

Baydon St Nicholas Computing Knowledge Progression (Kapow Scheme)

SKILLS	Computing Systems and Networks	Programming	Creating Media	Data Handling	Online Safety	Looking Ahead
EYFS RECEPTION	Hardware - Learning how to operate a camera to take photographs of meaningful creations or moments. - Learning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabulary. - Recognising and identifying familiar letters and numbers on a keyboard. - Developing basic mouse skills such as moving and clicking. Digital literacy - Recognising that a range of technology is used for different purposes. - Learning to log in and log out.	Computational thinking - Using logical reasoning to understand simple instructions and predict the outcome. Programming - Following instructions as part of practical activities and games. - Learning to give simple instructions. - Experimenting with programming a Bee-bot/Blue-bot and learning how to give simple commands. - Learning to debug instructions, with the help of an adult, when things go wrong.	Using software Using a simple online paint tool to create digital art	- Representing data through sorting and categorising objects in unplugged scenarios. - Representing data through physical pictograms. - Exploring branch databases through physical games.	KS1 OBJECTIVES Being online Recognising when they are online. Identifying programs (e.g. apps and websites) they use online. Recognising indicators of being logged into an account (e.g. avatar, username, initials). Online relationships Recognising that being kind, polite and safe is just as important online as in-person. Risks and harms Describing how someone might change their account if they have their password. Responsible and safe use Checking with an adult before they use new apps or websites. Beginning to remember their username and password for an online account. Treating devices carefully. Reporting online Recognising when something online scares or worries them. Describing how to respond safely to an online message.	END of Key Stage 1 (Year 2) Computing systems and networks Recognise common uses of information technology beyond school. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Programming: 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. Creating media: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Data handling: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Online safety: 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.

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KS1 Year 1 & Year 2	Identifying and operating hardware - Using a mouse, trackpad and/or touchscreen to interact with digital devices. - Using a keyboard to interact with a device. - Describe where technology is used at home (e.g., playing games, watching videos). - Using a mouse, trackpad and/or touchscreen for a specific purpose. - Using a keyboard for a specific purpose. - Using inputs to create outputs. - Recognising that different devices have different parts. - Identifying common uses of IT in the wider world (e.g., shops, self-service screens, traffic lights). Networks - Browsing and interacting with pre-selected websites, software or videos. - Following links on websites to get to other parts of a page. - Beginning to recognise a search tool. Data storage - Create and name a file with guidance. - Save and retrieve their work with guidance. - Naming and saving files so they can be found easily. - Recognising simple icons associated with saving their work. Digital security - Using a password to login and logout of a common platform (this could be a visual password or with support). - Recognising a login screen. - Describing why passwords are important. - Beginning to use username and password independently to log in and out of a common platform.	Understanding programming - Recognising that robots are programmed by humans. - Recognising examples of computers being programmed by humans to perform simple tasks (computer games, animations, computer-generated music). Plan - Explaining what they are trying to achieve with their instructions (algorithms). - Writing clear, sequenced instructions (algorithms) for familiar tasks. - Using terms like 'start,' 'end' and 'next' to describe the steps in instructions (algorithms). - Explaining what they are trying to achieve with their program. - Verbally planning what they aim to achieve with a program. Create - Changing their instructions or algorithms into code that the robot understands. - Using basic block code to implement an algorithm. - Looking at different forms of code (Bee-bot and Scratch) and predicting how a program will execute. - Tinkering with a basic existing visual code to see how it affects a program. Evaluate - Beginning to identify errors in instructions (algorithms). - Making suggestions for how to fix errors in instructions (algorithms). - Identifying errors in code within a simple program. - Correcting errors or bugs in simple programs they have created.	Plan - Making decisions about the digital content they make. - Ordering ideas so that content makes sense. - Identifying the audience and purpose of digital content. - Planning how to use the space on a digital page. Create - Creating digital content - Using a basic drawing or writing tools to create a simple piece of digital content (e.g., drawing a picture, typing words). - Selecting and using simple editing tools (e.g., formatting, resizing). - Typing simple words and short phrases. - Importing images onto a digital page. - Positioning images and text on a digital page. - Typing familiar words and short sentences. - Cutting, copying and pasting. Create - Design principles - Choosing and arranging simple elements (e.g., text, images, colours) to make digital content clear and appealing. - Using basic tools to change the appearance of digital content (e.g., selecting different brush styles, filling shapes with colour, formatting text). - Arranging text and images to create an organised, clear layout. Evaluate - Explaining their decisions about the digital content they created and the tools they used to make it. - Making simple changes to improve their work (e.g., changing colours, deleting). - Suggesting a change to their digital content or someone else's to improve how clear it is. - Making small improvements based on feedback (e.g., reordering text, adjusting image placement).	Understanding data - Recognising some ways that data is presented (pictograms, tally charts, block diagrams and simple tables). Plan - Creating a simple survey. - Asking simple questions to gather data. - Sorting objects or pictures into simple categories (e.g., grouping animals by type). Create - Creating a simple pictogram or tally chart with support. - Organising simple data into a table or pictogram. - Creating labels to sort data in a pictogram. Evaluate - Using a pictogram or chart to answer basic questions (e.g., "Which is the most popular fruit?")	Being online Recognising when they are online. Identifying programs (e.g. apps and websites) they use online. Recognising indicators of being logged into an account (e.g. avatar, username, initials). Online relationships Recognising that being kind, polite and safe is just as important online as in-person. Risks and harms Describing how someone might change their account if they have their password. Responsible and safe use Checking with an adult before they use new apps or websites. Beginning to remember their username and password for an online account. Treating devices carefully. Reporting online Recognising when something online scares or worries them. Describing how to respond safely to an online message.	END of Key Stage 1 (Year 2) Computing systems and networks Recognise common uses of information technology beyond school. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Programming: 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. Creating media: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Data handling: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Online safety: 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.

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LOWER KS2 Year 3 & Year 4	Identifying and operating hardware Selecting and using appropriate devices for a specific purpose. Recognising the shape and name of connectors and their ports. Connecting or pairing a wireless peripheral, like headphones or a micro:bit. Networks Using search engines effectively to find information and and navigate links. Recognising that a network is two or more wireless or wired connected devices. Identifying examples of networks (e.g. school network, home Wi-Fi, internet) and their components (e.g. router, switch and server.). Communicate digitally with others. Data storage Saving and retrieving files from different places on a network. Create and name a folder, then save files into it. Using a cloud-based tool to save, retrieve and share a file (Google drive, OneDrive). Digital security Creating strong passwords. Independently logging in and out. Describing how computer accounts are personalised to a user. Identifying places on the network that they can access. Recognising that having multiple logins and passwords adds more security.	Understanding programming Recognising visual and text-based programming languages. Recognising further examples of computers being programmed by humans to perform simple tasks. Plan Working towards a given goal that a program needs to accomplish. Breaking down what they want to achieve into smaller, manageable parts. Using logic, pattern recognition and decomposition to solve simple problems. Create Tinkering with an existing text-based code to see how it affects a program (website). Remixing code to alter and add to an existing program. Recognising repeating patterns in a program or code. Creating loops to make code more efficient in block-based programs. Beginning to use variables in block-based programming languages to make programs more interactive. Including a conditional statement in block-based programming languages. Evaluate Recognising the relationship between what is happening in a program and the written (block) code. Working backwards, beginning to identify the code they think a program uses. Running small chunks of code at a time to find the error or 'bug.'	Plan Explaining the audience and purpose for digital content. Using a word processing program to plan digital content. Create - Creating digital content Capturing digital images (e.g. photos and video). Adding layers to create digital content both photos and videos. Using the features of a word processor (e.g. tabs and hyperlinks) to structure digital content. Editing and refining images (e.g., cropping, adjusting brightness/contrast). Editing and refining video content (e.g., trimming, adjusting brightness/contrast). Using content blocks to insert text and images into a webpage. Create - Design principles Choosing colours and adjusting spacing and positioning to create a well-organised layout. Adjusting the order of clips on a timeline in video content. Evaluate Reviewing digital content made by others to check that it achieves a given goal. Editing and refining digital content to improve clarity and effectiveness.	Understanding data Exploring data in existing spreadsheets. Ask and answer questions about existing data. Plan Gathering real-world data for a purpose. Identifying relevant data to gather. Collecting accurate and relevant data. Create Entering and organising data in a simple spreadsheet (e.g., weather data). Adjusting column width to fit text. Formatting data to improve presentation (e.g. bold, italics, cell or text colour, alignment). Using basic spreadsheet functions (e.g., sorting data, creating bar charts). Evaluate Comparing digital data (sum, comparison and difference). Identifying and describing patterns in data using the sort function. Identifying data that does not fit a pattern. Suggesting improvements to a spreadsheet.	Being online Identifying what the internet can be used for. Online relationships Identifying how people connect online. Recognising the difference between acceptable and unacceptable behaviour. Risks and harms Identifying when online contact from other players is unwanted or inappropriate. Recognising signs of online bullying (e.g. repeated unkind comments or being excluded). Responsible and safe use Describing appropriate and safe responses to unwanted or unkind behaviour. Reporting concerns Recognising when something online is unsafe, inappropriate or suspicious.	END of Key Stage 2 Computing systems and networks 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. Programming 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. Creating media: 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. Online safety: Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

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Upper KS2 Year 5 & Year 6	Identifying and operating hardware Using multiple devices or peripheral to achieve a goal (screen sharing, connecting to a printer). Using logical steps to troubleshoot hardware by checking power, connections and settings. Networks Evaluating search results to determine how useful they are. Explain how search engines work and how they present information. Beginning to describe a file's journey through a network (e.g., from a computer to a server). Describing how a website works (e.g., how a browser requests a web page from a server). Explaining how data packets are broken down, sent and reassembled to form usable information. Data storage Reducing file size for efficient storage. Recognising how much data they are storing. Describing the purpose of an storage device. Choosing different file types to store information efficiently (jpeg, png have different file sizes). Digital security Recognising that you can add extra layers of security to your login. Describing how devices connected to the internet are at risk to hackers.	Understanding programming Recognising a wider range of text-based programming languages. Making links between different programming interfaces they are faced with. Recognising examples of programming elements in real-life applications (e.g. live loops in music, variables in pedometers). Plan Looking at programming blocks and considering how they could be used in a program. Planning a program to be downloaded to a physical system/device to solve a particular problem. Decomposing a program independently when given a specific outcome or task to achieve. Create Live coding (improvising with code). Programming a physical system that has the capability for sensory input (e.g. a micro:bit). Altering existing code with a new, specific outcome in mind. Independently using loops to make code more efficient in text-based or block-based programs. Using nested loops to make code more efficient. Recognising real-life applications of conditional statements (e.g. when the temperature reaches 20 °C, turn the heating off). Using variables in block-based programming languages and understanding the impact of changing the variables in their code. Evaluate Explaining what a program does and how it works, referring to the inputs and outputs. Becoming more efficient and effective at debugging their programs. Systematically identifying mistakes, problems or 'bugs' in a program.	Plan Selecting appropriate types of digital content (e.g., text, audio, image, video) to meet the goal of a multimedia project. Setting a goal for a multimedia project and identifying success criteria. Using a spreadsheet to plan and organise digital content. Plan a sequence of images to create the effect of movement. Create - Creating digital content Combining and manipulating different types of digital content to create a multimedia project. Choosing and combining sound or music with other digital content. Making edits or changes to improve the quality of an audio recording. Create - Design principles Creating simple and focused digital content. Use templates to ensure content is consistent. Selecting music to match the mood of digital content. Adjusting the timing and speed of clips on a timeline. Evaluate Evaluating a digital project against specific criteria. Applying feedback from a reviewer to improve a multimedia project so that it meets the goal.	Understanding data Analysing data in existing spreadsheets. Identifying patterns in existing data. Identifying what more complex data can tell us. Plan Gathering more complex real-world data for a purpose. Identifying a relevant data set to gather to answer a question. Collecting a larger set of data accurately. Create Using formulas to calculate totals. Creating different types of charts (e.g., line graphs, pie charts) to present findings. Evaluate Using filters to exclude irrelevant data. Analysing a refined data set. Comparing refined sets of data. Identifying patterns in refined data. Making improvements to a spreadsheets to make it more effective.	Being online Identifying the features of social media platforms. Online relationships Recognising how their online identity is shaped by what they share, like and comment on. Risks and harms Identifying when online apps or games are trying to encourage people to spend money. Responsible and safe use Recognising when games are trying to persuade them to spend money. Reporting concerns Using tools like block, mute, flag and report on different online platforms. Identifying which reporting tools to use in a specific situation.	END of Key Stage 2 Computing systems and networks 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. 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