

Gainford CE Primary School

Science Policy

Rationale:

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

Aims and Objectives:

We live in an increasingly scientific and technological age where children need to acquire the knowledge, skills and understanding to prepare them for life in the 21st century. Through the framework of the National Curriculum 2014, science aims to:

- To stimulate children's interest and enjoyment in the area of science
- Equip children to use themselves as starting points for learning about science, and to build on their enthusiasm and natural sense of wonder about the world.
- Develop through practical work the skills of observation, prediction, investigation, interpretation, communication, questioning and hypothesising, and increased use of precise measurement skills and ICT.
- Encourage and enable pupils to offer their own suggestions, and to be creative in their approach to science, and to gain enjoyment from their scientific work.
- Enable children to develop their skills of co-operation through working with others, and to encourage where possible, ways for children to explore science in forms which are relevant and meaningful to them.
- Encourage children to collect relevant evidence and to question outcome and to persevere.
- Encourage children to treat the living and non-living environment with respect and sensitivity.
- To encourage children to raise questions and learn how to investigate and explore these using both first-hand experience and secondary sources.
- To help children understand the nature of scientific ideas and to obtain and test the evidence for them.
- To help children recognise and assess risks and hazards to themselves and to others when working with living things and materials and to take action to control them.

Organisation and Methodology:

There is a whole school approach to planning and assessment, based on the National Curriculum 2014 .We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Through the Programmes of Study in the Science National Curriculum 2014, 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.

Programmes of Study

Provision is made for different ages and levels of ability
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.

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

- 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.

Resources for Planning

Hamilton Trust units of work may be used to assist and supplement planning in Science for Key Stage 1 and Key Stage 2 .Resources are downloadable from their website <https://www.hamilton-trust.org.uk>.

Content:

Statutory requirements, as laid down in the Science National Curriculum 2014
For KS1 there is one 2-year planning cycle, and in KS2, there are two 2-year planning cycles – Lower KS2 and Upper KS2.

During the 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.

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

During the Upper KS2 2-year cycle, 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 are covered, along with Year 6 key concepts in the areas of ANIMALS INCLUDING HUMANS, LIVING THINGS AND THEIR HABITATS, EVOLUTION AND INHERITANCE, LIGHT and ELECTRICITY.

Working Scientifically is embedded within the above content. Over the course of each term, 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 skills
- 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

Foundation Stage

We teach Science in the Reception class 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 objective 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.

Equal Opportunities:

At Gainford 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:

Positive attempts will be made to develop and use a wide range of resources and activities, which reflect the interests, and cultural background of all pupils

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.

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. Individual staff expertise and skills will be utilised to the benefit of both children and staff.

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 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.

At the end of each term, or after each unit of work teachers will make a formal overall assessment of the children's work in science. The assessment sheets can be used

digitally or in paper form (in terms of a point score system based on Emerging, Developing and secure understanding) is located in School Documents on the Durham Learning Gateway.

Resources

- Appropriate books will be available in the classroom libraries at all times.
- Children will be taught to use a range of scientific equipment.
- Children will have regular use of ICT resources during science sessions.
- Newspapers, magazines etc. will be used as appropriate.
- 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.
- A range of science equipment is stored centrally in the office area

- Educational visits and visitors to school may be used to enhance and enrich the science learning experiences of children.

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:

- 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 the establishment or from other schools or the Advisory Service will be used to support staff development.

The Science Leader and Curriculum Co-ordinator will be responsible for the development and monitoring of the Curriculum at each Key Stage.

Careful monitoring and evaluation of policy will be undertaken to ensure maximum effectiveness

Evaluation:

This policy will be reviewed as and when necessary.
Updated November 2015

Signed

Appendix 1 – Planning in Science

YEAR 1/2 CURRICULUM MAP (Year 1 of 2)

Term / topic	Autumn – Fire-The Great Fire of London (H)	Spring – Houses and Homes- where I live (G)	Summer – Oceans and Seas
Science	Light and sound – Observe seasonal changes		
	Plants – Identification Seasonal Changes	Materials- Everyday materials Seasonal Changes	Plants – Growth seasonal changes Animals –including humans

YEAR 1 / 2 CURRICULUM MAP (year 2 rolling programme)

Term / topic	Autumn – Animals (S)	Spring – Clothes Then and Now	Summer – Fighting Fit (S)/Famous People (H)
Science	Animals Living Things and Habitats – Living and Dead	Clothes then and Now Materials – use of everyday materials Animals -growing needs	Fighting Fit Plants – growing Animals –and health- related fitness

YEAR 3 /4 CURRICULUM MAP(Year 1 of 2)

Term / topic	Autumn – Once upon a Time (L)	Spring – UK (G)	Summer – Ancient Egypt (H)
Science	Animals including humans Plants – Structure and Reproduction	Light and Sound – Seeing and Shadows Materials – Fossils and Properties of Rocks	Plants – Growth and Transportation Forces and Magnets – How things move

YEAR 3/4 CURRICULUM MAP (Year 2 of 2)

Term / topic	Autumn Ancient Greece	Spring – Romans (H)	Summer – North East (G)
	Working Scientifically		
Science	Animals including Humans –	Electricity Sound	Living Things and Habitats –

	States of matter		
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YEAR 5/6 CURRICULUM MAP(Year 1 of 2)

Term / topic	Autumn – World War	Spring – Go for Green	Summer –Vikings and Anglo Saxons
<u>Science</u>	Earth and Space Living Things and their habitats	Forces	Animals – including humans Properties and Changes of Materials

YEAR 5/6 CURRICULUM MAP(2 of 2)

Term / topic	Autumn – The Americas (H)	Spring – Rainforests?	Summer – Street Child – Victorians (L)
	Working Scientifically		
<u>Science</u>	Evolution and Inheritance Animals including Humans	Electricity Light	Living Things and Habitats