Why is the study of KS3 Computer Science important?

Computer Science is about solving problems. It is the principle of making technology work for you, enabling you to find efficient and effective solutions. Throughout your study, you will apply computational thinking and the cornerstones of computer science to a variety of problems. Modern-day societies require people to work in an innovative way and computer science provides you with the foundation to build your learning journey upon.

In Computer Science you will learn to further consolidate your skills in text-based programming languages, you will also get an opportunity to use block-based programming languages in a variety of different applications. Computer Science theory is also explored, looking 'under the bonnet' at the computer system that you use on a day-to-day basis.

You will develop an excellent understanding of network security, hardware, representing data in computer systems and fundamentally you will become a responsible e-citizen.

Within the computer science curriculum, we focus on digital literacy, to ensure that you have all the life skills that you require moving forward into the workplace or further education. Whilst computer science focuses on creating, ICT focuses on using. Throughout your study, you will learn valuable ICT skills, such as spreadsheets and document creation.

Your computer science lessons will encourage you to think deeply and help you become a more effective and resilient problem solver that doesn't give up.

Computer science provides a fantastic start to your understanding of the technological world in which we live, a great life skill that all universities and employers will appreciate.

What skills will the study of KS3 Computer Science teach you?

The skills you will learn through KS3 Computer Science include:

- Apply computational thinking techniques (abstraction, decomposition, pattern recognition, algorithms) in a range of scenarios to solve problems.
- Develop resilience by not being afraid of challenges when solving problems, but to break them down and keep trying.
- Be creative in a subject that may not be renowned for it – there is no limit to creativity when you create the solution.
- How to act responsibly online to ensure that you and others stay safe online.
- Identify the key programming constructs (sequence, selection, iteration) required to solve a problem.
- Apply the key programming constructs (sequence, selection, iteration) to any programming language.
- Work independently and as part of a team to solve complex problems.
- Construct reasoned arguments to ethical, social and moral problems that have arisen due to technology and communicate these in an effective way.
- Identify links between different elements of computer science
- Evaluate different methods of representing data and decide on the most suitable method for presentation/storage

You will know and understand:

- How to use computers safely and responsibly
- The key cornerstones of computer science and how to identify them
- How to program algorithms in a variety of programming languages
- Key systems hardware
- How data is represented in computer systems
- How to use a variety of applications software
- How to program hardware
- How devices can be networked
- The impact that technology can have on ethical and environmental factors

How does your study of KS3 Computer Science support your study in other subjects?

The study of any subject in our curriculum takes full advantage of links with other subject areas- we term these as interdisciplinary links and we make the most of them because we know that deep learning requires the transference of knowledge and skills from one topic to another. Once you can transfer your learning across topics and subject areas then you are really mastering what you know and how to apply your understanding and skills.

Computer Science touches on so many other subjects such as mathematics as you develop skills in problem-solving, including decomposition (breaking down problems), abstraction (removing unnecessary detail from a problem) and pattern recognition. All of these skills will support your teaching in Mathematics as these are very important in being able to solve mathematics problems in a range of contexts. There are also links with Science as binary logic can be applied to electrical circuits in Physics and much of the technology from Computer Science can be mapped back to core principles of Science. For example, how sensors are used to monitor motion, force and/or pressure. You will learn methods of thinking and research that are widely applicable to other subject areas helping your thinking in all subjects.

How can you deepen your understanding of KS3 Computer Science?

Across Year 7 to 13, students engage in the Bebras Challenge. This is a national competition run by Oxford University that assesses Computational Thinking skills. Students have the opportunity to take part in this competition and if they are in the 10% nationally, they will be invited to Oxford University to take part in a new challenge.

Within each academy, the iDEA award is offered. The iDEA award stands for Inspiring Digital Enterprise Award and is an international programme that helps you develop digital, enterprise and employability skills.

This is introduced to years 7 & 8 during their Computer Science lessons and offered as an enrichment thereafter.

All other year groups will be introduced to the award through an assembly and be able to attend enrichment to complete. It is also possible to complete at home.

Other enrichments vary across academies and include RaspberryPi clubs, Minecraft clubs and also programming enrichments.

In addition to these enrichments, students are able to attend enrichment to receive additional support in Computer Science.

How are you assessed in KS3 Computer Science?

There are a number of assessment opportunities across the KS3 computer science learning journey. Most units of work require students to undertake some form of assessment, both formative and summative. All of our assessments are mapped against our key stage 3 curriculum specification and against our age-related assessment descriptors.

Students will become experts in the use of Google classroom and teachers will use advanced marking techniques such as rubrics so that students know exactly what they need to do to improve. This can be an especially useful technique when assessment involves programming tasks and problem-solving. Assessments are accessible and always build on skills that students have been taught and classwork will be assessed by your teacher frequently.

How can KS3 Computer Science support your future?

Studying Computer Science is the perfect gateway into either Cambridge Nationals in Creative iMedia, or into GCSE Computer Science. These then provide a platform for going on to studying A-level Computer Science, or Cambridge Technicals in IT, both of which are offered at Outwood Family of Schools post-16 centres.

Looking further ahead, you could go on to study a range of academic courses, or take your new skills into apprenticeships and workplaces. Computer Science industries are growing rapidly, and there are few better qualifications to underpin your future.

Key Stage 3 Course Overview
E-Safety
Computational Thinking (Computer Science)
Spreadsheets (ICT)
Micro:Bit (Computer Science)
Outwood Travels (Digital Literacy)
Computing Theory (Computer Science)
Small Basic (Computer Science)
Running for Prime Minister (Digital Literacy)
Programming in Python (Computer Science)
Events That Changed Our Time (Digital Literacy)
HTML Web Design (ICT/Computer Science)