St Nicholas CE First School
learning and believing, growing and achieving

Subject Information: Science

What's a fair test?

How will I solve…?

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What is scientific enquiry?

How do we work scientifically?

What happens if…?

How do I plan an investigation?

Principles of Science at St Nicholas CE First School

At St Nicholas CE First School, Science is:

- An engaging and exploratory experience providing the foundations for understanding the world
- An opportunity for staff to teach in a creative and purposeful way, and using a range of effective teaching and learning strategies to teach a range of concepts
- An opportunity for pupils to develop a sense of excitement and curiosity about the natural world and wonder, that they can apply in different context to enrich their learning experiences across the curriculum
- To develop an awareness of Science in everyday life and its relevance to personal health and safety
- To use their natural curiosity and acquired working scientifically skills to develop a scientific approach to solving problems.

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What is Science?

Science is a core subject in the National Curriculum for England for KS1 and KS2, and is a key skill developed across the Early Years Foundation Stage learning goals, particularly in Understanding the World. It is the study of the world through the specific disciplines of biology, chemistry and physics. At St Nicholas CE First School, Science is learnt through questioning, observing, predicting, designing practical enquiries and gathering, recording and presenting data.

Why teach and learn Science?

Children are naturally curious about their world and Science is an excellent vehicle for harnessing this curiosity.

- It enables us to have a better understanding about ourselves.
- It enables us to have a better understanding of our surroundings and the world in which we now live and how it may look in the future.
- It provides an understanding of how technological change and medicine has impacted on the development of the world and the quality of our lives and the importance of continued investigation for our future.
- It is part of modern culture, providing employment and opportunities to shape the future of the world.
- It encourages creative and imaginative thought.
- It encourages questioning and discussion skills.
- It promotes enquiry skills that will have positive impact across the curriculum.

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How will pupils learn?

Pupils will learn through a 'hands-on' approach by investigating through scientific enquiry which will enable their learning to come to life. Key learning vocabulary is shared and explored with pupils so that they are fluent in scientific language and demonstrating their learning. To promote a rich partnership in learning between pupils, they will work independently, in pairs, and in small groups; this will enable effective learning discussions to take place and the sharing and modelling of knowledge, understanding and skills. This will in turn develop children's self-confidence to work both independently and co-operatively with others. All children at St Nicholas will also have a Forest School experience in which they have additional outdoors time to explore and investigate Scientific concepts in a practical way making links to the use of Science in supporting every day life.

How is Science taught?

Science is taught as a discrete whole-class lesson for at least two hours per week. Any knowledge, understanding and skills taught within Science lessons should be applied across the curriculum, in order to promote teaching and learning for mastery. Teaching staff will make effective use of modelling and questioning of each learning concept to ensure pupils recognise and make connections within their learning. Furthermore, this allows for pupils to build on their prior learning and their experiences of everyday Science. Children will be encouraged to investigate and learn from their own scientific enquiries.

What will pupils learn?

Pupils will learn the following in EYFS and Key Stage 1 and 2:

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EYFS	Year 1	Year 2	Working Scientifically in Years 1 and 2	Year 3	Year 4	Working Scientifically in Years 3 and 4
Understanding the world involves guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment.	Plants Animals, including humans Everyday materials Seasonal changes	Living things and their habitats Plants Animals, including humans Uses of everyday materials	During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions	Plants Animals, including humans Rocks Light Forces and magnets	Living things and their habitats Animals, including humans States of matter Sound Electricity	During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.

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How is learning assessed?

Learning in Science is assessed continually within each lesson to ensure that staff plan for progression. This ensures that all groups of pupils are both supported and challenged to enable them to make at least expected progress. At the end of each unit, staff take into account their knowledge of each individual pupil to come to a judgement as to whether they are: Working Towards/Working at/Working Above the Expected Standard. As pupils are viewed as individuals with their own prior experiences and with each unit being unique with its own knowledge, understanding and skills, the judgement at the end of each unit may vary to reflect the progress that pupils make.

In the Early Years Foundation Stage, the use of observations underpinned by personalised and creative learning activities, enable staff to draw conclusions and judgements about pupils' understanding of technology across the early learning goals.

Access to Resources

Staff and pupils have access a rich and varied set of resources for each unit of work enabling learning to be maximised.

How does it promote fundamental British Values and SMSC?

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British Values – Pupils consider how science can be both lawfully and unlawfully used, including the consequences and impact of this. They will also explore how to work scientifically to express their ideas positively, whilst also developing tolerance and respect for the diverse world they live within.

Spiritual Development – Pupils have the opportunity to ask meaningful questions to extend their understanding about how science works and the world they live within; use and apply their learning purposefully and creatively; reflect on the impact of science in the wider world, and how science can be used to explore beliefs and new experiences in a modern society.

Moral Development – Pupils will explore different concepts of right and wrong when planning an investigation to ensure equipment is used safely, respectfully and lawfully. Moral education in Science encourages children to become increasingly curious, to develop open mindedness to the suggestions of others and to make judgments on evidence not prejudice.

Social Development – Pupils will effectively communicate and collaborate with others: sharing ideas, data and results for further enquiry, whilst appreciating the diverse views of others.

Cultural Development – Pupils will recognise and appreciate that scientific development arises from the diverse world around them. It is also becoming increasingly important that pupils develop an awareness of the impact of quickly developing cultures around the world on our environment.