

Science: Our DNA



Bolingbroke
Academy

Head of Department: Ms Pinner

'Curiosity, Confidence and Courage'

The Science department is committed to fostering each pupil's innate sense of curiosity and building the confidence they need to be successful life-long learners and problem solvers. We believe that all pupils will continue to engage with the scientific world beyond secondary school and it is our task to equip them with the critical thinking skills, engineering mindset and technological literacy they need to be fully engaged with the world around them.

Curriculum – Science is more than a single subject. It encompasses everything we see, hear, taste, and feel. Our staff is dedicated to creating a comprehensive curriculum which is planned by subject specialists. We are experts in our respective fields of study and this knowledge is embedded in our curriculum.

- **Key Stage 3** – Our goal in this key stage is to ignite the passion for questioning and investigating. Lessons are designed around the big questions pupils are already asking and teach the methods needed for pupils to be investigators. We strive to engage pupils in learning our subjects first hand, through fun, practical experiences and laboratory investigations.
 - Science - Biology, Chemistry, and Physics
 - Food and Nutritional Science
 - Computer Science
- **Key Stage 4** – In key stage 4 we build on the skills mastered in the previous key stage. Pupils are challenged to work and think more independently, especially around practical work. We use data to continually identify areas of strength and places where targeted interventions can build confidence.
 - GCSE Sciences – Biology, Chemistry, and Physics
 - Food and Nutritional Science
 - Computer Science
- **Key Stage 5** – At Sixth Form students are stretched to be resilient and independent workers. Lessons will focus not only on learning highly complex and detailed concepts, but also on the inductive reasoning and application of these concepts. Students learn their subject, but also the transferable skills which will help them to be strong candidates for university and employment.
 - Biology
 - Chemistry
 - Physics
 - Professional Pathways – Applied Sciences
 - Psychology
 - Computer Science

Scientific Skills

The backbone of our science curriculum are the skills pupils need to be confident practitioners of the scientific method. The mastery of these scientific skills is built into our curriculum and assessed in various ways throughout a pupil's journey. Learning to use specialist equipment like Bunsen burners, Newtonmeters, and Chef's knives are fundamental to the development of young scientists. Measuring, graphing, analysing data, and evaluating are regularly revisited to ensure confidence. At the heart of these skills is the teamwork required to be successful at any level of school or career, and we teach these skills through all key stages. Ultimately, with the development of these mindsets and practical skills, pupils can go on to investigate independently and indulge their own curiosities.

The Team

We are dedicated to teaching outstanding and engaging science lessons at all Key Stages. We aim to deliver lessons that inspire thoughtful questioning, creative problem solving, and constructive debate. We ask our pupils to stretch their knowledge and embrace the metacognitive process and we strive to do the same ourselves. Our classrooms are safe environments where all questions are valued as a part of the greater scientific process. As teachers, we continually strive to improve our practice through collaborative planning and professional development.

Scientific Literacy

Every pupil at Bolingbroke will leave our school with confidence in their scientific literacy. To us, this literacy encompasses a pupil's ability to use digital tools, decipher the Periodic Table, use terminology, as well as write code and read a recipe. We believe developing scientific literacy is key to creating life long learners of science who can continue to apply their scientific method or computational thinking beyond school and into university or careers.

The Worldwide Classroom and Enrichments

Science is not confined to a lab classroom. At Bolingbroke the world is our classroom and through our extensive program of activities outside the regular science lesson, we open up the space in which we learn. Trips, enrichments, events and visitors expand our classroom to the world around us and augment our science curriculum.

- Trips and Events
 - Invention Convention – All year 7 pupils create a novel invention to solve the problem of their choice and present them to judges in December.
 - British Science Week – A Nationwide event wherein all pupils and students participate in a variety of activities and visits from special guests.
 - Zoo Trip – Year 12 psychologists observe and examine animal behaviours first hand at the London Zoo.
 - Science Museum – Year 7 pupils engage with all corners of the scientific world with a hands on experience at the London Science Museum.
 - Natural History Museum – Year 8 pupils investigate the vast diversity of the living world through the exhibits at the National History Museum. The dinosaurs are always a big highlight!
 - Imperial College – Through various programs pupils and students participate in special events at Imperial College including the opportunity to work first hand with world leaders in the technology field.
- Enrichments
 - Plant to Plate – Pupils grow their own garden vegetables in our school garden and then use the ingredients in their own dishes.
 - CREST Award – Pupils work towards earning CREST awards through creatively solving a real-life problem and following through with their investigation. Past projects have included building rockets and simple machines.
 - Open Lab – Pupils or students are welcome to join the Open Lab to investigate the inquiry of their choice. Basic equipment and guidance is provided, but pupils are encouraged to think independently and work collaboratively with other pupils and students to problem solve.
 - Coding Club – Pupils and students will learn and apply their computer science skills to create a variety of products using computer code.