Science

'Let all you do be done in love'

1 Corinthians 16:14

Science at Great Milton C of E Primary School

Intent

At Great Milton C of E Primary School we believe three things underpin science teaching and learning:

'Enquire, Explore, Enjoy'

Here at Great Milton, we want all our children to LOVE Science.

Our aim is to provide every child with experiences which enable them to become inquisitive scientific learners, supporting them to recognise the importance of Science in everyday life and who develop positive attitudes towards Science. Through our Science teaching we aim to increase children's knowledge and understanding of the world around them, equipping them with a range of scientific skills through different processes of enquiry.

The National Curriculum states that through high-quality Science education pupils should be taught essential aspects of the knowledge, methods, processes and uses of Science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how Science can be used to explain what is occurring, predict how things will behave, and analyse causes

Ultimately, we want our children to not only be equipped with the requirements of the Science National Curriculum, but to have a real enthusiasm for Science and a sense of achievement within the subject. Our aim in teaching Science is to encourage all children to think that Science is important and relevant to their lives, now and in the future. Through our teaching of Science, we aim to build upon children's natural curiosity of the world around them and to provide as many opportunities as possible for children to experience the awe and wonder of the natural world. Consequently, our resulting aim is for the children to believe that they can become the scientists of the future and initiate the goal within them to improve their lives and life chances.

Implementation

Science teaching at Great Milton takes a practical, hands-on approach which puts investigation at its heart, children have the opportunity to ask questions and to decide how to explore and experiment to find out the answers, stimulating the children's learning through different enquiry types, providing them with a strong understanding of scientific knowledge and vocabulary, as well as extending their scientific skills.

Through asking their own questions, we aim to engage and excite all learners, giving them a sense of wonder at the amazing world we live in. We follow the principles of the *Thinking, Doing, Talking* Science Research Project (delivered by Science Oxford, in partnership with Oxford Brookes University) which encourages investigation and the development of their skills in working scientifically.

Children at Great Milton LOVE *doing* Science therefore we plan our Science for all our children to LOVE their Science lessons in order to provide them with as many practical opportunities as possible to investigate and explore.

Each year group covers the Science topics for their specific year, as laid out by the National Curriculum. Taking a cross-curricular approach is encouraged to ensure that links across the curriculum are used to extend and maximise the coverage of Science.

Lessons are planned to specifically cover the objectives from the National Curriculum as set out for a particular year group. This close focus on year group objectives ensures that when topics are revisited in subsequent years, this revisiting builds on what the children have learnt, rather than just revising what they have done in previous years.

Science is taught on a regular basis to ensure that children are experiencing Science in such a way as to build their skills and knowledge. This equates to a lesson a week or delivered in blocks should teachers prefer to have `Science Weeks'.

The Science National Curriculum contains two strands:

- **Knowledge content** – things that children need to **know**
- **Working Scientifically** – things that children need to be able to **do** in order to engage in scientific enquiry.

Both of these strands are taught alongside each other with children using different enquiry types to answer scientific questions about the world around them. These enquiry types are:

- **Pattern seeking investigations**, for example: Do taller people jump further?
- **Fair and comparative tests**, for example: Which material is best to make a windbreak?
- **Observations over time**, for example: What do plants need in order to grow?
- **Classifying, identifying and surveying**, for example: How could you group a selection of different materials?
- **Research using secondary sources** such as books and the internet, for example: What is the gestation period of a range of different animals and does this correlate to their size?

Across a year of Science teaching, teachers ensure that their lessons provide the children with:

- Experience all types of scientific enquiry
- Focused coverage of all strands of the working scientifically objectives allowing them to develop their scientific skills
- Opportunities to develop the knowledge to understand scientific concepts required by the National Curriculum
- Explicit teaching of the correct scientific vocabulary to enable children to explain their ideas and learning.

An overview of the National Curriculum objectives, both in terms of knowledge and skills, can be found here:

Science National Curriculum Coverage

At Great Milton C of E Primary, our Science lessons often have more than one lesson objective; there may be a knowledge objective *and* a working scientifically objective. When carrying out investigations, teachers focus on one particular aspect of the working scientifically curriculum. Any recording that the children do will be based around this objective. For example, if the objective for a particular investigation is **to ask Scientific questions,** then the recording done by the children will be to write their investigation question. This allows children the time they need to focus on **doing** the investigation, rather than `writing up' the whole experiment which is an extremely lengthy process.

As the children progress through the school, the expectation is that they show off their scientific skills and record more eg. question, prediction, method therefore developing their thinking skills as they make links and adapt their questions due to their findings. Children are given the opportunity to choose the enquiry question, plan, carry out and record whole investigations at least once a year, for example, through participation in Science Oxford's **Big Science Event.** They then present their investigation to their class and another teacher, therefore giving them the opportunity to take complete ownership and to experience the whole scientific investigation process.

Our Science teaching is enriched with visits from experts, including those from within the school community; and trips to, for example, museums and science centres. At Great Milton C of E Primary, we are lucky to have some excellent outdoor spaces within our school grounds, including wildlife areas and a pond. Teachers use this resource as much as possible in their teaching, encouraging children to understand the natural world around them and to take responsibility to look after it.

Impact

- Children enjoy Science lessons and all are able to actively engage and participate
- Science lessons build on previously learning, systematically developing children's scientific knowledge
- Children develop the Science skills they need in order to be able to investigate and explore Science concepts
- Children understand that scientific questions can be answered by different types of enquiry
- Children are equipped with the vocabulary necessary for them to explain their learning
- Children will develop a life-long interest in the natural world, including their local environment and will have a commitment to caring for it, understanding that we can all make a difference
- By the time they leave Great Milton C of E Primary, children will have sufficient Science knowledge, skills, and vocabulary to equip them for the next stage in their scientific educational journey
- Children will understand that Science is important and relevant to their lives, now and in the future, and will consider STEM careers

Further information for parents

Can you help enrich our Science lessons?

- If you are a parent who works in the field of STEM and you would be willing to come into school to talk to the children about your work, please contact the office at office@gmilton.org with the subject heading - Science Lead: Sue Green and you will be added to a register of parent scientists that teachers can draw upon to enrich our Science curriculum.

Supporting Science Learning at Home

For some fun experiments and investigations that you can do at home, you may like to have a look at these websites:

- Dr Jo Science Solutions
- Starters for STEM

More websites can be found on our Science page of the school's website,

Oxford has some wonderful museums and gardens, all of which have events specifically designed for young people and families and most of them are free. Why not spark your child's interest in Science and arrange a visit.

You may like to keep an eye on what's on using this link:

What's on at the Oxford Museums and Gardens?

https://www.waterperrygardens.co.uk/whats-on/

https://earthtrust.org.uk/

https://scienceoxford.com/events/