Computing at Beechwood Primary School

By the end of studying Computing at Beechwood Primary School, children will have an understanding of Digital Literacy, Computer Science and Information Technology and be able to talk about the following themes which they cover through the Kapow Primary Scheme of work:

- **Online Safety** (Understanding the benefits and risks of being online — how to remain safe, keep personal information secure and recognising when to seek help in difficult situations.)
- **Computing systems and networks** (Identifying hardware and using software, while exploring how computers communicate and connect to one another)
- **Programming** (Understanding that a computer operates on algorithms, and learning how to write, adapt and debug code to instruct a computer to perform set tasks.)
- **Creating media** (Learning how to use various devices — record, capture and edit content such as videos, music, pictures and photographs.)
- **Data Handling** (Ensuring that information is collected, recorded, stored, presented and analysed in a manner that is useful and can help to solve problems.)

Key Themes	Year Group Covered						
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Online Safety							
Computing systems and networks							
Programming							
Creating media							
Data handling							

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	Units and End Points		
EYFS	**Computing systems and networks 1** *To be able to understand what a computer keyboard is and recognise some letters and numbers.* *To know that a mouse can be used to click, drag and create simple drawings.* *To know that to use a computer you need to log in to it and then log out at the end of your session.*	**Programming 1** *To know that being able to follow and give simple instructions is important in computing.* *To understand that it is important for instructions to be in the right order.* *To understand why a set of instructions may have gone wrong.*	**Data handling** *To know that sorting objects into various categories can help you locate information.* *To know that using yes/no questions to find an answer is known as a branching database.* *To know that a pictogram is a way of showing information.*
	Programming 2 *To know that you can program a Bee-Bot with some simple commands.* *To understand that debugging means how to fix some simple programming errors.* *To understand that an algorithm is a set of clear and precise instructions.*		
Year 1	**Computing systems and networks** *To know that "log in and log out" means to begin and end a connection with a computer.* *To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art* *To know that passwords are important for security*	**Programming 1** *To understand that an algorithm is when instructions are put in an exact order* *To know that input devices get information into a computer and that output devices get information out of a computer.*	**Programming 2** *To understand the basic functions of a Bee-Bot.* *To know that you can use a camera/tablet to make simple videos.* *To know that algorithms move a Bee-Bot accurately to a chosen destination*

		To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing. *To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'.*	

Data Handling

To know how that charts and pictograms can be created using a computer.

To understand that a branching database is a way of classifying a group of objects.

To know that computers understand different types of 'input'.

Online Safety

To know that the internet is many devices connected to one another.

To know what to do if you feel unsafe or worried online - tell a trusted adult.

To know that people you do not know on the internet (online) are strangers and are not always who they say they are.

To know that to stay safe online it is important to keep personal information safe.

To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.

Year 2	**Computing systems and networks 1** *To know the difference between a desktop and laptop computer.* *To know that people control technology*	**Programming 1** *To understand what machine learning is and how it enables computers to make predictions* *To know that loops in programming are where you set a certain instruction (or instructions) to be repeated multiple times.*	***Data Handling*** *To understand that you can enter simple data into a spreadsheet.* *To understand what steps you need to take to create an algorithm.* *To know what data to use to answer certain questions.*

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		To know some input devices that give a computer an instruction about what to do (output). To know that computers often work together	To know that abstraction is the removing of unnecessary detail to help solve a problem	To know that computers can be used to monitor supplies.
		Online Safety To understand the difference between online and offline To understand what information I should not post online. To know what the techniques are for creating a strong password. To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.' To understand that not everything I see or read online is true.		
	Year 3	**Computing systems and networks 1** *To understand what a network is and how a school network might be organised.* *To know that a server is central to a network and responds to requests made.* *To know how the internet uses networks to share files.* *To know that a router connects us to the internet.* *To know what a packet is and why it is important for website data transfer*	**Programming 1** *To know that Scratch is a programming language and some of its basic functions.* *To understand how to use loops to improve programming* *To understand how decomposition is used in programming.* *To understand that you can remix and adapt existing code*	***Creating Media*** *To know that different types of camera shots can make my photos or videos look more effective.* *To know that I can edit photos and videos using film editing software.* *To understand that I can add transitions and text to my video.*

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		Computing systems and networks 3		
		To know the roles that inputs and outputs play on computers To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together. To know what a tablet is and how it is different from a laptop/desktop computer.		
		Online Safety To know that the internet is many devices connected to one another. To know what to do if you feel unsafe or worried online - tell a trusted adult. To know that people you do not know on the internet (online) are strangers and are not always who they say they are. To know that to stay safe online it is important to keep personal information safe. To know that 'sharing' online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.		
Year 4		**Computing systems and networks** To understand that software can be used collaboratively online to work as a team. To know what type of comments and suggestions on a collaborative document can be helpful. To know that you can use images, text, transitions and animation in presentation slides	**Programming 1** To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. To know what a conditional statement is in programming To understand that variables can help you to create a quiz on Scratch.	**Skills showcase** To understand and identify examples of HTML tags. To understand what changing the HTML and CSS does to alter the appearance of an object on the web To understand that copyright means that those images are protected and to understand that we should do a "creative commons" image search if we wish to use images from the internet. To know what "fake news" is and ways to spot websites that carry this type of misinformation.

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			To know what the "inspect" elements tool is and ways of using it to explore and alter text and images.
		Programming 2 *To know that combining computational thinking skills can help you to solve a problem.* *To understand that pattern recognition means identifying patterns to help them work out how the code works.* *To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.*	
		Online Safety *To understand some of the methods used to encourage people to buy things online* *To understand that technology can be designed to act like or impersonate living things.* *To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology.* *To understand what behaviours are appropriate in order to stay safe and be respectful online.*	
Year 5	**Computing systems and networks** *To know how search engines work.* *To understand that anyone can create a website and therefore we should take steps to check the validity of websites.* *To know that web crawlers are computer programs that crawl through the internet* *To understand what copyright is.*	**Programming 1** *To know that a soundtrack is music for a film/video and that one way of composing these is on programming software.* *To understand that using loops can make the process of writing music simpler and more effective* *. To know how to adapt their music while performing.*	***Data Handling*** *To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.* *To know what numbers using binary code look like and be able to identify how messages can be sent in this format.* *To understand that RAM is Random Access Memory and acts as the computer's working memory* *To know what simple operations can be used to calculate bit patterns.*
		Online Safety *To know different ways we can communicate online.*	

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		To understand how online information can be used to form judgements		
		To understand some ways to deal with online bullying.		
		To know that apps require permission to access private information and that you can alter the permissions.		
		To know where I can go for support if I am being bullied online or feel that my health is being affected by time online		

		Computing systems and networks	**Programming**	**Data Handling 1**
Year 6		*To understand the importance of having a secure password and what "brute force hacking" is.* *To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2.* *To know about some of the historical figures that contributed to technological advances in computing.* *To understand what techniques are required to create a presentation using appropriate software*	*To know that there are text-based programming languages such as Logo and Python* *To know that nested loops are loops inside of loops.* *To understand the use of random numbers and remix Python code*	*To know that data contained within barcodes and QR codes can be used by computers* *To know that infrared waves are a way of transmitting data* *To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.* *To know that data is often encrypted so that even if it is stolen it is not useful to the thief.*

Creating Media

To know that radio plays are plays where the audience can only hear the action so sound effects are important.

To know that sound clips can be recorded using sound recording software

To know that sound clips can be edited and trimmed.

Online Safety

To know that a digital footprint means the information that exists on the internet as a result of a person's online activity

To know what steps are required to capture bullying content as evidence

To understand that it is important to manage personal passwords effectively

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	To understand what it means to have a positive online reputation.
	To know some common online scams

In addition to the above, children will also have one off theme days to support their understanding

All classes will also use and have access to Project Evolve in order to support the online safety strand of the curriculum

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