

Computer Science and I-Media

“Computers are incredibly fast, accurate, and stupid. Human beings are incredibly slow, inaccurate, and brilliant. Together they are powerful beyond imagination.”- Albert Einstein, Physicist

Year 7

The Rationale

	Autumn Term 1	Autumn Term 2	Spring Half Term 3	Spring Half Term 4	Summer Term 5	Summer Term 6
Curriculum Knowledge	I-media/ICT/Computer Science: Classroom expectations, E-Safety, word processing skills	Computer Science: - Intro to computer Science and Bebras Challenge	I-media/ICT: Intro to I media	Computer Science: Programming essentials in scratch	I-media/ICT:: Spreadsheets	I-media/ICT:: - Crazy Animal, Photoshop
Subject Skills	This unit aims to equip students with essential skills and knowledge to navigate the digital classroom effectively. The focus will be on establishing classroom expectations, understanding e-safety, mastering email communication, and developing word processing skills. Through a blend of theoretical lessons and	This unit focuses on networks, the internet, and associated technology (network, hub, server, router, ISP, protocol, mainframe, personal computer, stand-alone, HTTP, wired, wireless, 3G, 4G, 5G, WiFi, bandwidth, bit, megabit, gigabit, broadband, buffering, packet, IP address, packet header, packet payload, Transmission	This unit is designed to build upon learners' experience in key stage 2. It requires learners to use a range of different skills across several pieces of software. Learners will work between different applications to create a poster and slides on a given theme. The unit is	This unit is the first programming unit of KS3. The aim of this unit and the following unit (Programming II) is to build learners' confidence and knowledge of the key programming constructs.	Introduce your learners to the wonderful world of spreadsheets and the concept of cell referencing. Ask them to collect, analyse, and manipulate data, before turning it into graphs and charts. Data is beautiful!	- Smudge - Magic Wand - Quick Select - Filters - Spot Healing - Eyedropper - Brushes - Eraser - Layers

	<p>practical exercises, students will learn to operate responsibly and efficiently in a digital learning environment.</p>	<p>Control Protocol, Internet Protocol, World Wide Web, WWW, internet services, email, Voice over Internet Protocol (VoIP), Internet of Things (IoT), spam, privacy, security, web browser, web server, web page, search engine, HTTP, HTTPS, URL, domain name, domain name system)</p> <p>Bebras challenge is national competition</p>	<p>designed so that learners can concentrate on applying skills that they may have previously learnt as well as those learnt in the unit. Learners are given clear tasks for which they need to first plan and then implement a solution.</p>	<p>Importantly, this unit does not assume any previous programming experience, but it does offer learners the opportunity to expand on their knowledge throughout the unit. The main programming concepts covered in this unit are sequencing, variables, selection, and count-controlled iteration.</p>		
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<p>Tier 3 Vocabulary</p>	<p>Digital citizenship Netiquette</p>	<p>Network protocol mainframe stand-alone HTTP Network cable hub server router ISP Internet packet IP address packet header packet payload Transmission Control Internet Protocol World Wide Web, internet services, email Voice over Internet Protocol (VoIP) Internet of Things (IoT) spam web browser web server search engine HTTPS URL domain name domain name system</p>	<p>Brand logo Content licence</p>	<p>Sequencing, subroutines execute Variables, subroutines, input, process, output, storage, tracing Expressions, evaluate, conditions, selection, If statements, sequencing, Operators, logic, comparison, selection, Iteration, count- controlled, condition- controlled, debugging, subroutines</p>	<p>Cell Formula Function Worksheet Range Conditional Formatting Data Validation Macro Cell Reference</p>	<p>Blur Smudge Quick Selection Layers Magic Wand Eraser Brush Resolution Pixels DPI Graphic Effects Filter</p>
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<p>How can you help your child engage with the content?</p>	<p>Talk to your child about the positives and negatives of the Internet</p>	<p>You can help by talking to them about computer networks by involving them in activities related to devices they use at home. For instance, you can show them how the family's computers, tablets, and smartphones connect to the Wi-Fi router, explaining how data travels wirelessly between devices. They can also demonstrate how smart home devices like smart speakers or thermostats communicate with each other through the home network. Additionally, you can engage children in setting up and securing the home Wi-Fi network, teaching them about passwords and encryption.</p>	<p>You can help with this unit by supporting them in using different software applications to create a poster and slides based on a given theme</p>	<p>You can encourage their child's creativity and problem-solving skills by suggesting projects and challenges for them to work on using Scratch.</p>	<p>You can encourage their child to explore online tutorials, guides, and practice exercises to further enhance their spreadsheet skills</p>	<p>Talk about the design of posters, magazines, other publications in everyday life</p>
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<p>Career Links</p>	<p>Administration, Teaching and Education, Mentor, Computer Programmer, Games Developer, Games Designer, Web Designer, Graphic Designer https://nationalcareers.service.gov.uk/explore-careers</p>
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Year 8

The Rationale

	Autumn Term 1	Autumn Term 2	Spring Half Term 3	Spring Half Term 4	Summer Term 5	Summer Term 6
Curriculum content	E-Safety	Computer Science: <i>intro to python and bebras</i>	Computer Science: App design and web design	Computer Science AI	Computer Science: Layers of computing	I-Media/ICT: Photoshop - My Holiday Gap Year
Key Skills	<p>In this unit, learners will evaluate the online world and their own internet activity for safety concerns and equip themselves with tools for protecting their online identities.</p> <p>As most learners will already have some form of online presence and familiarity with online spaces, the purpose of this course is for them to start thinking more critically about how they, and others, conduct themselves online. Learners will also be asked to discuss key debates around the online world, such as the extent of their right to privacy, and which powers should be granted to organisations and states. As much as possible, learners</p>	<p>This unit introduces learners to text-based programming with Python. The lessons form a journey that starts with simple programs involving input and output, and gradually moves on through arithmetic operations, randomness, selection, and iteration. Emphasis is placed on tackling common misconceptions and elucidating the mechanics of program execution. A range of pedagogical tools is employed throughout the unit, with the most prominent being pair programming, live coding, and worked examples. The Year 7 Programming units are a prerequisite for this unit.</p>	<p>In this unit, learners will explore the technologies that make up the internet and World Wide Web. Starting with an exploration of the building blocks of the World Wide Web, HTML, and CSS, learners will investigate how websites are catalogued and organised for effective retrieval using search engines. By the end of the unit, learners will have a functioning website.</p> <p>For the second part In a world where there's an app for every possible need, this unit aims to take the learners from designer to project manager to developer in order to</p>	<p>Throughout this unit, students will experience a variety of real-world AI applications and be made aware of the ever-increasing range of AI-related careers. As well as considering the social and ethical implications of AI developments, you and your students will have the opportunity to delve deeper and explore machine learning models and the engines that make them work. Students will be able to take part in practical activities, in which they will create their own</p>	<p>This unit takes learners on a tour through the different layers of computing systems: from programs and the operating system, to the physical components that store and execute these programs, to the fundamental binary building blocks that these components consist of.</p> <p>The aim is to provide a concise overview of how computing systems operate, conveying the essentials and</p>	<p>This unit follows on from the photoshop unit in year 7 developing further skills and building on the knowledge learned in the year 7 crazy animals' unit. Students will use our greenscreens to plan and design a fake holiday gap year.</p>

	<p>should be encouraged to develop their own ideas and opinions in order to become engaged citizens when it comes to online rights.</p> <p>In addition to learners understanding the context of online safety and the potential dangers they are at risk of, a key takeaway of this course is a repository of practical, risk-reducing steps that learners can implement online</p>	<p>Bebras challenge is national competition</p>	<p>create their own mobile app. Using App Lab from code.org, learners will familiarise themselves with the coding environment and have an opportunity to build on the programming concepts they used in previous units before undertaking their project. Learners will work in pairs to consider the needs of the user; decompose the project into smaller, more manageable parts; use the pair programming approach to develop their app together; and finish off by evaluating the success of the project against the needs of the user.</p>	<p>machine learning models using the free web-based tool Machine Learning for Kids and take a project from start to finish by going through the stages of the AI project lifecycle.</p>	<p>abstracting away the technical details that might confuse or put off learners.</p> <p>The last lessons cover two interesting contemporary topics: artificial intelligence and open source software. These are linked back to the content of the unit, helping learners to both broaden their knowledge and focus on the topics addressed in the unit.</p>	
<p>Tier 3 Vocabulary</p>	<p>Digital footprint</p>	<p>Algorithm, program, programming language, program translation and execution, interpreter,</p>	<p>HTML, tags, formatting attribute, directory, render CSS,</p>	<p>Artificial intelligence (AI), algorithm, data, rule-based, data-driven, model,</p>	<p>Computer, system, device, program,</p>	<p>Blur Smudge Quick Selection Layers Effects Filter</p>

		<p>programming environment, input, output, variables assignment variables, operators, expressions, integer string type, execution, walk-through Multi-branch selection, relational (or comparison) operators, logical (or Boolean) expressions, conditions, iteration,</p>	<p>style, formatting, head, body, attribute</p>	<p>generative AI, computer vision Machine learning, training data, supervised learning, unsupervised learning, reinforcement learning, classification, class, label, classification, test data, accuracy, bias, data bias, societal bias Decision tree, feature, node, root node, decision node, leaf node, classification, explainability</p>	<p>software, instructions Computer, system, device, program, data, hardware, processor, memory, storage, communication, input and output, architecture Program, instructions, data, hardware, processor, memory, storage, communication, operating system Logical operators (NOT, AND, OR), logical expressions, truth values (true, false), truth tables, logic gates, logic circuits,</p>	<p>Magic Wand Eraser Brush Resolution Pixels DPI Graphic</p>
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					hardware components	
How can you engage with your child?	Encourage open communication with your children about their online activities. Make them feel comfortable discussing their experiences, concerns, and questions about internet safety.	Encourage your child to practise coding regularly. Use online sites such as https://www.learnpython.org/	Encourage online tutorials, design software, and educational websites to supplement their learning. for example https://www.w3schools.com/html/	Stay informed about advancements and trends in AI technology to support your child's learning and discussions about the topic	Encourage your child's curiosity about computing systems by discussing real-world examples and applications	Talk about the use of green screens in daily life such as on still images
Career Links	Administration, Teaching and Education, Computer Programmer, Games Developer, Games Designer, Web Designer, Graphic Designer https://nationalcareers.service.gov.uk/explore-careers					
Year 9						
The Rationale						
	Autumn Term 1	Autumn Term 2	Spring Half Term 3	Spring Half Term 4	Summer Term 5	Summer Term 6

Curriculum content	Computer Science: Data representation	I-Media: Wind and waves multimedia	Computer Science: Cyber crime	I-Media: Animations	Computer Science: Python	I-media: Creating a visual identity and project
Key Skills	<p>In this unit, learners will focus on digital media such as images and sounds, and discover the binary digits that lie beneath these types of media.</p> <p>Just like in the previous unit, where learners examined characters and numbers, the ideas that learners need to understand are not really new to them. They will draw on familiar examples of composing images out of individual elements, mixing elementary colours to produce new ones, and taking samples of analogue signals, to illustrate these ideas and bring them together in a coherent narrative.</p> <p>This unit also has a significant practical</p>	<ul style="list-style-type: none"> - Navigation - Internal Hyperlinks - External Hyperlinks - Embedding images - Embedding videos - Embedding Sounds - Transitions - Animations 	<p>This unit covers some of the legal safeguards regarding computer use, including overviews of the Computer Misuse Act, Data Protection Act and GDPR and Copyright Law and their implications for computer use. Phishing scams and other email frauds, hacking, “data harvesting” identity theft and safe use of social media are discussed together with ways of protecting online identity and privacy. Health and Safety Law and environmental issues such as the safe disposal of old computers are also discussed.</p>	<p>Films, television, computer games, advertising, and architecture have been revolutionised by computer-based 3D modelling and animation. In this unit learners will discover how professionals create 3D animations using the industry-standard software package, Blender. By completing this unit learners will gain a greater understanding of how this important creative field is used to make the media products that we consume. Sessions will take learners through the basics of</p>	<p>This unit introduces learners to how data can be represented and processed in sequences, such as lists and strings. The lessons cover a spectrum of operations on sequences of data, that range from accessing an individual element to manipulating the entire sequence. Great care has been taken so that the selection of problems used in the programming tasks are realistic and engaging: learners will process solar</p>	<p>Students in this unit will develop a visual identity, planning a digital graphic that fits with this identity and then creating the visual identity and digital graphic.</p>

	<p>aspect. Learners will use relevant software (Photoshop and Audacity, in this case) to manipulate images and sounds and get an idea of how the underlying principles of digital representations are applied in real settings.</p> <p>This unit builds on the material from the Year 8 unit, 'Representations: from clay to silicon'.</p>			<p>modelling, texturing, and animating; outputs will include 3D models and short videos.</p>	<p>system planets, book texts, capital cities, leaked passwords, word dictionaries, ECG data, and more.</p> <p>A range of pedagogical tools are employed throughout the unit, with the most prominent being pair programming, live coding, and worked examples.</p> <p>The Year 7 and 8 Programming units are prerequisites for this unit. It is assumed that learners are already able to write Python programs that display messages, receive</p>	
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					keyboard input, use simple arithmetic expressions, and control the flow of program execution through selection and iteration structures.	
Tier 3 Vocabulary	Binary Conversion Pixels Pixilated Sound wave Binary sample	Navigation Hyperlinks Embedded Images Graphic Multimedia Transitions Animations Layout Design Master slide	Phishing, hacking, malware, virus, Trojan, logic bomb, geo-tagging, data harvesting, cybercrime, RSI, copyright, e-waste	Scale Keyframe Parenting Loop cut render	<ul style="list-style-type: none"> - Digital Circuits (Logic) - Develop Code - Constructs - Inputs /Outputs - Operators 	Visual identity Bitmap, vector, pixel, resolution, layers, hue, saturation, animation, DPI, PPI, Photoshop Enhancement image editing web use print use PNG JPG TIFF
How can you engage with your child?	look at bbc bitesize and review knowledge https://www.bbc.co.uk/bitesize/topics/zxnfr82	Talk to your child about the navigation of web pages and how hyperlinks are used	Stay informed about advancements and trends in cyber security to support your child's learning		Encourage your child to practise coding regularly. Use online sites such	Encourage them to consider the needs and preferences

			and discussions about the topic		as https://www.learnpython.org/	of their audience when creating visual designs
Curriculum Opportunities						
Career Links	Administration, Teaching and Education, Mentor, Computer Programmer, Games Developer, Games Designer, Web Designer, Graphic Designer https://nationalcareers.service.gov.uk/explore-careers					