Curriculum Intent

Department: Computer Science

We aim to deliver the Mission Statement of the school by:

KS3 Computing equips students to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which students are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, students are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that students become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Key stage 3 students are taught to:

- design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems.
- understand several key algorithms that reflect computational; use logical reasoning to compare the utility of alternative algorithms for the same problem.
- use two or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures; design and develop modular programs that use procedures or functions.
- understand simple Boolean logic and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers.
- understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems.
- understand how instructions are stored and executed within a computer system; understand how data of various types can be represented and manipulated digitally, in the form of binary digits.
- undertake creative projects that involve selecting, using, and combining multiple applications across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known users.
- create, re-use, revise and re-purpose digital artefacts for a given audience, with attention to trustworthiness, design and usability.
- understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct and know how to report concerns.

The School's JPPs are interwoven into our Scheme of Work and into our day to day teaching.

The Computing curriculum builds on Key Stage 2 knowledge in Key Stage 3 in the following way:

Year 7 – No assumptions are made about previous knowledge in KS2. Historically, primary schools have mixed approaches to Computing due to the lack of technical subject knowledge. This is anticipated and gaps are identified in the first term by all students doing a baseline test to gather data on their previous schools and level of knowledge. Using this data our Scheme of Work can be updated and lessons can be adapted to meet these gaps.

Key Stage 3 / 4

3 Pillars of progression: 1) Computer Science 2) Information Technology 3) Digital Literacy

Declarative knowledge ("Knowing that") and procedural knowledge ("Knowing how") are identified, sequenced and connected in our curriculum.

The course ensures that all students:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.
- are responsible, competent, confident and creative users of information and communication technology.

SEND

The EEF classes technology as one of the strategies for inclusive teaching. In Computing we use technology as a pivotal tool for fostering interest in our subject at KS3. With SEND students technology based classwork is seen to be less judgmental/neutral based on research as well as being able to engage and interest learners. The barriers to learning is significantly lower when technology is used with SEND students which we capitalise on.

Literacy, reading and oracy skills are embedded into our curriculum through tasks such as presentations, writing an essay on ethics and reading current affairs about our industry.