

Quotes

"Whether you want to uncover the secrets of the universe, or you want to pursue a career in the 21st century, basic computer programming is an essential skill to learn"
Stephen Hawking

"An investment in knowledge pays the best interest". Benjamin Franklin

"Technology is just a tool. In terms of getting the kids working together and motivating them, the teacher is the most important". Bill Gates

"Making AI more sensitive to the full scope of human thought is no simple task. The solutions are likely to require insights derived from fields beyond computer science, which means programmers will have to learn to collaborate more often with experts in other domains". Fei-Fei Li

Intent

Computer Science is the study of principles and practices that underpins an understanding and modelling of computation, and of their application in the development of computer systems.

Computer Science is deeply concerned with how computers and computer systems work, and how they are designed and programmed.

We want our students to understand and play an active role in the digital world that surrounds them, not to be passive consumers of an opaque and mysterious technology. A sound understanding of computing concepts will help them see how to get the best from the systems they use, and how to solve problems when things go wrong.

Our vision/aim going forward is to increase the uptake of Computer Science/B-Tec DIT at KS4 and KS5; specifically, among girls.

Objectives

- To secure knowledge of the concepts of computer science, including abstraction, logic, algorithms and data representation.
- To analyse problems in computational terms and have repeated practical experience of writing computer programs and to solve such problems – linking with the real-life scenarios.
- To build confident, creative and resilient learners who are able to recover from mistakes and effectively solve problems.
- To embed learning more deeply through repetition of content using different scenarios throughout all years.
- To give pupils opportunity to look at different careers pathways that involve computer science and the digital world.
- To give students experience of different types of technology.
- To explicitly teach vital vocab and develop cultural capital.
- To develop academic language to embed knowledge more deeply.

What will students experience at KES?

- High expectations in all lessons
- Knowledge rich curriculum
- Model examples how to problem solve
- Teacher led lessons
- Explicitly taught vocab e.g., you say I say,
- Student led lessons, driven by feedback from teacher and peers

- Students will receive both individual and whole class feedback – using a variety of methods including verbal/written and online methods
- Vocab tests via Teams – used to re-enforce key vocab
- Retrieval practices – will include use of questioning, quizzing, bet your chips, Use of graphical maps as an aid for revision

KS3 Overview

Students will design, use, and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems. They will learn 2 text-based programming languages: Python and HTML. Students will understand how computers work by looking at the hardware that make up computer systems. They will begin to understand how various types of instructions are stored and executed in computer systems, and how they can be used to represent images, music and text.

They will understand a range of ways to use technology safely, respectfully, responsibly and securely: including protecting their online identity and privacy; recognising inappropriate content; and knowing how to report concerns.

The Computing syllabus has been designed to cover the three main areas of Digital Literacy, Computer Science and Information Technology.

Digital Literacy and Information Technology

- What the cloud is and how to utilise cloud services
 - To be proficient in using a range of digital online/offline applications
 - How to transfer skills from one application to another
 - To use social networks and other online digital tools
- To be responsible when using social networks, technology, and other online tools
 - To understand the possible dangers, they can face online
 - To learn how to deal with situation they may encounter online
- To understand the impact ICT has on the world around them
 - The positive and negative effects of ICT on their lives
- To learn how to use privacy setting on social networks
- To be effective when working independently as well as when collaborating with team
- To have a basic understanding of how the internet works
 - To have a basic understanding how search engines work
 - How to identify accurate information in the digital world

Computer Science

- To be able to create interactive games by using a visual programming language
- To learn a textual programming language and related computational terminology
- To learn about the hardware components inside a computer/tablet/smartphone
- To learn what an operating system is and why it is used
- To understand the history of Computer Science, as well as key figures in history
- To understand what an algorithm is and why they are used
- To learn what networks are and how they are used