

Subject Curriculum Overview

Computer Science Department Curriculum Intent

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, design and technology, and provides insights into both natural and artificial systems. Computing can be broken down into ICT and Computer Science, in which pupils are taught the principles of information, communication and computation, how digital systems work and how to put this knowledge to use through programming and utilising office / creative media based applications. Building on this knowledge and understanding, pupils are equipped to use Information Technology to create programs, systems and a range of content. Computing also ensures that pupils 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.

Aims

The National Curriculum for computing aims to ensure that all pupils:

- 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.
- Undertake creative projects that involve selecting, using, and combining multiple applications, preferably 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 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 (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits.

Curriculum Map Year 7

Intent	During Year 7, pupils will study Computer Science on a carousel basis. They will rotate throughout the year and complete a 9-week topic in each subject area. Our aim is to provide them with opportunities to learn the basics and gain experience of each through different lessons.
Content - 'Know what'	E-Safety Hardware & Software, CPU & Binary
Skills - 'Know how'	<ul style="list-style-type: none"> ● Learning about online safety and dealing with cyberbullying. ● Recognise the different components inside a computer; different hardware e.g. tablets, Desktop PC's and Laptops. ● Understand the difference between input, output and storage devices. ● Know how numbers can be represented in binary/ hex and denary and conversion. ● Knows that computers transfer data in binary. ● Knows that digital computers use binary to represent
Big questions	<ul style="list-style-type: none"> ● What is the purpose of processors? ● How are numbers letters & symbols represented in computers?
Assessment	Written paper
Literacy/Numeracy/ Careers/ SMSC	<p>Literacy: Hardware, Software, RAM, CPU, Computing, password, secure, hazards, E-Safety, online scam, cyberbullying, citation, cyberbullying,</p> <p>Numeracy: addition and subtraction of binary numbers</p> <p>SMSC: How are devices recycled/disposed of ethically? What are current environmental issues with electronic devices</p> <p>Careers: hardware Engineer/Network Support/field engineer, Software Engineer</p>

Curriculum Map Year 8

Intent	During Year 8, pupils will study Computer Science on a carousel basis. They will rotate throughout the year and complete a 9 weeks' topic in computer science. Our aim this year is to build on skills taught in the previous year and continue to provide them with opportunities to learn knowledge and greater skills through different lessons.
Content - 'Know what'	Algorithms & Computational thinking Programming in Python
Skills - 'Know how'	<ul style="list-style-type: none"> • Know how to use abstraction and decomposition to design the solution to a problem • Be able to produce an algorithm using a flowchart. • Understand why sorting algorithm and searching algorithms are needed • Be able to run a simple Python program in Interactive mode using the input and print functions. • Be able to develop selection statements using operators (boolean e.g. AND, OR) • Demonstrate an understanding of data types (string, integer, Boolean, float/real), • Use iteration (while loops) to control the flow of program execution
Big questions	<ul style="list-style-type: none"> • What is the purpose of an algorithm? • How can programs be written to be easy to read and efficient?
Assessment	Written paper
Literacy/Numeracy/ Careers/ SMSC	Variables ,Boolean expressions Software developers, programmers, Data Analyst

Curriculum Map Year 9

Intent	During Year 9, pupils will study Computer Science on a carousel basis. They will rotate throughout the year and complete a 7 weeks' topic in computer science. Our aim this year is to build on skills taught in the previous year and continue to provide them with opportunities to learn knowledge and greater skills through different lessons.
Content - 'Know what'	HTML, CSS, JavaScript
Skills - 'Know how'	<ul style="list-style-type: none"> • Students will learn how to create text styles and add content, including text and graphics, in a specified position on a page, as well as navigation links to other pages on their website and to external websites • Add HTML form controls to a web page • Explain the role of JavaScript inside web pages • Understand and follow JavaScript syntax
Big questions	What is the language used for developing websites?
Assessment	Written paper
Literacy/Numeracy/ Careers/ SMSC	Meeting the needs of the customer when creating websites. Avoid plagiarism or copyright images. Careers: Web designer