



Grange Primary School

Pursuing excellence for every child

Science Policy



Curriculum Intent

Science is instrumental in preparing future generations for their changing world. Science should stimulate pupils' interest, ignite learners' curiosity, promote enquiry and embed secure knowledge of the world and phenomena around us. Science should be taught through investigative and research learning in order that children can learn through discovery, backed up with practical modelling so that children question intelligently, evaluate well and explain with precision.

Aspirations

This driver will ensure that our pupils are aware of a diverse range of career opportunities and the lifelong learning available to them. This will be achieved through aspirational speakers that visit our school and studying significant people within the curriculum.

Independence

Independence is the thread throughout all of our curriculum and is carefully nurtured through well planned lessons with some clear success criteria. Pupils are encouraged to seek out resources, practise, apply and develop skills as well as building resilience.

Characteristics of a Scientist

- The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings.
- Confidence and competence in the full range of practical skills, taking the initiative in, for example, planning and carrying out scientific investigations.
- Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings.
- High levels of originality, imagination or innovation in the application of skills.
- The ability to undertake practical work in a variety of contexts, including fieldwork.
- A passion for science and its application in past, present and future technologies.

Implementation

Our pupils should be able to organise their knowledge, skills and understanding around the following:

Working scientifically

Health, hygiene and working ethically

Biology:

- Understand plants
- Understand animals and humans
- Investigate living things
- Understand evolution and inheritance

Chemistry:

- Investigate materials

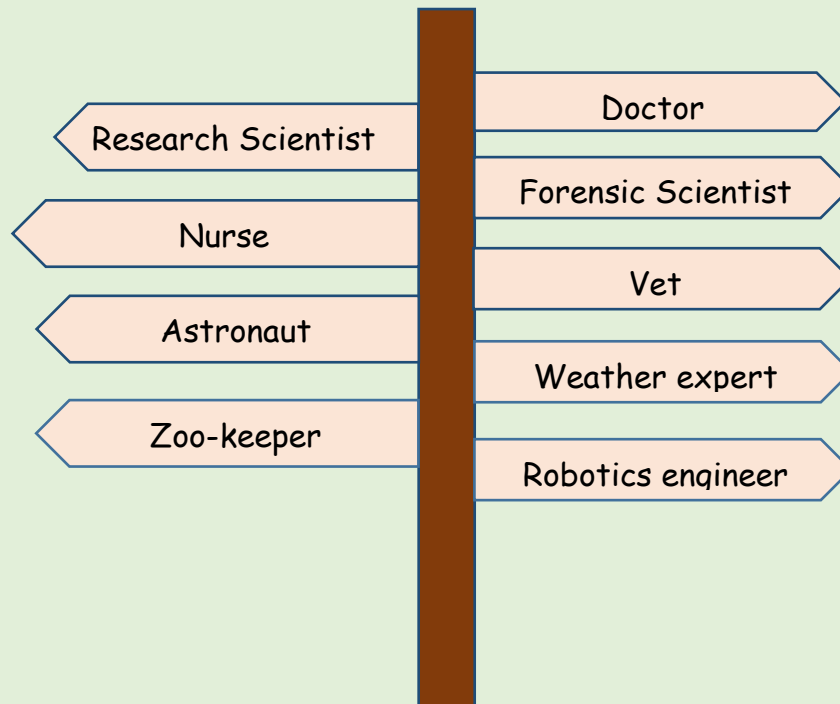
Physics:

- Understand movement, forces and magnets
- Understand the Earth's movement in space
- Investigate light and seeing
- Investigate sound and hearing
- Understand electrical circuits

These key concepts underpin learning in each milestone. This enables pupils to reinforce and build upon prior learning, make connections and develop subject specific language.

[Add link to the curriculum breadth maps for Science](#)

As a scientist you could aspire to be a:



It is our aim that all children will:

- demonstrate a love of science and an interest in further study and work in this field
- retain knowledge that is pertinent to Science with a real life context.
- be able to question ideas and reflect on knowledge.
- be able to articulate their understanding of scientific concepts and be able to reason scientifically using rich language linked to science.
- demonstrate mathematical skills through their work, organising, recording and interpreting results.
- work collaboratively and practically to investigate and experiment.
- achieve age related expectations in Science

Curriculum Impact

By the end of EYFS, the pupils at Grange Primary School will:

Make comments about what they have heard and ask questions to clarify their understanding. Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

By the end of KS1, the pupils at Grange Primary school will be able to:

Ask simple questions. Observe closely, using simple equipment. Perform simple tests. Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions. Have a basic understanding of plants, animals including humans, habitats and how these link together, materials, seasonal changes, circuits and space.

By the end of Year 4, the children at Grange Primary School will be able to:

Ask relevant questions. Set up simple, practical enquiries and comparative and fair tests. Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers. Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests. Identify differences, similarities or changes related to simple, scientific ideas and processes. Use straightforward, scientific evidence to answer questions or to support their findings. Have a developing knowledge of: plants, animals including humans, habitats, how they are adapted, know how fossils and rocks are formed and have an understanding of the states of matter and how temperature may affect this. They will be able to describe how light travels and explain shadow formation as well as explaining how we hear sound. They will develop knowledge of forces including magnetic force.

By the end of KS2, the children at Grange Primary School will be able to:

Plan enquiries, including recognising and controlling variables where necessary. Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. Take measurements, using a range of scientific equipment, with increasing accuracy and precision. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions. Present findings in written form, displays and other presentations. Use test results to make predictions to set up further comparative and fair tests. Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments. Plan enquiries, including recognising and controlling variables where necessary. Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work. Take measurements, using a range of scientific equipment, with increasing accuracy and precision. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions. Present findings in written form, displays and other presentations. Use test results to make predictions to set up further comparative and fair tests. Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments. Have deepened knowledge about plants, animals including humans and how they have adapted and evolved. They will have knowledge of the circulatory and reproductive systems. They will have developed further knowledge of states of matter and the changes that can/not be made. They will understand different forces, and how these can be used in mechanisms and circuits.

Assessment

Through the explicit teaching of Science knowledge and skills, both the teachers and the pupils assess their learning continuously throughout the lesson. Our assessment systems enable teachers to make informed judgements about the depth of learning, retention and the progress pupils have made over time.

Links to EYFS

The EYFS framework is structured very differently to the national curriculum as it is organised across nine areas of learning rather than subject areas.

Science		
Three and Four-Year-Olds	Communication and Language	• Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"
	Physical Development	• Make healthy choices about food, drink, activity and toothbrushing.
	Understanding the World	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.
Reception	Communication and Language	• Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. • Use new vocabulary in different contexts.

Reception Continued	Physical Development	• Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - sensible amounts of 'screen time' - having a good sleep routine - being a safe pedestrian
	Understanding the World	• Explore the natural world around them. • Describe what they see, hear and feel while they are outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.

ELG	Communication and Language	Listening, Attention and Understanding	• Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	Managing Self	• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
	Understanding the World	The Natural World	• Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.