

Introduction to Science

Department vision

To provide an enriched curriculum where students achieve better science capital to become critical and collaborative thinkers, who are resilient, inquisitive, and ethical.

Students gain valuable skills and knowledge that will make them confident and independent life-long learners and equip them for their future careers.

Intent

The Abbey School Science department believes that students should 'be the best that they can be' and have a sense of wonder for the world around them. To achieve this, a robust curriculum has been developed which focuses on high-quality content which is ambitious and knowledge-rich and contributes to the development of competence of pupils, promote lifelong learning opportunities for all, and give opportunity for their personal, social, physical, cognitive, moral, psychological and emotional development. The curriculum aims to support and challenge students of all abilities whilst ensuring students make adequate progress, enjoy the subject, challenge any misconceptions, and build confidence as they progress through their learning journey.

Promoting scientific culture through the '10 big ideas' from the AQA progression model allows students to gain substantive knowledge through the spiral curriculum starting in year 7. Disciplinary knowledge is embedded as appropriate, and the required skills become more challenging as the course progresses.

Our science education also provides the foundation for a range of diverse and valuable careers both within, and outside of scientific fields and builds science capital from engaging with STEM activities.

By the end of the student's science journey at The Abbey School, students will be able to:

- Develop scientific knowledge and understanding through the disciplines of Biology, Chemistry and Physics.
- Understand the major role science plays in everyday life.
- Develop and learn to apply observational, inferential, practical and problem-solving skills in the laboratory, in the field and in other learning environments.
- Develop their ability to evaluate claims based on science through critical analysis of the methodology, evidence and conclusions, both qualitatively and quantitatively.
- Learn how scientific knowledge is required for a wide range of careers.

Implementation

Our intent will be achieved by having a robust and spiralling curriculum which focuses on the '10 big ideas' which starts at year 7 building on knowledge and skills gained from primary school, and continues right through to year 11, and into KS5.

Substantive knowledge is gained through well-planned lessons, which include appropriate differentiation to ensure that all students are confident with the content taught. Disciplinary knowledge is embedded throughout to ensure students gain all required skills. Practical activities are run in a controlled manner to ensure that students work through the whole process from planning (method, identifying variables, writing a risk assessment, writing a hypothesis) through to completing the experiment and finally presenting data in the correct way to draw valid conclusions.

Collaboration with the Mathematics department has ensured that numeracy and key skills map across both subjects and are taught consistently within Mathematics and Science lessons.

It is vital that students become scientifically literate, and this is achieved by introducing keywords constantly and reusing them as often as possible. Drilling and retrieval practice techniques are useful to embed these phrases, as is working with the English department which use scientific words in their spelling tests. Writing and reasoning skills are developed through using 6-mark questions during assessments and modelling answers that would achieve full marks.

Opportunities to discuss wider scientific ideas and career options are embedded within the curriculum, as is drawing links between specific science topics and spiritual, moral, social and cultural ideas to ensure that students not only gain substantive and disciplinary knowledge but also understand the role science plays in the world around them.

Impact

Science teachers have a firm understanding of the curriculum intent and implement this by teaching high-quality lessons which are sequenced in line with the curriculum.

The work given to students over time matches the aims of the curriculum, which is to ensure that all students acquire the knowledge and skills required to enable them to move on to their next stage in education or employment.

Students have pride in their work and produce it to a high standard which leads to students achieving well in their GCSE examinations.