



Tollbar MAT
Family of Academies



Tollbar Academy

Science

Intent

At Tollbar Academy we provide all students with a rich, fulfilling deep education. We aim to broaden their minds and raise students' expectations, empowering them with knowledge and skills that will enrich our community, provide a platform for future success in the world of work and their role in society. The Science Curriculum focuses on Scientific thinking.

“How science works” aims to explain scientific methods and how scientists work. Science attempts to explain the world in which we live, and it provides technologies that have had a great impact on our society and the environment. Pupils try to explain phenomena and solve problems using evidence. Pupils are taught to understand that data used as evidence must be repeatable, reproducible and valid, as only then can appropriate conclusions be made.

The Faculty recognises the challenges presented by the local context of North East Lincolnshire, and against this backdrop, seeks to raise aspirations amongst all students. The curriculum links the local situation to the curriculum, for example North East Lincolnshire is fast becoming one of the main renewable energy centres for the country.

The Faculty's intent is to provide all learners at the Academy with the skills and knowledge to allow them to transition smoothly to the next step, enabling them to thrive not only academically, but also in terms of their personal development. Science has fantastic opportunities to build students' cultural capital through STEM and the world around them.

Implementation

The Science curriculum is carefully planned and structured to build on knowledge and skills taught at the previous Key Stage. The Curriculum is knowledge driven with skills sequenced throughout. These skills are constantly developed and revisited throughout the entirety of student's education. This ensures students make a smooth transition from each Key Stage and are well prepared for the next chapter of their education.

This is achieved by teaching Science that is challenging and engaging, to meet the needs of all learners. The course selected ensures that Science is not an abstract concept. The curriculum is tailored to the science of the world around us. This course allows students to explore the science that underpins day-to-day life and helps learners engage with the course rather than just study it. The faculty is ensuring a broad curriculum is taught that does not only focus on the national curriculum. For example, New Scientist articles are going to be read each term to help develop students' scientific curiosity, whilst looking at exciting science outside/linking to the national curriculum. Cross curricular links are constantly developed in lessons and imbedded in schemes of work. The Science curriculum ensures content is linked to the Academy 'themes' for each term when this is relevant. This allows students the opportunity for deeper learning.

Throughout the Science curriculum careers are constantly discussed and linked to the topics students are studying. Students discuss what the careers involve, what qualifications are needed and what future opportunities they could lead to.

Key Stage 3

The Key Stage 3 curriculum is based largely around the Activate schemes of work. Students start the course by building up scientific practical skills. This ensures there is no dip or inconsistency during the transition period. Key Stage 3 is planned carefully to be completed within two years, without loss of breadth and depth. This high pace ensures no students are coasting and that students are pushed to reach the limits of their ability.

The Key Stage 3 curriculum is designed to ensure students have the skills and scientific knowledge to make a smooth transition to Key stage 4.

Curriculum Delivery

At Key Stage 3, pupils are set by ability. SMSC (Spiritual, Moral, Social and Cultural) and British Values are embedded into the curriculum and delivered throughout Science.

Key Stage 4

The national curriculum is based around the OCR Twenty First Century Science course. This course ensures science is not abstract and is linked to the world around us. Biology, Chemistry and Physics consist of 8 topics. Units 1-3 are taught in year 9 and units 4-6 are taught in Y10. The schemes of work for year 9 and 10 are designed to further develop skills and knowledge taught at KS3. Students are encouraged to develop practical and analytical skills. During year 9 and 10, students are taught a broad curriculum that is not solely based on the national curriculum. This allows them to follow their intellectual curiosity and develop a passion and interest for science.

In Year 11, students focus on preparing for the next transition, ensuring they have an in-depth knowledge of the skills and scientific knowledge required. This allows for revisiting and reconsolidation of topics which students may find difficult, enabling them to securely embed their understanding of subject content, to transfer key knowledge and concepts to long term memory, and to further develop their academic skills.

Curriculum Delivery

At Key Stage 4 students are set by ability.

Separate Science students receive 3 lessons for each Scientific subject studied.

Combined Science students receive 2 lessons of Biology, Chemistry and Physics.

SMSC (Spiritual, Moral, Social and Cultural) and British Values are embedded into the curriculum and delivered through all subjects.

Key Stage 5

The Key Stage 5 curriculum is designed to ensure a smooth transition from previous key stages by building on the content and skills taught at KS4. The sequence of topics ensures students are constantly revisiting content and skills before developing it to a higher level of skill/understanding. This allows students to continually reinforce and embed their learning. The Key stage 5 course focuses on building problem solving skills and applying knowledge and skills to new scenarios. Frequent links are made to the real-world applications of theoretical learning, and students have multiple opportunities

to encounter employers, further education providers and other agencies relevant to this stage of their education.

Curriculum Delivery

Lessons are timetabled between 9:15am – 4:05pm, and when not in lessons, students undertake independent study or enrichment activities.

A single period lesson is 50 minutes, and a double is 100 minutes. Double periods are designed to allow opportunities for students to undertake more complex experiments.

SMSC, Careers Education and British Values are embedded throughout the curriculum and delivered through all subjects.

Impact

In Science, the impact of our curriculum will be such that:

- Students develop detailed scientific knowledge and skills that allow them to smoothly transition successfully in to future learning and employment.
- Students are aware of the possible career links to science and what qualifications they need to pursue them.
- All students are stretched to the limits of their ability, regardless of additional needs and ability.
- Students possess the cultural capital required to succeed in later life, and leave us as respectful and active local, national and global citizens.