



## Science Curriculum Intent



<p><b>Why is Science important?</b></p>	<ul style="list-style-type: none"> <li>• Science is a compulsory subject for all students, therefore all students follow a 5 year pathway</li> <li>• One of the keys to social mobility is science education. EEF</li> <li>• Science qualifications open the doors to many rewarding and interesting careers.</li> <li>• Scientific literacy is critically important to being an informed citizen.</li> <li>• The most powerful method we have for understanding the world is Science and the science curriculum lay the foundations of that understanding.</li> </ul>
<p><b>What is Science’s value within the curriculum and in everyday life?</b></p>	<p>The science curriculum aims to promote scientific curiosity, develop successful scientists and encourage future scientists. Science takes students beyond their everyday experience by giving them access to Biology, Chemistry and Physics, embedding powerful knowledge in science through “big ideas” of and about science and creates that scientific curiosity in both a theory context and a practical one. BEST Best Evidence in Science Teaching has identified “the big ideas” that students need to build schema and to support their understanding of how the science curriculum fits together. We build understanding of the ‘Big Ideas’ in Science that are relevant to pupils’ lives during and beyond school using evidence from EEF and the 7 recommendations. Sitting beneath each “big idea” are key concepts which form the basis of the units of work that students study. We also aim to use Science as a tool to contribute to pupils’ acquisition of cultural capital</p>
<p><b>How does Science reinforce the Alsop values of Knowledge Respect and Opportunity?</b></p>	<p><b>Knowledge :</b> The science curriculum provides units of work which are supported by statements that detail the specified substantive <b>knowledge</b> and disciplinary <b>knowledge</b> (POS) to be taught and remembered. This is supported by Rosenshines principles and provides the foundations for understanding the world around us through Biology, Chemistry and Physics. Scientists talk, discuss and evaluate, this enables the science curriculum to model and embed <b>respect</b> as part of our learning within the classroom in an ethical discussion or in a practical investigation. To address misconceptions and encourage self-regulation (EFF). Specialised knowledge in science allows students to think about, do things that they perhaps wouldn’t normally do. This provides scientific curiosity and successful learners which leads to <b>opportunity</b>.</p> <p><b>Respect:</b> Tolerance of differing cultural and religious values particularly when considering ethics of scientific practices</p> <p><b>Opportunity:</b> The EEF published in 2017 Improving Science in Secondary schools identified the strongest factor affecting pupils’ science scores is their literacy levels. Poor literacy skills can affect how well a pupil is able to understand scientific vocabulary and to prepare and engage with scientific reports. Therefore, our POS explicitly identifies Tier 2 and Tier 3 vocabulary and specifies the reading that students should undertake each lesson. By improving literacy, we will enable our students to access the science curriculum in a more meaningful way and thus have a positive impact on their achievement. The report also states that a strong predictor of later success in the sciences is the ability to reason scientifically by testing hypotheses through – To support our students to develop this skill our POS have tasks that allow pupils to design experiments that require them to control variables. Also teachers guide their pupils’ scientific reasoning by setting questions that can be investigated and getting them to design fair tests.</p>
<p><b>How does Science build on the foundations laid at KS2?</b></p>	<p>Our Year 7 and 8 curriculum builds on the skills, knowledge and understanding that pupils secured at Key Stage 2.</p> <p>Prior Knowledge form KS2 is explicit in our POS based on evidence of prior learning from BEST research based evidence.</p>



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	<p>We aim for our Year 7 &amp; 8 curriculum to set the foundation for KS4.</p> <p>To develop scientific knowledge and conceptual understanding through the 3 disciplines, building on prior knowledge. The curriculum aims to develop the understanding of nature, process and methods of science through different types of enquiry that helps students to answer scientific questions about the world around them. The curriculum is equipped with knowledge that enables students to understand the uses and implications of science to and for the future</p>
<b>How does Science support reading?</b>	<p>Literacy and reading are key parts of our lessons. Within each topic there are opportunities to read like a scientist and explore further. Key reading pieces have been developed so that they can be embedded into each topic. The big write is a key indicator piece of work and requires students to draw on knowledge and use literacy as part of this process. All students Yr 7-13 are encouraged to have a science text book to embed those key concepts and knowledge through reading. In practical lessons reading is essential to the method of the investigation and is used and embedded.</p>
<b>How does Science challenge all learners?</b>	<p>The idea of know apply and extend encourages all students. The concept of science can often prove challenging for our learners. The lessons and sequencing are aimed at promoting scientific curiosity and high level thinking in order to make links to the real world through the use of big questions but also promote successful learning. Ensuring knowledge is embedded before applying it and then extending. This enables students to build on key concepts and make successful links within their learning.</p>
<b>How is science inclusive for all learners?</b>	<p>The EEF have identified 7 areas which are important for successful science teaching. Being clear about the purpose and sequencing is key. To support all our learners we are beginning to embed the 7 recommendations from the research. Preconceptions, Self-regulation, modelling, memory, Practical work, language of science and use of feedback. The curriculum is flexible to ensure if more practice is needed learners are given the opportunity therefore leaving no learners behind.</p>
<b>What role does assessment play in Science?</b>	<p>Assessment is, indeed the bridge between teaching and learning (Dylan William)</p> <p>The purpose of assessment is to identify the strengths – and any gaps- in an individual pupil's own learning, and to establish whether there are any misconceptions amongst groups of pupils that may need to be retaught, taught differently or otherwise reinforced.</p> <p>Learning is about effecting changes in long term memory and so we use assessments that establish whether pupils have mastered the basics in our subject and have the confidence to build towards concepts and skills with sufficient depth that are increasingly complex.</p> <p>Within the science curriculum we aim to assess the students understanding all the time. Our POS contain explicit AfL tasks for each lesson using BEST diagnostic resources. Lessons have key questions after concepts have been taught to enable teachers to identify if the knowledge is embedded. Low stake quizzes, multiple choice questions and retrieval roulette are a key feature. End of topics quizzes/ tests are used to promote success and identify areas of misconceptions. Key indicator pieces are also used to assess literacy and scientific understanding along with AP assessments as per school calendar Yr7-13. Multiple choice quizzes are often used for homework to provide students with a way of self-regulating and retrieving knowledge. After key assessments staff carry out a QLA to identify on students strengths and areas for development and adapt their teaching in a responsive way to ensure knowledge is embedded and gaps are filled.</p>
<b>How are British values interwoven into the Science curriculum?</b>	<p>Relationships are crucial to teaching and learning: modelling of respect in lessons (how we speak and listen). Learning about different beliefs and values. For example, with</p>



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	evolution, we teach students that there are different views but all views must be respected.
<b>How is SMSC interwoven into the Science curriculum?</b>	In Science, we explore organ transplantation and we consider the ethics and cultural and religious perspectives. We teach about global topics including climate change. We teach students about healthy lifestyles including nutrition. We also teach about healthy relationships including family planning.
<b>How is cultural capital interwoven into the Science curriculum?</b>	Students are taught about key historical scientists; about ethics when considering specific scientific practices such as GM crops Safe relationships, health, wellbeing and nutrition are also key topics covered, Consideration of religious and cultural viewpoints when discussing key scientific topics including contraception, cloning, organ transplantation etc. We relate our learning to industry as much as we can so that Science is applicable to real life contexts for our students. We study important and thought provoking scientific ideas and theories including: climate change, Darwins Theory of Evolution, stem cells, organ donations, Big Bang Theory. We include new and topical research and relevant news stories into our lessons .