

Computing - What Pupils need to know

While some elements will be taught discretely most will be taught through topics or themes linked to high quality texts				
	Nursery	Reception	Year 1	Year 2
Computing Content	Knowledge and Know Hows			
	<p style="text-align: center;"><i>Development Matters Links</i></p> <p>Remember rules without needing an adult to remind them.</p> <p>Match their developing physical skills to task and activities in the setting.</p> <p style="text-align: center;">Explore how things work.</p>	<p style="text-align: center;"><i>Development Matters Links</i></p> <p>Show resilience and perseverance in the face of a challenge.</p> <p>Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'.</p> <p>Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</p> <p>Explore, use and refine a variety of artistic effects to express their ideas and feelings.</p>	<p>Children will recognise technology around school and use it responsibly.</p> <p>Children will create their own digital paintings.</p> <p>Children will write short algorithms to program a Bee-Bot.</p> <p>Children will group data (images) to demonstrate how computers are able to group and present information.</p> <p>Children will publish writing using a computer.</p> <p>Children will use programming blocks to use, modify, and create programs.</p>	<p>Children will recognise information technology and understand the importance of rules when using IT to keep safe.</p> <p>Capture, edit and improve photographs.</p> <p>Design, test and debug programs using algorithms.</p> <p>Collect and present data in different ways.</p> <p>Create and compare digital and non-digital music.</p> <p>Use sequences of commands to create a program.</p>
	<p style="text-align: center;">Match their developing physical skills to tasks and activities in the setting.</p>	<p style="text-align: center;">Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</p>	<ul style="list-style-type: none"> • Identify examples of technology in the classroom for example laptops, iPads. • Use technology responsibly for example use a mouse and keyboard accurately, switch on log into computer and save a file. • Know rules to keep us safe when using technology for example keeping your password safe. • Use freehand, shape and line tools and colour to create a digital picture. • To write a combination of commands to create a programmable sequence for a bee-bot. • Debug their program and find multiple solutions to a problem. 	<ul style="list-style-type: none"> • Understands information technology (IT) is a computer or something that works with a computer for example, laptop, printers, smartboards. • Identify IT in the world around them e.g. scanners, CCTV, card machines • To use technology safely and responsibly for example keeping personal information private, photo consent, commenting, open with trusted adults. • Understand what makes a good photograph for example format (both landscape and portrait), lighting, focus • Understand images they seem may not be real (editing)

			<ul style="list-style-type: none"> • Label and group objects using drag and drop features. • Use Microsoft Word to type and format text including; font changes, undo, highlight • Use ScratchJr to design, create and evaluate a race game using block programming to write algorithms. • Create a piece of digital music using animals as inspiration. 	<ul style="list-style-type: none"> • Use Pixlr image editing to format and add effects to an image e.g. colour effects • Understand algorithms are a set of instructions. • Use algorithms to predict, design and program bee-bots and blue-bots. • Use j2e to present data in tally charts, pictograms and block diagrams. • Use block coding to design, create and debug their own quiz.
	Explore how things work.	Explore, use and refine a variety of artistic effects to express their ideas and feelings.	•	•

In acquiring the above knowledge, learners would be expected to use and understand the following vocabulary in a range of contexts:

Computing Vocabulary			Year 1 Computer, keyboard, mouse, paint, fill, undo, format, backspace, type, search, command, programming, algorithm	Year 2 information technology (IT), barcode, device, filter, attribute, sequence, debug, algorithm, sprite
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Notes

While some elements will be taught discretely most will be taught through topics or themes linked to high quality texts

	Year 3	Year 4	Year 5	Year 6
Computing Content	Knowledge and Know Hows			
	Understand digital devices need inputs, processes and outputs. Understand a sequence of pictures played closely together can create movement (stop-motion animation)	Understand the internet is a network and needs to be kept secure. Evaluate online content to decide how honest, accurate, or reliable it is.	Understand how information is found on the World Wide Web, through search engines and what influences searching. (Comparison of search engines),	Understand all data transferred over the internet is in packets. Exploring how the internet facilitates online communication and collaboration.

	<p>Understand things can be grouped using their attributes (branching data bases).</p> <p>Understand software can be used for effective publication.</p> <p>Understand the link between events and actions when programming. (Scratch)</p> <p>Explore the concept of sequencing through programming in Scratch.</p>	<p>Explore devices needed to record and publish sounds digitally. Understanding the ownership and copyright implications of this.</p> <p>Create programs by planning, modifying, and testing commands to create shapes and patterns.</p> <p>Understand how and why data is collected over time.</p> <p>Understand how digital images can be changed and edited, and how they can then be resaved and reused. Including the implications of this.</p> <p>Understand the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition.</p>	<p>Develop the knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video.</p> <p>Understand the concept of selection in programming through the use of the Micro:bit programming environment.</p> <p>Understand how a flat-file database can be used to organise data in records.</p> <p>Understand that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object.</p> <p>Know how the If... Then... Else structure can be used to select different outcomes depending on whether a condition is true or false.</p>	<p>Understand what makes a good web page including copyright and fair use of media, the aesthetics of the site, and navigation paths.</p> <p>Understand the concept of variables in programming through games in Scratch.</p> <p>Understand how to use spreadsheets to organise data into columns and rows to create their own data set. Understand how to use a computer to produce 3D models.</p> <p>Understand the elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6).</p>
	<p>Use examples of digital devices (laptop, tablet, digital camera) to identify the input, process and output.</p> <p>Children will use iPads to create and edit a stop-motion animation with the use of onion skinning and microphones to add audio.</p> <p>Use a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. (Create a digital piano – Scratch)</p> <p>Design, use and test a branch database (j2data) to create an identification tool. E.g. dinosaurs</p> <p>Use desktop publishing software and consider careful choices of font size, colour, orientation and type to edit and improve premade documents. (Canva)</p>	<p>Describe how networks physically connect to other networks. Explore how things are shared and stored via the internet evaluating its reliability.</p> <p>Identify and use input and outputs devices required to work with sound digitally. Identify the ownership of digital audio and the copyright implications of duplicating the work of others to produce their own podcast.</p> <p>Plan, modify, and test commands to create shapes, patterns and repetitions to produce digital wrapping paper. (turtle academy)</p> <p>Use input devices to monitor the environment; collecting, accessing and analysing data. E.g. five-hour log of hot water cooling to room temperature.</p>	<p>Describe how information is transferred between systems and devices.</p> <p>Storyboard, capture, edit, and manipulate a video.</p> <p>Explore a range of filming techniques (e.g. close up, mid-range, long shot, moving subject, side by side and high, low or normal).</p> <p>Learn how to connect and program components (e.g. LED, motors) using the micro:bits to design, create and evaluate a moving fairground ride.</p> <p>Use tools within a database to order and answer questions about data.</p> <p>Group and duplicate using shapes and lines to create vector drawings.</p>	<p>Explain how the structure of data packets allows data to be transferred across the internet.</p> <p>Identify what makes a good web page and use this information to design and evaluate their own website using Google Sites.</p> <p>Use Scratch to use, modify and create their own variable game including a scoreboard.</p> <p>Use spread sheets to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them.</p> <p>Plan, develop, and evaluate their own 3D model of a building including moving, resizing, and duplicating objects.</p>

	Use actions and events to move a sprite in four directions (up, down, left, and right). Then use this in the context of a maze to produce their own functional game. (Scratch)	Use editing software to retouch, crop, rotate and add effects to a photograph. Discuss the implications of editing photographs. (Getpaint) Design and create a game which uses repetition, applying stages of programming design throughout. E.g. bat catching game	Use Scratch to create quiz using an If... Then... Else structure.	Design and make a step counter using the micro:bits.
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In acquiring the above knowledge, learners would be expected to use and understand the following vocabulary in a range of contexts:

Computing Vocabulary				
	Year 3 network switch server animation algorithm programming commands code sequence bug debug motion orientation	Year 4 internet router selection crop rotate sensor logger code blocks infinite loop	Year 5 connection search engine ranking vector panning audio database microcontroller conditional implement operator	Year 6 protocol domain name data packet Hypertext Markup Language (HTML) copyright breadcrumb variable sensing formula software

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