Science at St Mary's

Intent: At St. Mary's CEVA Primary School, we believe that good teaching of science offers pupils the opportunity to access a wealth of knowledge and information which contributes to a secure understanding of how and why things work. Science explains the world around us and, as such, science should be practical, and work to answer questions. Children will be encouraged to be inquisitive, imaginative, and to draw information together in order to answer scientific questions and problems.

Essential characteristics of scientists:

- Children must be able to ask questions.
- Using what they already know, children must make hypotheses.
- They must be able to closely observe and then draw conclusions.
- Children must understand variables and how to design and carry out investigations including an increasing awareness of the importance of fair-testing.
- Children in KS2 must use evidence from research as well as observation to draw conclusions.

At the end of Foundation at St Marys CE	At the end of Key Stage 1 at St Marys CE	At the end of Key Stage 2 at St Marys CE
Pupils will gain a secure understanding of what science is, and to be introduced to the world around them through science. Pupils will develop scientific vocabulary and language. In addition, they will begin to explore investigations to ensure a strong foundation of science vocabulary and language.	Pupils will develop their understanding of scientific ideas by using different types of scientific enquiry. They will ask their own questions, observe changes over time, notice patterns, grouping and classifying, and carrying out simple comparative tests. They will continue to build on their scientific language and communicate their ideas to a range of audiences in a variety of ways.	Pupils will be able to develop a deeper understanding of a wide range of scientific ideas. They will do this through exploring and talking out their ideas, asking their own questions about scientific phenomena, and analysing functions and interactions more systematically. In addition, they will draw on a wider range of data from a variety of sources. They will have encountered more abstract ideas and begin to recognise how these ideas help them to understand, and predict how the world operates.

Assessment

We use ongoing assessment in every lesson including quizzes and, in KS2, a lesson at the end of each topic where children can share what they know either by completing an activity, or by completing a more formal assessment.

As well as this, children are given immediate verbal feedback as appropriate, particularly in KS1 and when working scientifically.

Teachers use their professional knowledge, and the work completed in books, to make a judgement regarding age related expectations (ARE).

Children in Year 6 are given a judgement of 'Working At' the expected standard or 'Working Towards'.

Cultural Capital

This is achieved through: first, ensuring that the requirements of the national curriculum are met. Where possible, children get hands-on experience as we believe that, in science, children learn best through 'having a go'.

We have and will continue to plan science days, visiting science experiences and visits from science, technology, engineering, and math (STEM) professionals, speaking to classes both remotely and face-to-face.

Career Professional Development

We develop teachers' subject knowledge and pedagogy. We carry out subject knowledge audits, book looks, and pupil voice is gathered. Knowledge matrices are available to all staff to support their own subject knowledge.

Spirituality:

In science, we promote spirituality through the asking of questions. As science is all about questions, this is a really effective way of supporting children to develop and show spirituality.

When we look at the seasons in EYFS and KS1, children are encouraged to 'Marvel with Awe and Wonder' at the world around them. Children often express interest in the 'why' in areas of science such as magnetism. In KS2, children often link religious and other world views when looking at how animals adapt. An experience which generated a lot of thinking and spirituality was when year 6 dissected hearts. The precision and detail of the organ fascinated and inspired the whole cohort and led to really interesting conversations about creation, health, health-poverty and the impact of medical intervention.

As scientists, it's important to understand that, although we're looking for answers, some of the biggest questions remain unanswered and only 'theories' really seem to explain them. It's also important to remember that creativity of thinking (spirituality) is what has gone a long way to answer these questions. Particularly in more recent time (think of the work of Einstein and Hawkins).

Implementation:

Our curriculum uses the national expectations as a base and we have organised units to ensure that a progression of knowledge, understanding and skills is clear and embedded. In split-age classes children will be challenged to 'work scientifically' at a level appropriate to their age and ability. Where possible, practical activities, experiments and investigations will be used in order to ensure that the children get first-hand experience of being able to work scientifically.

We have identified the key elements of knowledge and skills that are required for each unit and knowledge organisers are used to ensure consistency and coverage across classes. Children are expected to refer back to these periodically through their science units to ensure they are developing understanding and skills. A science club is offered to all children in KS2 for at least one term in order to promote a love of science. In addition the whole school takes part in a whole school 'Science Day' where they go off timetable to work with different experts or enthusiasts.

Impact:

The impact of our science curriculum can be seen in the books, classroom displays and in conversations with children.

Having a range of practical opportunities in lessons raises engagement and excitement about science, promoting a love of science for the children.

In Year 6 we assess the children's attainment in science using teacher judgement and this is shared with the Department for Education (DfE).

We aim to foster a delight, curiosity and fascination throughout the primary phase for children to hang future specific learning on – with a view to growing the next generation of scientists.