Science at The Mill Academy

Intent

At The Mill Academy we recognise the importance of Science in every aspect of daily life. As one of the core subjects taught in Primary Schools, we give the teaching and learning of Science the prominence it requires. It is our intention to build a Science Curriculum, which develops the learning of Science skills alongside a questioning mind about ways in which Science influences everyday life.

Our investigative Science will encourage children to ask important questions about how things work and why things happen in a certain way. Ultimately, this will help all children to understand the world they are growing up in and provide them with life skills to better access it as well as becoming creative thinkers and adults who strive to seek solutions to problems and answers to life's questions.

We strive to develop our children's curiosity and excitement about the natural world, encourage respect for living organisms and the physical environment of their earth, empowering and informing pupils to use their knowledge and skills to understand how Science can be used today and in the future so they are better equipped to make sustainable choices to protect our precious world.

We endeavour to promote a joy and excitement for learning, which our children can use in all other areas of the curriculum as well as raising their personal self-confidence. We intend to create involvement via numerous "WOW moments" and for our pupils to be able to approach unknown and unexplainable phenomenon with awe and wonder, through practical hands-on experiences.

Implementation

The science curriculum at The Mill Academy is based upon the 2014 Primary National Curriculum in England, which provides a broad framework and outlines the knowledge and skills taught in each Key Stage. Teachers plan lessons for their class using our progression of knowledge and skills document, which incorporates Working Scientifically. Exploration is vital to learning Science and from the EYFS through to KS2 at The Mill Academy, Science should wherever possible be a practical experience. During EYFS the Specific Area of "Understanding the World" contains the Science objectives to be covered. Pupils should be learning scientific knowledge and vocabulary and 'working scientifically' appropriate to their developmental age.

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All years should plan six practical investigations in which children build on practical skills and have opportunities to develop their knowledge and skills.

To ensure high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school. Science may be taught as discreet lessons or as part of topic work. Teachers must have the same expectations during Science lessons that they would have when teaching English or Mathematics and that any mathematical task (such as measuring or drawing graphs) is pitched at an age-appropriate level to ensure sufficient challenge. It is vital that any mathematical or English barriers should not impede a child's scientific learning, therefore learning topic-specific vocabulary is a central part to our science progression documents, which form the basis of planning units of work. The vocabulary children will need for each area of science are identified on the school's progression document and this builds upon the vocabulary they have learnt in earlier years. The key vocabulary will be emphasised at the beginning of each unit of work and through a variety of teaching approaches, based on the teacher's judgement, will be reiterated throughout subsequent lessons.

When teaching science, teachers should plan to follow the children's interests to ensure their learning is engaging, broad and balanced. Before planning a unit of work, teachers will assess children's prior knowledge and understanding to ensure work is pitched at the correct level, providing opportunities and support to ask questions and thus lead their own learning. For example, a list of class questions could be generated at the beginning of a topic and each week one of the questions will be investigated, working scientific enquiry skills into each session as the teacher deems appropriate.

At the Mill Academy, we provide a variety of opportunities for science learning inside and outside the classroom. Learning outside of the classroom, especially in EYFS is an essential part to learning science. It is essential children observe and immerse themselves in their local environment to apply their learning practically to real-life situations.

Evidence will be kept in several places: Evidence of work for KS1 and 2 should be in children's Science books. Specific evidence of science learning covered each term will be collected into a science scrapbook by Science Leader, who will also audit how skills are progressing over key stages to monitor science learning throughout school. There are posts documenting learning with examples of work on the various social media platforms used by classes and on our school Facebook group.

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Science provides excellent opportunities to enhance the learning of more able pupils through planning lines of enquiry, asking opened ended problems, analysing results and drawing conclusions based on scientific findings.
We also believe it is important that parents are involved in their children's science learning in an ever-evolving world. Every year, we shall have a "Science Week," where the subject ambassador plans simple, engaging practical activities for the children to complete with their parents at home, alongside in-school tasks. This encourages them to ask questions about the world and demonstrates how they can think scientifically and investigate using simple everyday objects. This emboldens families to engage with scientific activities themselves at home, to start the dialogue and help support children's learning and enthusiasm. In addition this aids raising the profile of science both within and outside school.
CPD will be offered to staff where needed, this may be a course to attend, an online CPD programme to take part in or the subject leader delivering training to the rest of the staff.

Impact

Within science at The Mill Academy, we strive to create a supportive and collaborative ethos for learning by providing opportunities for children to question and investigate to discover answers for themselves and take their learning in a direction they are interested in. The evidence collected shows that the standard of science teaching and learning and the enrichment opportunities offered to the children is very high, that our science curriculum is of great quality, well thought out and demonstrates progression. We focus on advancement of knowledge, understanding and skills and discreet vocabulary development also form part of each of our innovative and fun year-group topics.
The impact is for all pupils to develop a sense of excitement and curiosity and provide them with the necessary skills and knowledge to become young scientists.
We measure the impact of our curriculum through the following methods:

- Assessing children's understanding of topic linked vocabulary before and after the unit is taught.
- Marking of written work in books.
- Summative assessment of pupil via discussions about their learning.

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•Interviewing the pupils about their learning (pupil voice) carried out by Our Wider curriculum leader.
•Moderation staff meetings where pupil's books are scrutinised and there is the opportunity for a dialogue between teachers to understand their class's work.
•The science subject leader will continually monitor the impact science teacher is having on the children's learning, through book looks to ensure the progress of knowledge and skills is being taught.

The Mill Academy's Science Curriculum ensures:
•EYFS pupils are KS1 ready by the time they leave the Early Years:
Rainbow (FS1) and Sunshine (FS2) classes prepare the children for KS1. Children have explored the three strands of Understanding the World: The World, Technology and The World to prepare them for more formal learning in Y1.
•Assessment in KS1 and KS2 is used to support next steps:
Focusses primarily on depth of understanding, not just superficial knowledge recall, but also on knowledge and understanding of key vocabulary and each pupil's ability to use this language appropriately within context. Our assessment for learning practices involve pupils continuously with their learning and allow us to evaluate the continued enjoyment and confidence of individual pupils during different topics within our science curriculum.
•Pupils are secondary ready by the end of Year Six:
Criteria from both the primary and secondary National Curriculum are blended to correctly prepare pupils for expectations required by secondary schools. Our broach, rich Science curriculum ensures all pupils, including disadvantaged and SEND acquire the knowledge and Science capital they need to be ready for the next Key Stage and to ultimately succeed in the STEM based world they live in, preparing them for secondary education.
•Working scientifically is developed effectively through progressive skill steps.
•English and Maths are developed in tandem:
Through skills and knowledge well-matched to year group expectations within our progression documents. Developing cross-curriculum blended learning is vital for problem solving skills necessary for STEM approaches