

Curriculum Map: Computing, Year 7

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Content Declarative knowledge 'I Know'	<p>1. Unit 1 Dig Literacy ...what 'digital competence' is ...what online safety is</p> <p>2. Unit 2 Programming Styles ...the basic concepts of programming like sequencing, variables and expressions, parameters, and differences between programming styles and environments e.g. visual, drag and drop and text-based programming</p>	<p>1. Unit 3 Flowcharts .- about algorithms using flowcharts as the medium</p> <p>2. Unit 4 Python ... about text-based programming, and about using simple code for input/output/variables and decisions in Python.</p>	<p>1. Unit 5: Independent learning unit: Construct game making ...create exciting game by learning a new software independently by using tutorials and peer-mentoring.</p> <p>2. Unit 6 Data Representation ...about data storage in Binary, and common classification of data like integers, strings etc.</p>	<p>1. Unit 7 Computational Thinking ...how algorithms are useful to solve real world problems and how they find a use even in nature ... use logical reasoning to compare the utility of alternative algorithms for the same problem</p> <p>2. Unit 8 Hardware and Communication ... how hardware components function together to make a 'computer system'. ... about different modes of connectivity.</p>	<p>1. Unit 9 Audience & Purpose: Exploring Careers in Computing/IT ... produce digital artefacts e.g. a slideshow on exciting trends or careers in Computing/IT, that meet the requirements of a specific Audience and Purpose.</p> <p>2. Unit 10 Cyber Security ... about various threats to the PC and how to keep the PC safe. ...about problems related to from cybersecurity, various cybercrimes, and prevention measures.</p>	Unit 11 Programming: Small Basic ...text-based programming with the flavour of a different language to produce exciting graphics
Skills Procedural Knowledge 'I know how to'	<p>Unit 1 ...be safe on the internet, use emails with attachments and what is netiquette, ...organise my files and folders. ...use different software to produce different digital artefacts ...use software and hardware to create full solutions</p> <p>Unit 2</p>	<p>Unit 3 ...use all the shapes of a flowchart correctly, to create an algorithm to represent a real-world problem</p> <p>Unit 4 ...use simple programming tools to piece together coding solutions for simple problems that can include multiple conditions</p>	<p>Unit 5 ...independently learn to use new software to produce digital artefacts ...pro-actively ask for help if required ...help my peers by finding out their errors and helping them debug those</p> <p>Unit 6 ... why and how computers use Binary to represent and store all types of data</p>	<p>Unit 7 ...how classical Computer Science algorithms are used to efficiently solve real world problems like finding the shortest path, or doing a binary search ...how even nature uses the concept of algorithms in the form of fractals</p>	<p>Unit 9 ...what types of images and colours are suitable for different age groups ...what should be the complexity of the language, the font style, the number of words used for different age groups ...how to produce the artefact so it matches its purpose ...the different exciting career options in the world of Computing/ IT</p>	Unit 11 ...recap the fact that correct sequence of instructions are needed for a program to work as expected ...learn a different set of 'grammar'

	<p>...identify different styles of programming</p> <p>...what variables are and how they are used in expressions</p>		<p>...the concept of encoding of characters using ASCII</p> <p>...different types of data are stored in differently in a computer</p>	<p>...to use pattern matching to identify common rules / patterns to solve similar problems more efficiently</p> <p>Unit 8</p> <p>...about the different parts that make up a PC and other electronic devices</p> <p>...compare differences between wired, wireless and Bluetooth, and how they are used by devices to connect to each other.</p>	<p>Unit 10:</p> <p>...that there are several threats to the security of the data on my PC</p> <p>...understand the difference between different malware like virus, trojan, etc.</p> <p>...protect my PC by using protection measures like anti-virus, firewall</p> <p>...aware of different types of cybercrimes like phishing, ransomware, DDoS</p> <p>...understand that encryption is essential to protect against cybercrimes</p>	<p>(syntax) to produce code</p> <p>...the importance of testing and debugging my code in short iterations</p>
Strategies Conditional Knowledge 'I know when to'	<p>... when not to respond to spam emails</p> <p>...when to adapt my knowledge of file organisation to suit emerging situations</p>	<p>...when to use my knowledge of If/Elif/Else statements and adapt it based on the problem I have to solve, e.g., one that has more than 2 condition.</p>	<p>...when to ask for help from peers or my teacher</p> <p>...when to use different datatypes (which one) based on the nature of data that is being processed</p>	<p>... whether and when to choose Binary Search over Linear Search in a problem that requires searching.</p> <p>...that there can be several different algorithms for solving the same problem, but that each algorithm will have different levels of efficiency, so I need to choose algorithms that suit different situations carefully.</p>	<p>...that a lot of cybercrimes like ransomware, DDOS are targeted towards big organisations. But individuals are also easy victims to cyber crimes like phishing. So, I need to protect myself from these.</p>	<p>...when it is important to test my code</p> <p>...when to use the appropriate parameters for respective functions</p>
Key Questions	<p>How can I be safe on the internet?</p> <p>What are some of the basic elements that are used to build a program?</p> <p>Do we use sequencing in our everyday lives?</p>	<p>Why do we need to design an algorithm before we produce code?</p> <p>How to use sequencing in a program?</p> <p>When to use selection in a program?</p>	<p>How is binary used to store various data types?</p> <p>Why do we need encoding schemes?</p> <p>Why are different datatypes needed?</p>	<p>How do algorithms find a use in our daily lives?</p> <p>How do all the parts of a PC work together?</p> <p>Is it safe to use WiFi?</p> <p>Is it safe to use public hotspots?</p>	<p>Why is it important to protect our computers?</p> <p>Why is cybersecurity so important in society today?</p> <p>How can I protect myself and my family from common cybercrimes?</p>	<p>Why is it important to give precise instructions to a computer?</p> <p>Why is the order of</p>

						instructions so important?
Assessment topics	Digital literacy assessment Assessment on basic programming concepts	Flowchart assessment Python assessment	Data Representation assessment	Hardware and Communications assessment	Cybersecurity unit assessment	
Cross curricular links/Character Education	Character / Confidence building. Reference to Mathematical concepts of expressions, variables.	Problem solving, Algorithmic Thinking. Resilience.	Learn to 'learn on the job' - a key skill required in all careers. Graphics editing. Problem solving, Logical Thinking. Independent learning. Peer support. Resilience.	Pattern matching. Maths like sequences. Problem solving. Building Excel skills. Budgeting / Price comparison. Hyperlinks.	Catering to demographics. Accessibility. PowerPoint skills. Peer-assessment. Trends or careers in Computing/IT. Experience real-life problems. Safety/protecting personal information.	Problem solving, Algorithmic Art. Resilience.