

Curriculum Principles

Science

By the end of KS2, students of Science at Music Primary will:

- know fundamental scientific principles from biology, chemistry and physics that will provide a foundation for understanding for secondary school and beyond.
- understand the processes of scientific enquiry and use scientific reasoning to explain findings of investigations.
- understand how Science can be used to explain observations and make predictions about natural phenomena.
- develop Science Capital, where they recognise how their classroom learning is applicable to the outside world.

In order to achieve a true understanding of Science, schemes of work have been intelligently sequenced based on the following rationale:

- scientific knowledge is broadly hierarchical in nature – students must have a secure understanding of each key block of knowledge before progressing onto the next stage. Therefore, in order to support this, units have been meticulously planned and sequenced to ensure that students are always building on and deepening their previous learning.
- schema is planned vertically, horizontally and diagonally, with cross-curricular links established and developed throughout, in order to optimise learning. Knowledge retrieval and formative assessment opportunities are embedded within every lesson, to increase retention of knowledge and identify gaps for targeted intervention.
- oracy opportunities are embedded throughout the Science curriculum, enabling all pupils to develop their ability to make reasoned, fact-based observations.
- in biology, students are introduced to different animals (including humans) and plants and their life processes in KS1 and this is then revisited in more depth at KS2.
- in chemistry, students are introduced to the properties of everyday materials. This starts in KS1 with the investigation of different materials and their uses, before moving onto more abstract concepts such as solubility, conductivity and changes of state in KS2.
- in physics, students are introduced to the fundamentals of forces, electricity, sound, light and space – focusing on concrete concepts at this stage. These units are first introduced in lower KS2, then revisited in more depth in upper KS2.
- KS1 and KS2 teaching is designed to create a secure foundation for students to continue their Science learning in KS3, with explicit links made across the curricula.
- experimental work is a key feature of all lessons so that students can build confidence working practically and can start to appreciate the nature of scientific enquiry.

At Music Primary, the Science curriculum will address social disadvantage by addressing gaps in students' knowledge and skills:

- all students are taught from the same student work booklets so that everyone is given access to the same powerful knowledge. That being said, teachers understand the need to supplement the work booklets with additional practice/scaffolds or extension material, as required for individual students.
- our curriculum is designed around the most disadvantaged learner in our community. We are careful not to assume any prior general knowledge or cultural capital – instead we aim to democratise knowledge through explicit teaching, so that all students can lay claim to a rich intellectual inheritance.
- enrichment opportunities are carefully embedded, ensuring students have the opportunity to contextualise their Science learning.

We fully believe Science can contribute to the personal development of students at Music Primary:

- the social development of our students is nurtured through the explicit teaching and practice of effective teamwork and communication skills when working in small groups for scientific investigations. Student groups are selected by the teacher to ensure that students learn to effectively collaborate with others who may be from different backgrounds or from outside of their friendship circle.

- Science naturally provides many opportunities for balanced discussions of moral and ethical issues.
- Science lessons also provide a wealth of opportunities to explore personal development relating to physical health. For example, when teaching about the digestive system, students are taught about the importance of a balanced diet.
- we want students to become respectful and responsible citizens who actively contribute positively to society. For example, students are taught in detail about global warming, pollution and energy resources so that they understand the importance of recycling, reducing waste and cutting down their carbon footprint.
- students have the opportunity to explore how Science can be utilised within their future careers; we recognise that many students will be interested in pursuing opportunities relates to Science, Technology, Engineering and Maths (STEM), and that we have a responsibility to ensure all students are prepared for their future lives.