



Moorbrook School Science

Intent

The science department at Moorbrook would like all pupils to have a good understanding of the world in which we live. The engaging curriculum provides pupils with extensive knowledge and skills that enables them to comprehend the importance and relevance of science, which can be applied to numerous practical and work situations in life at a local, national and international level.

Pupils at primary schools follow a science curriculum which is not broad and is inconsistent. Therefore when pupils arrive at our school we assess their prior knowledge and plan accordingly to build on their scientific knowledge and skills. We also try to improve skills such as working as part of a team and how to have a discussions/debate to improve their communication skills. The Key Stage 3 science course is based around the National Curriculum and on the requirements of GCSE. The KS3 content is mapped under the 10 big idea headings: Forces, electromagnetism, Energy, Waves, Matter, Reactions, Earth, Organisms, Ecosystems and genes. These are further divided into smaller topics. These topics provide our pupils with knowledge and skills to assist with practical situations in life. The lessons follow a scheme of work that helps to build their knowledge and skills in all areas of science. At Key Stage 4 pupils study the GCSE Biology course which builds on the knowledge of KS3 with pupils further developing skills of investigation and reporting as well as applying the skills and knowledge gained at KS3 to address more complex and abstract scientific issues and ideas.

Whilst teaching them the topics we build upon and consolidate prior learning, ensuring any 'gaps' in knowledge and skills are covered. As our pupils are SEND we ensure all work is targeted at their level and ensure they can retrieve and remember as much as possible especially through practical work.

At Key Stage 4, pupils work within the framework of the AQA Entry Level Certificate in Science and then their focus is directed towards GCSE Biology which stretches and challenges their understanding of areas such as the importance of organs in our bodies, maintaining a healthy lifestyle including prevention and diagnosis of microbiological disease as well as cancers. They gain knowledge on how to improve and protect the environment we live in and sustain it for the future generations.

Implementation

The science department consists of a science teacher and a teaching assistant who has deep understanding in science. Focus is given to enhancing scientific knowledge to explain certain ideas or theories and to improving practical skills to accurately conduct certain methods to achieve correct results and learn from the mistakes that are made.

In science, pupils work as part of a team to complete certain practical tasks to improve their team working skills. Pupils conduct experiments using apparatus safely and accurately to gain experience of using scientific equipment providing skills to enable them to work in a scientific environment. As experiments are conducted, pupil's record results, interpret data (graphs, tables etc.) including reasoning for anomalous

results and reach valid conclusions to indicate how science helps shape the world around us to help discover new medicines, explain certain theories and much more.

We monitor the learning of our pupils through direct questioning including discussions which enables our pupils to share their thinking, observing their skills in conducting certain practicals and achieving the required results. We constantly mark their work and provide verbal feedback to ensure pupils are understanding their mistakes and misconceptions. We regularly assess them to allow them to experience exam style questioning including answering longer questions with more marks and hence improve their approach to these types of questions. This provides them with valuable experience in preparation for the GCSE exams at the end of Year 11. This also provides us with valuable feedback on their learning habits, gaps in their knowledge and how we can help improve their approach to conducting assessments with maximum benefit.

Pupils learning is based on the curriculum and experiences through prior learning and experiences. We further support their understanding with relevant practical's and past exam questions to ensure their learning is consolidated and where theories are provided, we explain how scientists reached their explanation based on their findings. Pupils who struggle are also given opportunities to work in small intervention groups to help support their learning with resources aimed at their learning level.

Impact

The science department continues to foster an engagement and curiosity of the subject. Pupils enjoy science lessons especially the practical aspects, experimenting using unfamiliar apparatus and collecting results for themselves.

The science department's long term plan supports our pupils understanding of science in their daily lives and not just in the classroom. They understand the needs to look after the environment for our future generations through sustainability. They learn to respect the views of others and how advancement in technology can be viewed differently by people, e.g. stem cells research. The extensive quality teaching in science has resulted in more pupils achieving higher GCSE grades in Biology than before which indicates that our pupils are understanding more, remembering more and are applying their knowledge and skills in the correct places. At the same time we are improving our cross curriculum links with other subjects, requiring pupils to write detailed answers and analysis thus improving their numeracy and literacy skills.

Over the past few years the school has experienced great improvement in respect to its Science GCSE results. In 2020, 67% left with a GCSE qualification; in 2021; 86% left with a qualification and in 2022, 100% of pupils left with a GCSE science qualification. In addition to this pupils in Year 9 and 10 are achieving Entry Level Certificate in science. The results and experience of learning in the science environment is enabling our pupils to prepare for the next stage of their career, whether be furthering their studies, applying for apprenticeships in scientific industries or simply being responsible citizens in society when it comes to looking after our environment.