



# Science Faculty Curriculum Philosophy

The aim of the science curriculum at Biddick Academy is to develop students' curiosity, knowledge and conceptual understanding of the world around them. Science is a complex subject that brings ideas and concepts from several areas together. For this reason, we strive for students to be able to link the three science disciplines together as well as with other curriculum areas, through relevant links to learners' real life experiences. This meta-cognitive approach enables students to build up understanding over the 5 years at Biddick Academy and beyond.

To develop this, the science curriculum sets out to support students in organising their thoughts and knowledge so that they can apply this to new contexts. To support students with this, staff encourage and nurture students to allow them to develop an increasing level of resilience. Furthermore, the curriculum is designed to ensure students have a wide breadth of both scientific and disciplinary knowledge that they can apply to contexts and situations beyond Biddick Academy.

The science curriculum is designed in a spiral approach and aims to develop students' natural curiosity about the world around them through inspiring students to want to know more. We strive to achieve this through real life examples to build inquisitive learners who ask "why" and "how" to explain scientific phenomena. In science, we have high expectations of students and we are determined to build students' resilience and readiness for their next stage. For this reason, at all years, the science curriculum is designed to encourage and develop higher order thinking and reasoning skills, for example applying knowledge to new contexts. The science curriculum and assessment structure is then focused on methods to support students in developing these skills.

Key Stage 3 science focuses on core threshold concepts such as forces. These concepts will be explored in both KS3 and KS4 and each time the knowledge from previous years is built upon further. This is done through making links with other prior learning that has occurred since and by developing higher order thinking skills to be applied.

In Year 9, the Science curriculum builds a strong and secure understanding of the core concepts required to understand the GCSE curriculum so that knowledge can be applied and therefore further secured. For example, students cover energy in Year 7 and Year 8, looking at transfers and the uses of energy. In Year 9, we support students in applying this knowledge to generating electricity and evaluating different sources of energy generation in different unfamiliar contexts. Students in Year 9 will then apply this knowledge further in all three disciplines when in Key Stage 4, for example, exothermic and endothermic reactions, forces, acceleration, waves and radiation.

Key Stage 4 offers the opportunity for students to expand and apply the knowledge developed over Years 7-9, for example applying knowledge of human cell structure and inheritance from Key Stage 3 and applying this knowledge to understanding a wide range of scientific processes and phenomena including genetics, genetic diseases and punnet squares as well as selective breeding, genetic engineering, evolution and biodiversity.

To support retrieval of the key concepts developed prior to Year 10, students in Key Stage 4 are given the opportunity to recall and retrieve key knowledge through strategic homework, retrieval and set revision periods before whole school assessments. Although students are exposed to an ever-increasing level of exam questions to support preparation for final examinations, the curriculum is centred around developing a curiosity for science, by going beyond the mark scheme.