# The Mosley Academy
## Subject Leader Curriculum Overview – Science
## Natasha Baxter

The National Curriculum for Science aims to ensure that all pupils by the end of Year 6:

- develop scientific knowledge and conceptual understanding through the specific 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
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

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| **EYFS** | **Children learn about the world through the following characteristics of learning: Playing and exploring, active learning and creating and thinking critically.**<br>**Understanding the World**<br>• Explore the natural world around them.<br>• Describe what they see, hear and feel whilst outside.<br>• Recognise some environments that are different from the one in which they live.<br>• Understand the effect of changing seasons on the natural world around them. |

**Pupils should be taught in KS1:**

- To experience and observe phenomena, looking more closely at the natural and humanly constructed world around them.
- To be curious and ask questions about what they notice.
- To develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information.
- To use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.
- To 'Work scientifically' through and clearly related to the teaching of substantive science content in the programme of study.
- Read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

**Pupils should be taught in Lower KS2:**

- To broaden their scientific view of the world around them through 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.
- To 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.
- To draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.
- To 'Work scientifically' through and clearly related to the teaching of substantive science content in the programme of study.
- To read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

**Pupils should be taught in Upper KS2:**

- To develop a deeper understanding of a wide range of scientific ideas through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically.
- To encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time.
- To select 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.
- To draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.
- To 'Work scientifically' through and clearly related to the teaching of substantive science content in the programme of study.
- Pupils should read, spell and pronounce scientific vocabulary correctly.

**Intent**

At The Mosley Academy we value Science as an important part of the children's entitlement to a broad and balanced curriculum. Our curriculum is planned to foster pupils to be naturally curious about the world around them. We aim to create a sense of wonder and a well-developed Science Capital. Our school is committed to providing the pupils with a stimulating, engaging and challenging learning environment and therefore have pupils that can articulate their understanding of scientific concepts and be able to reason scientifically using rich language linked to science.

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| The ability to think independently and raise questions about working scientifically and the knowledge and skills that it brings. | Confidence and competence in the full range of practical skills and being able to plan and carry out scientific investigations. | Excellent scientific knowledge and understanding which is demonstrated in written and verbal explanations, solving challenging problems and reporting scientific findings. | High levels of originality, imagination or innovation in the application of skills. | The ability to undertake practical work in a variety of contexts. | A passion for science and its applications in past, present and future technologies. |

**Implementation**

**Key concepts**

**Working Scientifically**

| **Biology** | **Chemistry** | **Physics** |
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| Understand Plants<br>Understand animals and humans<br>Investigate living things<br>Understand evolution & inheritance | Investigate materials | Understand movement, forces and magnets<br>Understand the Earth's movement in space<br>Investigate light & seeing<br>Investigate sound & hearing<br>Understand electrical circuits |
| Developing Experts is used throughout KS1 and KS2 as a progressive scheme of work that matches National Curriculum requirements. | Science is taught discreetly, using links to other curriculum areas when these can be made effectively. The sequence of learning is based on pupils prior and future knowledge. | Our Science Curriculum is resourced well. We work in collaboration with local secondary schools and can borrow resources if those needed are not available. |
| Vocabulary is progressive throughout the school. Pupils are expected to talk like a Scientist and use the correct language within and beyond lessons. These are displayed in pupils' books, on working walls and evidenced verbally within lessons. | Enquiry skills are linked across the science curriculum, with progression planned in. Working Scientifically is interwoven throughout to ensure pupils link and use their substantive knowledge to their disciplinary knowledge. | The use of 'Big Questions' act as a starting point for pupils understanding to help teachers plan subsequent learning and then used again to assess what knowledge pupils have retained. |
| We broaden our curriculum through an off-timetable Science Week, a MAT wide subject excellence programme for science, science afterschool provision and links with our families and local community to help educate pupils on how science is used in a variety of job roles and everyday life. | Teachers use formative assessment strategies within lessons to assess how well pupils are achieving against the National Curriculum expectations. We report at the end of each block of whether pupils are 'working towards the expected standard' or are 'working at the expected standard'. EYFS assess against the Early Learning Goals on the EYFS Profile Assessment, stating if pupils are 'expected' or 'emerging'. | Our lessons are planned to support pupils with first hand experiences of the world around them. This involves providing opportunities to work outside of the classroom and to have access to positive role models within the field of science. Each class has a half term of Forest School, where Science is incorporated to help support first hand experiences. |
| At The Mosley Academy we understand that SEND can be categorised in four main ways:<br>**social, emotional, and mental health cognitive and learning communication and interacting physical and/or sensory**<br>We aim to understand individual barriers to learning and adapt lessons accordingly to enable SEND pupils to feel successful, as well as improve their understanding of concepts and retention of knowledge. In school, this support may include some of the following methods: the use of visual or practical resources, the use of adult support, differentiating by outcome according to the child's needs, pre-teaching key vocabulary, providing templates to scaffold, the use of spaced repetition to improve memory, consideration of the type of task e.g. group, partnered, individual. | | |

**Impact**

Assessment at The Mosley Academy is teacher based and formed using formal strategies (e.g. half termly assessment tasks, quizzes) and informal strategies (use of concept maps, verbal/written outcomes, reflection tasks/presentations). Formative assessment is used as the main tool for assessing the impact of science as it allows for misconceptions and gaps to be addressed more immediately rather than building on insecure scientific foundations.

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| Monitoring through:<br>Learning Walks<br>Pupil Voice<br>Book Scrutiny | Increased Cultural Capital through an exposure to a wide range of vocabulary. | Broad, balanced curriculum where skills and knowledge are embedded and create a shift in long term memory.<br><br>Provision is adapted so that it is suitable for all groups of learners, including SEND. |