

Science at Great Moor Junior School



Our Learning Journey

At Great Moor Junior School, we believe that students deserve a broad and ambitious Science curriculum, rich in skills and knowledge, which ignites curiosity and prepares them well for future learning or employment. As they move through the curriculum, students will be increasingly led to develop their curiosity, provide insight into working scientifically and appreciate the value of science in their everyday lives.

The key principles used when designing the curriculum were:

- To develop a knowledge and skills rich curriculum, supported by high quality teacher instruction, collaborative learning and the opportunity for students to demonstrate understanding
- Development, understanding and use of scientific vocabulary
- The sequence of learning, including prior knowledge and next steps
- Retrieval of information over time
- Frequent 'low stakes' checkpoints that feedback in to classroom planning

In conjunction with the aims of the National Curriculum, our science teaching offers opportunities for children to:

- Develop scientific knowledge and conceptual understanding through the disciplines of Biology, Chemistry and Physics
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- Be equipped with the scientific knowledge required to understand the uses and implications of Science, today and for the future
- Develop the essential scientific enquiry skills to deepen their scientific knowledge
- Use a range of methods to communicate their scientific information and present it in a systematic, scientific manner, including I.C.T., diagrams, graphs and charts
- Develop a respect for the materials and equipment they handle with regard to their own, and other children's safety
- Develop an enthusiasm and enjoyment of scientific learning and discovery

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It is not taught as a separate strand.

Our science topics are as follows:

Science	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3		Rocks	Animals including Humans	Plants	Light	Forces and Magnets
Year 4		Electricity Sound		States of Matter		Living things and their habitats Animals including humans
Year 5		Properties and changing materials Forces	Earth and Space			Living Things and their habitats. Animals including Humans
Year 6		Animals including humans Living things and their habitats		Light Electricity	Evolution and Inheritance	

This sequence allows staff to build on knowledge and skills gained across previous years and build on pupils learning. Prior learning and specific links that can be made are identified in our planning documents to help support staff in doing this.

<p>The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them.</p> <p>How?</p> <ul style="list-style-type: none"> - Exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. - Pupils ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. - Pupils draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 	<p>As pupils move to upper key stage 2, the principal focus of science teaching is to enable pupils to deepen their understanding of a wide range of scientific ideas.</p> <p>How?</p> <ul style="list-style-type: none"> - Exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. - Through encountering more abstract ideas and beginning to recognise how these ideas help them to understand and predict how the world operates. - Beginning to recognise that scientific ideas change and develop over time. - Selecting the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. - Drawing conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.
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Implementation

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science.

Our whole school approach to the teaching and learning of science involves the following;

Planning and Delivery:

- Science has a high profile across school and is viewed with high importance
- Children are taught science in modules planned by the subject lead over the course of the year and arranged in conjunction with other modules taught over the year. This allows an in-depth teaching of science and the ability to carry out enquiries and investigations on that topic. Many Science lessons have strong cross-curricular links.
- Class teachers amend planning as necessary to suit the current context and needs of all pupils in their class.

- Planning involves high-quality resources to aid understanding of conceptual knowledge.
- Through our planning, we involve enquiry opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This curiosity is celebrated within the classroom.

Assessment:

- Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning, so that all children keep up.
- Assessment grids are divided up into year groups and modules, they are swiped/ticked to show achievement. These are taken from the National Curriculum.
- Formative assessment is a key tool during and after each lesson.
- At the end of the module, EMX is used to determine the ability of each children in the topic. These assessments are uploaded to SIMS AM7.
- The children regularly self-assess and reflect on their progress.

Knowledge, concepts and skills retention:

- We build upon the learning and skill development of the previous years. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Retention of knowledge is a key element of our curriculum and one that we continually strive to achieve. Prior knowledge is recalled where possible throughout the day, including at times when science is not being taught as a block and links are made to knowledge and concepts that pupils have previously acquired. This allows pupils to always build on their learning and make progress.
- Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in-keeping with the topics.
- Additional opportunities are also provided in science such as through our cross-curricular days and participation in British Science Week.

Enhanced curriculum offer:

- We take part in many out-of-school learning experiences and invite Scientists into school to enhance the children's learning within Science, for example, Year 4 learn about rivers in the outdoors and Year 5 are visited by a Space Expert and enjoy the 'planetarium'.

Impact

The successful approach at Great Moor Junior School results in a fun, engaging, high-quality science education, that provides children with the foundations for understanding the world.

The impact of our science curriculum is measured in many aspects:

- Children across school enjoy Science lessons and take an active part in them.
- All children make at least good progress over the year in science. Progress and attainment is monitored by the class teacher and subject lead, and if this is not the case, analysis of why takes place in order to help pupils make increased progress.
- Learning has taken place of the subject knowledge and skills set out in the knowledge organisers (committed to long term memory).
- Teachers are confident in gaps analysis of pupils learning and alter teaching and learning to close these gaps.
- Through various workshops, trips and interactions with experts, children have the understanding that science has changed our lives and that it is vital to the world's future prosperity. Children learn the possibilities for careers in science as a result of our community links and connection with national agencies such as the STEM association.
- Pupil voice help to evidence all of the above.
- Science books show the learning journey of pupils over the time and that fluency and mastery in science is incrementally improving.