

KS3 Computer Science Curriculum

“Computer Science is the subject that has altered the ways we interact with Technology.”



e-Safety	Programming	Digital Literacy	Applications	Graphics & Web Design
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Year 7	Digital Literacy Understanding how office products can support the data created from an online form	micro:bits Developing applications using sensors to interact with our environment	p5js Developing JavaScript programming skills to develop interactive graphics
Year 8	Twine How to create an interactive story using a programming language	Python Turtle Using python to develop graphics based on the programming fundamentals	HTML Altering HTML code as and developing code based on <u>svg</u> images
Year 9	App Design How are mobile apps designed and how can they be used to solve real world problems	Python Writing an interactive game within a lesson using Python and a specific brief	GIMP Develop and alter image learning how professional tools and techniques work

How will you be assessed?

- Knowledge of programming and ability to decompose problems
- Understanding how code can be written to utilise logic whilst maximising efficiency and understanding.
- Application of knowledge and understanding to interpret, analyse and evaluate programming problems providing effective solutions
- Computer science skills, such as writing code based on a brief, online assessments and reviews of your project work over the term

Intent	What new knowledge/content do we introduce?			
By the end of KS3 students are able to...	Year 7		Year 8	Year 9
<ul style="list-style-type: none"> Are able to effectively carry out work in Microsoft Windows utilising a wide range of skills to organise their work as well as utilise a variety of different Office products Have an excellent ability in being able to decompose a given problem into specific stages Are able to use different programming languages using the programming fundamentals of sequence, selection and iteration 	Autumn	e-Safety How do we need to be secure when setting up our login	e-Safety Understanding of social networking and how we should be responsible for what we post online	e-Safety Understanding of copyright and plagiarism and how we this has implications on our
		Digital Literacy Effective organisation our work in Windows and Office applications usage	Twine How to create interactive web based stories based around the programming fundamentals	App Design How are apps on mobile phones created and developed and how can we develop solutions to real life problems
	Spring	micro:bits What sensors can be programmed in an external device to support our interaction with the environment	Python Turtle Programming the movement of an on-screen turtle to create complex digital patterns using selection and iteration	Python Creation of a game within one lesson. Using a variety of programming methods
	Summer	p5js.org How to program in JavaScript to create complex interactive graphics and using iteration to simplify code	HTML How to code in HTML to alter existing websites as well as create digital svg images only using code	GIMP Use of a complex graphics for image creation and manipulation
	Rationale for this sequence	<p>Students arrive in Year 7 with varied experience in programming and digital literacy. To ensure that they are able to effectively work with the computer and the core applications that we will use throughout KS3 and KS4, students are given the necessary knowledge to navigate Windows as well use all of the major applications within the Microsoft Office suite. The students utilise the applications whilst carrying out a research project, with data developed from Microsoft Forms. This is analysed with Excel, presented with PowerPoint and written up with Word.</p> <p>Students go on to utilise and program a device where we can determine the degree of programming ability within the year. Student understand the ways in which technology is changing how mobile phones software is developed to utilise similar sensors</p> <p>Finally students write code interactive code in JavaScript building on the understanding of the fundamentals touched on in the previous term.</p>	<p>Year 8 begins with how students should understand the impact of social media has upon their lives and the correct and responsible ways of interacting with it.</p> <p>Our third programming language, blends the comprehension and creative writing skills from English and has them developing an interactive story. Students become more aware of how variables work and the ways in which the story might flow are laid out graphically whilst combing code to alter how text might appear.</p> <p>Finally, our fourth programming language ensures that students have a full and broad understanding of the most important programming languages in the modern society. They see how all internet sites are created and develop their own website as well as vector graphics directly created within the HTML.</p>	<p>Year 9 begins with further developing the students understanding of professionalism in how the interact with technology and the responsibility they have to writing original material or citing sources as needed. Programming is further developed from earlier years with a development of the understanding as to how real world problems can be solved using technology. The Spring term has students using Python, but projects a series of fast paced lessons geared to developing interesting interactive games within each lessons.</p> <p>Finally, students leave year 9 with an understanding of how graphics are created with professional graphics packages. They learn tools and techniques that are necessary to develop and alter images as used by professional design companies in the industry.</p>
How does the KS3 Curriculum build on previous learning at KS2?	<p>We take skills the students would have typically used in KS2, such as programming with Scratch and use a variety of different techniques to ensure that they are supported in their first programming with the text based languages that we teach. For example, we utilise different integrated development environments that work with our chosen languages that automatically demonstrate the differences in words might have different meanings to the language. We support their maths understanding by using tasks that are graphically represented based on the code they enter. Finally, we support their English ability by the interaction with various Office applications as well as the creative writing skills within different Topics.</p>			