skill 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 'End of Topic' assessments.

At the end of each term, each child's achievement is recorded on an individual NYSSoL Knowledge & Understanding – Pupil Progress Record sheet as 'emerging', 'expected' or 'beyond' expected outcomes.

Progress in each PLAN, DO and REVIEW skill is regularly assessed. At the end of each term, each child's progress in each skill is recorded on an individual NYSSoL Working Scientifically Pupil Progress Record sheet.

Teachers will make a formal overall assessment of the children's work in science at the end of Key Stage 1 and Key Stage 2.

Resources:

- Appropriate books will be available in the classroom.
- Children will be taught to use a range of scientific equipment.
- Children will have regular use of ICT resources during science sessions.
- Children will have direct access to resources, within health and safety limitations, which they will be taught to use with respect.
- Parents will be informed of the science topics so that they can support the work at home, if appropriate.

Health and Safety:

- A risk assessment will be made, as part of the planning process, before any potentially dangerous scientific activity is undertaken.
- Children will be informed of any risks or hazards but will also be encouraged to assess and identify risks for themselves.
- Children will be shown how to use scientific equipment safely.
- Safety glasses will be used where appropriate.

Staff Development/INSET:

- Opportunities will be taken for staff to undertake training in Science to develop and reinforce knowledge and skills and to review the latest developments.
- Where appropriate, staff expertise from within or beyond the school will be used to support staff development.
- The Science Leader will be responsible for the development and monitoring of the Curriculum at each Key Stage.

Impact

As a result, learners will:

- Know more, remember more and understand more about working scientifically and scientific concepts.
- Show confidence in asking questions about scientific concepts which build on their scientific knowledge.
- Show confidence in planning, carrying out and reviewing different types of scientific enquiries to answer their questions.
- Show confidence in selecting resources best appropriate for their scientific enquiries.
- Understand how science is relevant to our world both now and in the future.
- Show confidence in their ability to achieve in science.
- The majority will achieve the expected standard in science.