HCHS Curriculum Purpose Statement – Science

Science is everywhere in today's world and is an integral part of everyone's daily life. With advances in science transforming our society and our lives at an incredible pace, our curriculum is designed to build a pupil's science capital. In the world in which we live this is an absolute necessity.

We aim to engage all pupils by developing their scientific knowledge and literacy thus allowing them to fully understand and be able to discuss scientific issues that affect them with confidence.

The scope of our curriculum provides frequent opportunities for pupils to scaffold new knowledge on prior learning. Our strong practical approach allows pupils to learn about realities of the scientific world and become professional researchers. The aim of our experimental/investigative approach being to promote the use of scientific method and enquiry thus developing student's abilities to problem solve and make decisions. The practical approach promotes engagement and allows new knowledge acquired to be hinged upon hands-on experience. We want pupils to leave lessons feeling inspired, challenged and with a curiosity to find out more whilst being fully equipped to do so. The science curriculum also ensures that there are opportunities to widen pupil awareness and perception of science in society via social, moral and ethical discussions.

Our science provision will equip all students with the skills and knowledge they need to succeed in school and beyond. Fundamental to this is making science relevant to students lives and offering frequent opportunities to use critical thinking and problem-solving skills – both universally transferable.

Key Stage 3:

We will help students to build on the elements of key stage 2 science knowledge, ensuring they resolve any prior misconceptions and fully cover the National Curriculum and beyond, developing a detailed scientific understanding of the topics covered.

We aim to grow students' curiosity and interest in science and allow them to begin to appreciate how their wider world works through a range of practical work, problem solving and ICT based activities.

We will help build students' teamwork and communication skills and enable them to be able to independently and confidently plan and safely carry out scientific investigations using appropriate methodology. The skills of analysis and evaluation of quantitative data will also be covered.

We hope students will have had a positive experience and many will want to opt to study triple science at GCSE level.

Key Stage 4:

Via a spiral, sequenced curriculum we will enable students to build on the relevant elements/experiences gained throughout their Key Stage 3 science, adding both depth and detail to their prior knowledge. This will be linked to scientific investigative skills and the compulsory core practical work that students must undertake in science.

We will build their critical thinking skills enabling students to question any scientific evidence/data given to them and not just accept it at face value. This will be linked to their communication skills, where discussion and debate of topical scientific issues/ideas will be promoted.

Students will develop resilience and understand that it is a vital part of learning to make mistakes as long as they learn from their mistakes and don't give up. This will build confidence in their own scientific abilities and make them less afraid of taking the next step in their learning independently. They will also learn how to apply their scientific knowledge in unfamiliar contexts, appreciating that they cannot be taught everything. They will take a pro-active role in assessing, then improving their own work requiring minimal teacher contribution.

Maths skills will be taught in such a way as to enhance the work done in the Mathematics department and shown how these transferrable skills can be applied in a scientific context.

Examination entries will be carefully matched to students' abilities and decisions made only after consultation with parents/carers/students.

Examination technique will be practiced and developed to allow students to become familiar with the style of GCSE examination questions they will face at the end of their course. This will be matched with a variety of revision techniques which will help students transfer as much relevant scientific knowledge to their long-term memory as possible.

We hope that as a result of all of the above students will have developed a positive working relationship with their teachers, enjoyed their science education so much that as many as possible would wish to pursue at least one science discipline to A level.

Key Stage 5:

Students will build on all the relevant elements/experiences of key stage 4 science mentioned above and continue to become more independent learners, taking pro-active steps to ensure they are reviewing all their learning and reading ahead to prepare for future lessons. They will rise to the challenge/demand of studying A levels and set themselves demanding goals. They will develop a deep understanding of their subject and be able to make links across the different disciplines within each science. Mathematical skills will be applied to complex practical and theoretical situations and practical skills learnt from GCSE enhanced through the completion of the Practical Activity Group (PAG) tasks plus multiple other related scientific investigations.

Students will be able to identify any barriers that are holding back their learning and take the necessary steps to overcome these. They will become more resilient in their approach to being given more independent study tasks and be able to overcome any initial setbacks with the support of their teachers.

We hope they will develop a passion for their chosen science/s and have a curiosity to learn more and a desire to read beyond the boundaries of the exam board specification.

As a result of all of the above points we hope that students will have developed a positive working relationship with their teachers, enjoyed their science so much that as many as possible would wish to, and be fully equipped to, pursue a related science course at University.