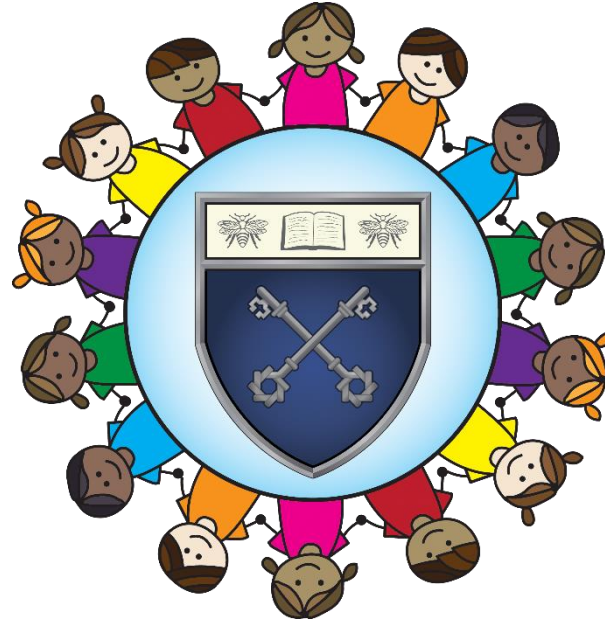


Computing Curriculum



Substantive and Disciplinary
Knowledge Progression Map



Substantive Knowledge

Substantive Concepts To know that...	Year 3	Year 4	Year 5	Year 6
Information Technology	<p><u>Stop Frame Animation</u> -Animation is a technique used to make objects and drawings appear as if they are moving. -Stop-frame animation is a technique in which many photographs are taken of objects, with small movements in between. -When the images are quickly shown together, the objects appear to move. -There are many stop-frame animation apps and programs, for example.</p> <p><u>Desktop Publishing</u> -Desktop publishing is when we create documents using page layout software (Microsoft Publisher/Canva). -When using desktop publishers, we consider how images and text are laid out the page in an eye-catching and appropriate format.</p>	<p><u>Photo Editing</u> -There are lots of different ways that we can edit photographs, for example cropping, rotating, flipping, and changing colours and styles.</p>	<p><u>Video Editing</u> -Video is made up of a sequence of images shown in quick succession, giving the impression of movement. -The trim tool allows you to remove excess video -A number of special effects are available, including using animations and transitions between shots.</p> <p><u>Databases</u> -Data is raw numbers and figures. Information is what we can understand from analysing data. -Databases organise data so that it can be easily added to, amended, stored and accessed (these can be paper or computer). -There are lots of different ways that we can collect, log and interpret data, including by using databases.</p>	<p><u>Webpage Creation</u> -A webpage is a hypertext document that is a part of the World Wide Web. -Websites are a collection of webpages about the same topic. -Websites are created for a chosen purpose, and with a particular audience in mind.</p> <p><u>3D Modelling</u> -3D modelling involves using computer software to create 3D shapes, in order to produce models of real-world objects. -3D modelling allows us to view designs from different angles and experiment with various designs.</p> <p><u>Spreadsheets</u> -Data is raw numbers and figures. Information is what we can understand from analysing data. -Spreadsheets organise and store data in meaningful ways</p>

				so that it can be easily accessed and analysed. -A formula can tell a computer which mathematical operation to use for a calculation: add, multiply, divide, or subtract.
Computer Science	<p><u>Sequence in Music</u> - Programming is when we make a set of instructions for computers to follow. -A sequence is a pattern or process in which one thing follows another -We use algorithms (a set of instructions to perform a task) to sequence movements, actions and sounds in order to program effective animations.</p> <p><u>Events and Actions</u> - Programming is when we make a set of instructions for computers to follow. -We use algorithms (a set of instructions to perform a task) to sequence movements, actions and sounds in order to program effective animations. -We can use event and action command blocks in order to make sprites carry out acts when certain prompts take place.</p>	<p><u>The Internet</u> Information technology (I.T.) includes computers and things that work with computers. -Information and data can be shared by devices across networks. -The internet is a network of networks that is used around the world. -The World Wide Web is a system on the internet that has websites and webpages.</p> <p><u>Repetition in Shapes</u> -Programming is when we make a set of instructions for computers to follow. -Logo is a text-based program that we can use in order to create shapes and patterns. -We can type commands which are then drawn on the screen.</p> <p><u>Repetition in Games</u> - Programming is when we make a set of instructions for computers to follow. - We can use repeat and loop operator blocks in order to make our programs more</p>	<p><u>Sharing Information</u> -Computers have Input, Process and Output (IPO) components. -Computer systems are built using a number of parts (inputs, processes and outputs). -Computer systems can communicate with other devices.</p> <p><u>Selection in Physical Computing</u> - Programming is when we make and input a set of instructions for computers to follow. -Microcontrollers are devices that can be programmed to control output devices that are connected to them. -We use algorithms which we can plan, model, trial and debug, in order to create accurate command sequences, involving multiple output devices (e.g. LEDs and motors).</p>	<p><u>Variables in Games</u> - Programming is when we make and input a set of instructions for computers to follow. -Variables are changeable elements of a program. -We use algorithms which we can plan, model, trial and debug, in order to create accurate command sequences, that enable variables to be enacted in games.</p> <p><u>Sensing</u> - Programming is when we make a set of instructions for computers to follow. -Micro:bits are small computers that perform different actions based on programs written on computer software. -Micro:bits have a range of input sensors that can be used as input triggers for different codes to run. -Output devices on Micro:bits (e.g. LED displays) can be programmed to display words, pictures and numbers.</p>

		logical and efficient. These help to run code continuously or for a set number of times.		
Digital Literacy		<p><u>The Internet</u> -Some content is protected on the internet. It is important to know that not all information on the internet is accurate.</p> <p><u>Photo Editing</u> -We should understand the not all photographs that we see are real: they may have been edited. -We should also edit photos for positive, and not negative reasons</p>	<p><u>Sharing Information</u> -Computers use special addresses called IP addresses. -When building upon someone else's work, you need to be aware of copyright and intellectual property rules.</p> <p><u>Video Editing</u> -We should understand the not all videos that we see are real: they may have been edited. -We should also edit videos for positive, and not negative reasons</p>	<p><u>Webpage Creation</u> -You should only use images that are copyright-free. Many images are owned by people/ companies and cannot just be reused.</p> <p><u>3D Modelling</u> -3D modelling is used in many industries, e.g. in interior design, architecture and making video games.</p>



Disciplinary Knowledge

Disciplinary Knowledge Know how to...	Year 3	Year 4	Year 5	Year 6
Information Technology	<ul style="list-style-type: none"> -Use some search technologies effectively and appreciate how results are selected -Decide which questions to ask when using search engines 	<ul style="list-style-type: none"> -Understand computer networks, including the internet, and how they provide multiple services such as the World Wide Web -Use search technologies effectively and appreciate how results are selected and ranked 	<ul style="list-style-type: none"> -Use a wide range of search technologies effectively and appreciate how results are selected and ranked -Recognise the opportunities computer networks offer for communication and collaboration 	<ul style="list-style-type: none"> -Appreciate how results are selected and ranked and use this to retrieve accurate content -Be discerning in evaluating the reliability of digital content
Computer Science	<ul style="list-style-type: none"> -Start to use reasoning to understand how algorithms work -Start to solve problems by decomposing them into smaller parts -Start to use sequence and selection in programs 	<ul style="list-style-type: none"> -Detect and correct errors in algorithms and programs -Start to use sequence, selection and repetition in programs -Begin to solve problems by decomposing them into smaller -Work with variables and various forms of input/output 	<ul style="list-style-type: none"> -Use logical reasoning to understand how algorithms work and detect and correct errors in algorithms and programs -Accurately manipulate variables and various forms of input/output -Use sequence, selection and repetition in programs -Write and debug programs that accomplish specific goals, including controlling or simulating physical systems 	<ul style="list-style-type: none"> -Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems -Use sequence, selection and repetition accurately in programs -Accurately manipulate a wide range of variables and various forms of input/output -Securely use logical reasoning to understand how algorithms work and detect and correct errors in algorithms and programs

Digital Literacy	<ul style="list-style-type: none"> -Use technology safely, respectfully and responsibly -Use a variety of software on digital devices -Recognise acceptable/unacceptable behaviour and identify ways to report concerns about content and contact 	<ul style="list-style-type: none"> -Select and use a variety of software on digital devices -Recognise acceptable/unacceptable behaviour and identify ways to report concerns about content and contact 	<ul style="list-style-type: none"> -Confidently, competently and responsibly use information and communication technology -Express own ideas by selecting, using and combining a variety of software on digital devices to design and create programs 	<ul style="list-style-type: none"> -Express own ideas by selecting, using and combining a variety of software on a range of digital devices to create programs -Confidently, competently and responsibly use information and communication technology
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