

St Helena's Church of England Primary School

"It is our responsibility to learn and achieve our dreams as a family."

Opening minds, widening horizons and developing a better world

Policy on Science

Valuing Community, Compassion, Endurance, Friendship, Hope, Respect, Thankfulness, Wisdom

1 Curriculum Intent.

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way that they do. It teaches methods of enquiry and investigation to stimulate creative thought.

At St Helena's, our intended curriculum fosters a natural scientific curiosity, allowing children to discover and understand the scientific world for themselves. Year-on-year, the children develop their scientific knowledge, subject-specific vocabulary, enquiry skills and a conceptual understanding in Biology, Chemistry and Physics. When working scientifically, children's creativity, self-evaluation, co-operation and responsibility is encouraged. It is intended that our curriculum will prepare our children for life in an increasingly scientific and technological world, while encouraging them to think for the future by developing care and concern for our changing environment.

We intend for our children to leave us in Year 6 having had an enjoyable experience of science in primary school, with a deep and lasting interest in the subject for the rest of their academic careers and beyond.

2 Teaching and learning

Tell me and I forget, Teach me and I remember, Involve me and I learn.

We use a variety of teaching and learning styles in science lessons. Our principal aim is to develop children's knowledge, skills, and understanding. Knowledge organisers determine the essential knowledge and vocabulary every child needs to remember. Children will be regularly engaged in enquiry-based research activities, specifically focussing on:

- **Pattern seeking**
- **Comparative and fair testing**
- **Observation over time**
- **Identifying, classifying and grouping**
- **Research using secondary resources**

We encourage the children to ask, as well as answer, scientific questions, make predictions and hypotheses. They will use a variety of equipment and will record their findings using measurements, statistics, graphs, observational drawings and photographs. Visits and visitors will be used to enrich and engage children's learning.

In all classes, children have a wide range of scientific abilities. We recognise this fact and 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:

- setting tasks which are open-ended and can have a variety of responses
- grouping children carefully so that they are able to learn collaboratively
- providing resources of different complexity, matched to the ability of the child

We use classroom assistants to support some children, ensuring that work is matched to the needs of individuals.

All staff are responsible for ensuring all children are safe during practical lessons. (Refer to “Be Safe – aspects of safety in science and Technology in KS1 and 2” and the Science Association manual)

Scientific Enquiry recording must consider:

- What do I want to find out? (scientific enquiry question)
- What will I do? (Method)
- What will I need? (Equipment)
- What will I keep the same and what will I change? (Variables)
- What will I think will happen and why? (Prediction)
- What did happen? (Results)
- Why did that happen? (Conclusion)

By UKS2, children will record the whole scientific process at the most relevant point in the year whilst younger children might record parts of the whole investigation. The recording must be modelled so that children are taught how to write each element and in particular, predictions and hypotheses.

3 Science curriculum planning

Science is a core subject in the National Curriculum. Objectives from the National Curriculum are mapped onto our long-term frameworks and progression plan. They are taught in an inter-connected theme-based context. Scientific vocabulary progression is mapped out on the progression plan to aid in the planning process when considering “what came before” and “what comes next” in the learning progression. Medium and short-term planning will be in the teacher’s preferred format.

Make use of “Explore, Engage, Extend” and “Explorify” on the S Drive as a starting point for the unit planning.

4 The Foundation Stage

Knowledge and Understanding of the World is one of the seven areas of learning for a child in the Foundation Stage of school. They will be encouraged to be scientists everyday as they investigate, question, discover and be curious about the natural and man-made world they live in.

5 The contribution of science to teaching in other curriculum areas

The teaching of science contributes significantly to children's learning in other curriculum areas. Children develop oral skills in science lessons through discussions and through recounting their observations of scientific experiments. They develop their writing skills through compiling reports and by recording information. When children use weights and measures, they are learning to use and apply number. Through working on investigations, they learn to estimate and predict. They develop accuracy in their observation of events. Many of their answers and conclusions include numbers. Science teaching offers children many opportunities to examine some of the fundamental questions in life. 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 for discussion.

Science and Technology

Technology enhances the teaching of science significantly. Software allows children to investigate processes which it would be impracticable to do directly in the classroom. Children use technology to record, present and interpret data, to review, modify and evaluate their work, and to improve its presentation. Children learn how to find, select, and analyse information on the Internet and on other media.

6 Science and inclusion

At our school, we teach science to all children, whatever their ability and individual needs. Science forms part of the school's intention to provide a broad and balanced education to all children. Through our science teaching, we provide learning opportunities that enable all pupils to make good progress. We strive to meet the needs of those pupils with special educational needs, those with disabilities, those with special gifts and talents, and those learning English as an additional language, and we take all reasonable steps to achieve this.

When progress falls significantly outside the expected range, the child may have special educational needs. Our assessment process looks at a range of factors – classroom organisation, teaching materials, teaching style, differentiation – so that we can take some additional or different action to enable the child to learn more effectively. Assessment against the National Curriculum allows us to consider each child's attainment and progress against appropriate expectations. This ensures that our teaching is matched to the child's needs.

7 Assessment – Formative and Summative

Two forms of assessment will be used; regular questioning, quizzes, retrieval activities, paired talk and written responses during the lessons will ensure teachers understand children's next learning steps and end of unit checks will assess children's knowledge and understanding. This helps to make accurate judgements against National Curriculum expectations. These judgements are used to track children's attainment and progress in science across the school and are recorded on the online platform "Classroom Monitor".

Children's progress is formally reported to parents in an annual school report. Teacher assessments in science are reported to parents at the end of each Key Stage. The school has an open-door policy

and parents can approach class teachers and the Headteacher to discuss children's progress at any time.

Children are encouraged to make judgements about how they can improve their own and each other's work through peer and self assessment and the use of success criteria.

8 Monitoring and review

The coordination and planning of the science curriculum are the responsibility of the subject champion/Headteacher.

The quality of teaching and learning in science is monitored and evaluated as part of the school's agreed Development Plan.

Professional development for teachers and support staff will be identified through Performance Management, data analysis and the school development planning process.

Science Leaders across the Kyra Alliance will work collaboratively to review policy and practices and share ideas, resources and expertise to raise standards in all schools.

The Governing Board has one member allocated to the monitoring and evaluation of the subject and will accompany the Subject Champion to observe and talk with the children on a regular basis.

This policy will be refined when changes in Government policy make this appropriate.

Scientific Enquiry in Practice

In their learning, children across school will develop their scientific understanding and knowledge through:

- Pattern seeking
- Comparative and fair testing
- Observation over time
- Identifying, classifying and grouping
- Research using secondary resources

As part of their enquiry, children across all three phases will consider:

*In KS1 (with increasing written evidence in Year 2) and LKS2, (with increased written quality and reference to **bold** terminology by Year 4).*

- What do I want to find out? (**Question**)
- What things will I need? (**Equipment**)
- What do I think is going to happen? And Why? (**Prediction/Hypothesis**)
- What am I going to do? (**Method**)
- What will I change between tests? (**Fair Test/Variables**)
- What happened during my test? (**Results**)
- Why did this happen? (**Conclusions**).

*In UKS2, children will have developed a strong understanding of the first four points (**Question; Equipment; Prediction and Method**). When planning and carrying out scientific enquires, UKS2 should place a stronger emphasis on manipulating variables (**Fair Test**) and encourage the children to consider multiple manipulations and why. When concluding, UKS2 children should further evaluate their tests by making appropriate recommendations for further enquiry, with reasoning.*

Suggested Proforma for Scientific Enquiry (adapt to Key Stage)

<u>Question</u>
<u>Equipment</u>
<u>Prediction/Hypothesis</u>
<u>Method</u>
<u>Fair Test/Variables</u>
<u>Results</u>
<u>Conclusions</u>

