Introduction to the Computer Science Department

Developing confident, resilient, and proficient digital citizens

"Every pupil should appreciate that computational ideas inform and illuminate other disciplines, and this should be reflected in the teaching of these disciplines at school. Like numeracy and literacy there is a cognitive strand of computing that offers valuable thinking skills to learners of all ages (e.g. algorithmics, logic, visualisation, precision, abstraction)." Computing At School (CAS), 2012.

The growing popularity of this important subject has allowed us to grow our Computer Science department in recent years, we now have three subject specialists in school and a growing number of Computer Science students. At GCSE the subject is one of our most popular courses and we were delighted to be able to offer two Year 12 classes this year for the Computer Science A level.

Extra-curricular activities are key for Computer Science and students enjoy taking part in many national competitions, for example Cyberfirst. In the past we have also run visits to Bletchley Park exploring the topic of Cryptography.

At key stage 3 all students are taught in classes of 30 and participate in two hours of computer science a fortnight. Students are enthusiastic and engaged with the subject and delight in participating in external competitions. The Key Stage 3 programme reflects the topics students will need for Key Stage 4 Computer Science. At Key Stage 4 students are entered for the AQA GCSE Computer Science 1-9 examination (details included as an appendix). At Key Stage 4 we currently have two classes of highly able students in both years 10 and 11 and as an expanding school we anticipate that these numbers will rise. We offer the OCR A-level which is extremely popular with our students and provides a wonderful opportunity for subject experts to work with our highly able Sixth Form students.

There are currently three excellent, very large computing rooms; all are fully equipped with 31 modern PCs including a teacher computer connected to an interactive whiteboard. The rooms are air conditioned and share a commercial printer. Both rooms provide separate desk space for theory work away from the computers making them ideal for delivering all key stages of the Computer Science curriculum. Subject Prefects assist the department with Open Evenings, Options Evenings and club activities, such as the recent BBC Microbits and the NCSC CyberFirst Girls competition.

Department Ambitions

To provide opportunities that allow all students to understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. To expose students to relevant content that allow them to analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve problems. To encourage students to be critical and mindful of growth potential through evaluation and application of information technology, including new or unfamiliar technologies, analytically to solve problems. All students should feel responsible, competent, confident and creative users of information and communication technology.

Entitlement

Each and every student will be supported fully in their learning regardless of background or individual needs. Students with SEND will be fully supported and accommodated through the use of specialist equipment where appropriate.

Key Knowledge and Broad Concepts

The Computer Science curriculum at CCHS aims to teach the core principles of computer science, in which students are taught information and computation, digital systems and how to put this knowledge to use through programming. Students build on the knowledge of core computer science principles throughout key stage 3 to develop a strong understanding of the subject in preparation for the GCSE syllabus. The content delivered to students in KS3 meets the expectation outlined in the DofE national curriculum framework. In addition, the CCHS curriculum has been designed to broaden our students' exposure, awareness, and appreciation of the subject through extra-curricular opportunities.

Future

Students will be equipped to use computational thinking and creativity to understand and change the world. During the delivery of computer science lessons, students will be informed of the expectations of the subject in relation to their approach to learning, their development of knowledge and the skills they develop.