Eastbrook Primary Academy Computing

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	Digital literacy skills (mouse and keyboard skills, logging on, iPad safe usage)		Staying Safe Online – Buddy the Dog (Social situations & Online sharing)	We are coders (*Kodable/LightBot*)	We are directors (*BeeBot* app directional coding)	
Year 2	We are file finders (creating and saving files)	Digital literacy skills (logging on, typing accuracy)	Staying Safe Online – *Digiduck's Big Decision* (Online appropriate behaviour)	We are code debuggers (*Scratch Jr., Code.org*)	We are researchers (*Publisher*)	We are games testers
Year 3	Digital literacy skills (saving, typing) We are opinion pollsters (*Microsoft Office*)	We are programmers (*Scratch*)	Staying Safe Online - *#goldilocks* (Online sharing and appropriate behaviour) We are book creators (eBooks – *Book Creator*)	We are presenters (Scratch)	We are communicators (*2e-mail*) E-Safety	We are bug fixers (*Scratch*)
Year 4	We are software developers (*Scratch*)	We are musicians (*Audacity*)	Staying Safe Online - *Google Interland* (games and discussions covering kindness, privacy, phishing messages and sharing)	We are toy designers (*Scratch*)	We are meteorologists (*Excel*, green screen)	We are html editors (*Scratch*)
Year 5	We are game developers (*Scratch*)	We are cryptographers	Staying Safe Online – Weekly discussions on various aspects of *What is Internet Safety?*	We are architects (*SketchUp, Minecraft, Maze Creator*)	We are web developers	We are artists
Year 6	Desktop Publishing (Literacy link)		Staying Safe Online – Project around promoting positive online technology use		We are advanced coders (*Scratch & Python)* Consolidation of 'missed' learning/secondary ready	

Blue – Computing Green - Digital Literacy and Information Technology

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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum Pupils should be taught to:	• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions • create and debug simple programs • use logical reasoning to predict the behaviour of simple programs • use technology purposefully to create, organise, store, manipulate and retrieve digital content • recognise common uses of information technology beyond school • use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies		• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts • use sequence, selection, and repetition in programs; work with variables and various forms of input and output • use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs • understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration • use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content • select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information • use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		
By the end of the year, children should be able to:						
Computer Science Knowledge	Use a **programmable** toy e.g. Beebot Understand you can **program technology** to follow **instructions** Know that many everyday devices follow **commands**	Understand a set of instructions can be called an **algorithm** Understand how algorithms must be **precise** and **sequential** for a program to achieve a goal	Understand that a real-world problem can be turned into an algorithm and **computational thinking** can help find errors and **expected outcomes** Understand that a programmable device can **repeat** commands	Identify where computer science can be found in the real world Create programs in **block language** to **simulate** real world computer science (interactive toys) Use **block language** to program different **sensor** points to create different **outcomes** Understand **sequences** and **repetition** of commands to write more efficient **code**	Identify where computer science is used in the real world and identify how the algorithms might be composed (e.g. traffic lights, washing machine, theme park ride) Program **hardware** to perform in a certain way or produce a specific **outcome** Understand **selection** in programming from different **variables** and **prioritising** instructions	**Create, test** and **debug** a program with real-world applications using a second programming language – *create a smartphone app* Develop, create and **debug** computer control applications Understand that outputs can be programmed or be a **response** to the environment

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Computer Science Skills	Give simple **commands** in a set of instructions to move and change direction of a **sprite** or object – *Kodable/Light Bot* Follow a set of instructions in **sequence** Begin to predict the outcome of a simple set of instructions **Fix** a problem in a simple sequence of instructions (real world application)	Give simple **commands** in an **algorithm** to move and change direction of a **sprite** or object, adding timings (wait) – *Scratch Jr./code.org* Use **logic** to identify intended **objective** of a set of commands **Detect** and **debug errors** in given algorithms	Use simple **block language** in *Scratch* to create a dialogue between sprites Use sequences of commands in **block language** to create an outcome where a sprite might change position, perform actions or change 'costume' Use the if block to begin to understand **variables** and the impact on an algorithm Use logical reasoning to identify **errors** and **debug** their own and others' programs and give reasons Use **computational thinking** to explain choices they've made in their algorithms and their **expected outcomes**	Create a program using **block language** with user interaction with use of if/when blocks and simple sensing Explain an **algorithm** that uses sequences, repetition and some variables in their own words Test and evaluate the effectiveness of others' programs	**Decompose** a game model written in block language into component parts Adapt a game model written in block language to add independently created **variables** and **conditional** statements Use logical reasoning to detect and fix errors in a variety of algorithms and comment on the **efficiency** of the code	Use logical reasoning to detect and fix errors in a variety of algorithms fully justifying **effectiveness** and efficiency of choices Give clear and precise logical explanations of algorithms and their component parts
Information Technology Knowledge	Recognise that a range of technology is used in school and at home, selecting technology for particular purposes	Understand that there are a variety of different programs on computers used to create original content (e.g. word processing, drawing, calculating etc) Understand that data can be stored on computers and retrieved, as well as deleted	Understand what a search engine is and what it is used for Understand what digital networks are, of which the internet is one Understand that the world wide web is a one of multiple services provided by the internet Understand that search engines are used to	Understand that searches are selected and ranked when using search engines Understand the different types of computer network Identify the variety of services offered by the internet in terms of communication and collaboration Understand the history of animation and learn how	Identify the reasons for using different digital networks Design and create programs on a computer in response to a given goal	Identify the different protocols that are needed within digital networks Critically evaluate the ways in which search results are ranked and selected and factors that contribute to this

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			navigate websites within the world wide web Understand logic to refine a search resulting in a more focused and productive result Know what makes a presentation effective	to create an animation in its simplest form Understand the concept of desktop publishing and be able to identify the differences between Microsoft PowerPoint and Publisher Understand what a spreadsheet is		
Information Technology Skills	Use school laptops already logged on Use the **keyboard** and **mouse** to navigate a **laptop** Follow simple instructions to access online resources Adjust the colour and thickness of a pen or brush tool Create shapes with different colours Add **text** to artwork and alter font, colour, size and effect Apply knowledge of Paint tools to plan an artwork design Use a selected range of Paint tools to create a digital piece of artwork Open a **word processing** document and enter text	With support, log on to the school network with a shared **username** and **password** Use a range of simple tools to edit a word processing document Sort, collate, edit and store simple original **digital content** (e.g. they can name, save and recover their work) Explore the features and tools of **presentation** software (*PowerPoint*) Open, edit and save a *PowerPoint* presentation Search the internet	Create **animations** using software technology Understand how to use and apply knowledge of filming techniques, **audio downloads** and software editing to assemble a video montage. Design and create **content** on a computer or tablet – *Story Creator* Collect and present information from multiple **sources** Use different ways of manipulating text and images in a **multimedia presentation** Insert sound recordings and short video into a presentation Use a monitored personal e-mail address to **communicate** with others in a closed network	Identify which software is most appropriate for a given task Design and create content on a computer using a variety of software Collect, organise and present data for a specific purpose (e.g. transport data and creating simple graphs or charts) Use and apply learned desktop publishing skills to create a printed product	Use **software** to design a real-world model for a purpose – *SketchUp, Minecraft* Analyse the quality of information gathered using a **search engine** (accuracy and reliability) Investigate personal blogs and look at how content is evolving to cater for audience Deconstruct a web page into component parts Build a website with **hyperlinks** on a given template Use knowledge and understanding of software capabilities to create effective pieces of artwork	Design and create systems in response to a given goal, with multiple, interrelated components Collect, organise, present, analyse and evaluate data for a specific purpose (e.g. transport data and creating graphs or charts) Analyse the quality of information gathered using a search engine (evidence of bias and assumptions) Use the SUM function in Excel to solve problems Use *Excel* formula to carry out different methods of multiplying Use *Excel* formula to calculate averages and highlighting different cell values Understand how QR codes work and be able to generate QR codes using software

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Digital Literacy Knowledge	Understand what is meant by **digital technology** and can give examples both inside and out of school Understand that some **information** used with digital technology (e.g. **passwords**) should be kept **private** Understand what **personal information** is and how to **protect** it online Understand that there is **content** on the **internet** that may upset them and what they should do if this happens	Understand how to **report** their **concerns** about something online Understand how to protect **personal information** online and how you could accidentally give it away (e.g. images **shared**) Identify ways in which people can **communicate** with others online Understand what constitutes **acceptable and unacceptable behaviour** when communicating online	Understand the importance of their conduct when using communication tools Understand the variety of online 'identities' someone may have (gaming, avatar, social media) Be aware of what **information** should be shared online and <u>who they should share it with</u> Understand that any form of **online content** can remain for a very long time Know more than one way to **report concerns** about **inappropriate content and communication**	Understand the potential ramifications of unacceptable behaviour online Understand that online identities are not always a reflection of the person who created them Understand that everyone that does anything online has a digital footprint Identify a variety of ways to report concerns about inappropriate content and communication	Understand the impact of the services offered by the internet on people's lives Understand what is meant by intellectual property, copyright, piracy, and fair use and distribution Understand that there may be people online that wish to hurt you or your friends Understand that your digital footprint can be used to target you with online content Are aware of the variety of support networks in place to assist in the event of reporting a concern	Understand how online content can be misleading and designed with a particular viewpoint in mind Understand how to legally, safely and fairly use others' online content in your own work Understand how your online behaviour can negatively impact on your future Are aware of terms and conditions for web servers/apps (e.g. age restrictions on social media use or ownership of content shared by individuals shared online) and the reasons behind them
Digital Literacy Skills	Explain why it is important to be **considerate** and **kind** to people	Explain, giving examples, of why it is important to be **considerate** to people **<u>online</u>**	Demonstrate the importance of having a **secure** password Explain the **negative** implications of failure to keep personal information like passwords secret	Identify unsafe online behaviour and ways in which they may be encouraged to share personal information Help others to keep safe online and give age-appropriate advice	Explain how identity and information online can be copied, modified or altered	Create a robust, safe and secure online identity and explain how it can impact on the way people perceive you Understand and explain the potential consequences of sharing reportable online content

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
COMPUTER SCIENCE	computer control electronic game home instruction keyboard mouse cursor school screen smartphone tablet technology touch use	aim app command device digital instruction problem program programmable programming remote sequence solve step symbol task test	algorithm animation code debug detect error fix function logical precise reason repeat rules software solution specific sprite	block language computational thinking controlled expected impact input interaction objective outcome output pattern pixel random reasoning repeating result unexpected user variable	condition conditional conditions decibel light motion prioritise priority repetition sensor sequential simulate	decomposition dependent independent proximity server selection	generalisation GPS - global positioning system response
INFORMATION TECHNOLOGY	click enter internet link offline online password search select view web page website	access content copy data delete download edit file folder hyperlink information paste permission recover resources sort store world wide web	browser hardware media publishing retrieve save slideshow software username video conference window wired wireless word processor	autocomplete chart collate data email html - hypertext Internet service provider (ISP) IP address medium network plan presentation relevance search engine shoot tools	collaboration collect communication filters global index hub local area network (LAN) organise spreadsheet uniform resource locator (URL) rank wide area network (WAN)	accuracy accurate analyse assumption blog cascading style sheets field file transfer markup language http - hypertext transfer protocol numerical packet protocol reliability reliable rights strings web server	Bias components evaluate interrelated optimise protocol system usage