Science Department Curriculum Statement 2023/2024

Build resilience, self-reliance and perseverance	Raise aspirations and promote "self-challenge"	Experience a broad range of subjects and learning opportunities	Increase the "cultural capital" of students	Support Mental Health and Wellbeing	Develop deeper understanding and a love of learning and self-development.
A	B	C	D	E	F

Intent

As a Science department we pride ourselves in taking a student-centred approach to teaching and learning with an emphasis on placing scientific ideas within an up-to-date and relevant context. Science staff use this approach with all year groups so students can see the importance of science in society and not purely as an isolated academic discipline.

The Science Curriculum is designed to encourage students to:

- Nurture a curiosity, interest and enjoyment in science (B);
- Appreciate that Science has contributed enormously to understanding of the world (B);
- Be aware of the way science affects every aspect of our lives (D);
- Be equipped to make informed decisions about science related matters; e.g. use of energy resources, health and diet (A, E);
- Be able to make informed judgements about scientific media reports and engage in debate about scientific matters (D);
- Recognise the usefulness, and limitations, of scientific methods and appreciate their applications in other disciplines and everyday life (A, D);
- Be encouraged to pursue and be suitably prepared for further studies and careers in science (B).

We have recently reviewed both the KS3 and KS4 curriculum to ensure that practical work is at the heart of the curriculum. This allows students to apply and develop what is known and understood through observations (B, C). They will also develop their investigative skills which includes transferable skills such as identifying variables, analysing, interpreting and evaluating data. Finally, they will develop master practical skills such as using specialist equipment and confidently recognizing hazards in practical procedures (A).

Implementation

Across KS3 and KS4 we have implemented a spiral curriculum model. Students have multiple interactions with each key concept over their five-years. This allows their understanding to progressively deepen and encourages them to connect ideas and be better prepared to apply these concepts when approaching an unfamiliar topic. The KS3 curriculum is delivered over two years, Year 7 and 8, but feeds directly into the KS4 curriculum (A, F). Across the two years students cover key topics in Biology, Chemistry and Physics divided up into 10 main topics including Organisms, Matter and Forces. During Year 8 students also learn key scientific skills and complete HSW, Scientific literacy and careers in Science units (B, C, D).. At GCSE students complete the Combined Science (Trilogy or Synergy) or Separate Science qualification (Biology, Chemistry and Physics). The Year 9 curriculum advances each students' KS3 understanding and lays the foundations of their GCSE knowledge by focusing on the fundamental ideas and concepts (A, C). Years 10 and 11 revisit each topic and theme

with an increased complexity, this reinforces the information and allows a logical progression from simple to complicated ideas (F).

Practical skills are an integral part of the Science curriculum and the longer sessions lend itself to practical activities being embedded into each session (A). Practical questions in the written examinations will draw on the knowledge and understanding students have gained in their practical lessons (B). These questions will account for a minimum of 15% of the overall marks of each qualification. The questions typically focus on investigative skills and how well students can apply what they know to novel practical situations (F).

Throughout KS3 and KS4 students are also taught 'Maths in Science' alongside the Science curriculum, this element focuses on developing and applying key mathematical skills in a scientific context (B). This is an important skill as each GCSE examination paper has an element of mathematics, in the Combined Science paper at least 20% of the marks must be assessing mathematical skills, in the Separate Sciences there must be at least 10% of marks on the Biology paper, 20% on the Chemistry paper and 30% on the Physics paper (A). These skills continue to be revisited throughout the GCSE specification where focus is put on exam practice of these skills (F).

There is a strong emphasis on subject-specific vocabulary in each scheme of learning. At KS3 students are provided with keyword lists at the start of each topic. In both key stages we focus on the understanding of command words, these are the words/phrases used each examination that tell students how they should answer a question (F). All students have a copy of these on the front of their exercise books.

Students enthusiasm of the subject is stimulated through Session 3 activities such as KS3 Science club and KS4 STEM club (B). We have redesigned the KS3 curriculum to deliver an engaging Space unit which is delivered across all Science lessons. Over the years we have enriched students' curriculum by organising KS4 trips to London to visit the Science and Natural History Museum, Greenwich Observatory and Thorpe Park. We have organised several A Level visits to Geneva where students visited CERN, the European Organisation for Nuclear Research (C, D). Throughout each academic year we work alongside the Careers department to organise STEM visits and workshops and take part in inter-academy STEM challenges. Furthermore, each year we celebrate British Science week with a range of interdepartmental activities for each Year group (B, C, D).

Impact

Outcomes in the Science department are positive. The A Level and BTEC courses offered in Sixth Form (Biology, Chemistry, Physics, Psychology, L3 BTEC Science and L3 BTEC Health and Social Care) are extremely popular with internal and external students, and many students often opt to study more than one of these subjects (C). Over the years we have had excellent success with students securing places at prestigious universities to study Science based courses such as Medicine, Dentistry, Veterinary Medicine and Engineering (B).