

# Science Policy Document



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To be reviewed, evaluated and updated: September 2021

## **Introduction**

This policy document sets out the curriculum intent, implementation and how impact will be measured for Science.

Science at Burnside aims to teach our children the skills, knowledge and understanding they need to question and understand concepts and phenomena that occur in the world around them and equips them with the motivation to seek explanations for these. Children learn the skills required for scientific enquiry and they will begin to appreciate the way science will affect their future on a personal, national and global level.

The aims of science are to enable children to:

- Ask and answer scientific questions
- Plan and carry out fair scientific investigations, using equipment including computers
- Know and understand the life processes of living things
- Know and understand the physical processes of materials, electricity, light, sound and natural forces
- Know about materials and their properties
- Evaluate evidence and present their conclusions clearly and accurately.

## **Science Curriculum aims**

### **EYFS**

We teach science in the Foundation stage as an integral part of the topic work covered during the year. It comes under Understanding the World in the EYFS. Children must be supported in developing the knowledge, skills and understanding that help them to make sense of the world. Their learning must be supported through offering opportunities for them to use a range of tools safely; encounter creatures, people, plants and objects in their natural environments and in real life situations; undertake practical ‘experiments’; and work with a range of materials.

### **Key Stage 1 Science**

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask questions about what they notice. They are helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science is done through the use of first-hand practical experiences, but there is also some use of appropriate secondary sources, such as books, photographs and videos. ‘Working scientifically’ is taught through and clearly related to the teaching of the science content in the programme of study. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils seek answers to questions through collecting, analysing and presenting data.

## **Key Stage 2 Science**

### **Lower Key Stage 2 – Years 3-4**

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. ‘Working scientifically’ is taught through and clearly related to the teaching of the science content in the programme of study. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils seek answers to questions through collecting, analysing and presenting data

### **Upper Key Stage 2 – Years 5-6**

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. In upper key stage 2, they encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They also begin to recognise that scientific ideas change and develop over time. They select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. ‘Working scientifically’ is taught through and clearly related to the teaching of the science content in the programme of study. These types of scientific enquiry include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils seek answers to questions through collecting, analysing and presenting data.

## **Intent**

Below is the order that we will teach each area of Science for each year group. We have chosen to teach the areas in this order as each area helps to build on previous knowledge that has been taught. Working scientifically is taught throughout the year in all topic areas.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Animals including humans		Everyday materials		Plants	
	Seasonal change					
Year 2	Living things and their habitats	Uses of everyday materials		Plants	Animals including humans	
Year 3	Rocks	Rocks / Light	Light	Plants	Animals including humans	Forces and magnets
Year 4	Living things and their habitats	Animals including humans	States of matter		Sound	Electricity
Year 5	Earth and space	Forces	Properties and changes of materials		Living things and their habitats	Animals including humans
Year 6	Living things and their habitats	Animals including humans	Electricity	Evolution and inheritance	Light	

Please see separate medium term plans for more information regarding our intent.

## **Implementation**

Our school uses a variety of teaching and learning styles in science lessons. Our principal aim is to develop the children's knowledge, skills and understanding. We do this through a mixture of whole-class teaching and individual / group activities. Teachers encourage the children to ask as well as answer scientific questions. The children have the opportunity to use a variety of secondary sources of information, where it will enhance learning as well as gaining first hand experiences, for example, the use of books, photographs, graphs, diagrams, models and ICT. Burnside Primary School also has close links with North Durham Academy and the Centre for Life in Newcastle who provide science activities for the children across all age ranges. We recognise the fact that we have children of differing scientific ability in all our classes and so we provide suitable learning opportunities for all children by matching the challenge of the task to the ability of the child. We achieve this in a variety of ways by:

- Setting common tasks that are open-ended and can have a variety of responses Setting tasks of increasing difficulty (we do not expect all children to complete all tasks)
- Grouping children by ability and setting different tasks for each group
- Providing a range of challenges with different resources
- Using additional adults to support the work of individual children or small groups
- Incorporating high order questions that apply to scientific thinking to extend the most able children in science

Our science planning is topic based as part of our integrated curriculum approach. The National Curriculum is used as the basis of curriculum planning. We have planned the topics in science so that they build upon prior learning. We ensure that there are opportunities for children of all abilities to develop their skills and knowledge in each unit and we also build progression into the science scheme of work, so that the children are increasingly challenged as they progress through the school. More able learners are identified and throughout the year and enrichment opportunities are offered.

### **The contribution of science to teaching in other curriculum areas**

#### **English**

Science contributes significantly to the teaching of English at Burnside by actively promoting the skills of thinking, reading, writing, speaking and listening. The children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through writing reports and projects and by recording information.

#### **Mathematics**

Science contributes to the teaching of mathematics in a number of ways. The children use weights and measures and learn to use and apply number skills. Through working on investigations, they learn to estimate and predict. They develop the skills of accurate observation and recording of events. They use numbers in many of their answers and conclusions.

#### **Computing**

Children use computing in science lessons where appropriate. They use it to support their work in science by learning how to find, select, and analyse information on the internet. Children use computers to record, present and interpret data and to review, modify and evaluate their work and improve its presentation.

#### **Personal, social and health education (PSHE) and citizenship**

Science makes a significant contribution to the teaching of personal, social and health education. This is mainly in two areas. Firstly, the subject matter lends itself to raising matters of citizenship and social welfare and healthy eating and exercise. Secondly, children benefit from the nature of the subject in that it gives them opportunities to take part in debates and discussions. Science promotes the concept of positive citizenship. Spiritual, moral, social and cultural development Science teaching offers children many opportunities to examine some of the fundamental questions in life, for example, the evolution of living things and how the world was created. Through many of the amazing processes that affect living things, children develop a sense of awe and wonder regarding the nature of our world. Science raises many social and moral questions. Through the teaching of science, children have the opportunity to discuss, for example, the effects of pollution and the moral questions involved in this issue. We give them the chance to reflect on the way people care for the planet and how science can contribute to the way we manage the Earth's resources. Science teaches children about the reasons why people are different and, by developing the children's knowledge and understanding of physical and environmental factors, it promotes respect for other people.

## **Inclusion**

At Burnside we teach science to all children. Science forms part of the school curriculum policy to provide a broad and balanced education for all children. Through our science teaching, we provide learning opportunities that enable all pupils to make progress. We do this by setting suitable learning challenges and responding to each child's different needs. Assessment against the National Curriculum allows us to consider each child's attainment and progress against expected levels. Our work in science takes into account the targets set in the children's individual support plans. **Assessment**

We assess children's work formatively in science through observations and marking. These assessments inform the class teacher's planning for future lessons. At the end of a unit of work, the class teacher makes a judgement about the children's achievements. At the start of the year, key objectives are identified that will be assessed in each unit and opportunities for assessment are planned for. Assessments may take the form of a practical activity, a concept map or a written assessment. The teacher records these assessments to inform reports to parents and the next class teacher at the end of the year.

## **Monitoring and Review**

The monitoring of science teaching and pupil progress is the shared responsibility of teachers, subject leader and the senior leadership team. The work of the subject leader includes supporting colleagues in the teaching of science, keeping up to date with current developments as well as providing a strategic lead and direction for the subject. The school's governing body receive regular updates to inform them of the vision for continually driving forward science teaching.

## **Impact**

Through the Science curriculum offered, it is our aim to develop inquisitive children who are critical thinkers and learners. Alongside the scientific knowledge they acquire, we are passionate in ensuring that we make a lasting impact upon the children thinking scientifically and developing scientific skills and concepts simultaneously in order to equip them for the rest of this stage, the next key stage and beyond.