	EYFS	Year 1	Year 2
Hardware	-Learning how to operate a camera to take photographs of meaningful creations or momentsLearning how to explore and tinker with hardware to develop familiarity and introduce relevant vocabularyRecognising and identifying familiar letters and numbers on a keyboardDeveloping basic mouse skills such as moving and clicking.	-Learning how to operate a camera or tablet to take photos and videosLearning how to explore and tinker with hardware to find out how it worksRecognising that some devices are input devices and others are output devicesLearning where keys are located on the keyboard.	-Understanding what a computer is and that it's made up of different componentsRecognising that buttons cause effects and that technology follows instructionsLearning how we know that technology is doing what we want it to do via its outputUsing greater control when taking photos with cameras, tablets or computersDeveloping confidence with the keyboard and the basics of touch typing.
Networks and data representation	N/A	N/A	N/A
Computational thinking	-Using logical reasoning to understand simple instructions and predict the outcome.	-Learning that decomposition means breaking a problem down into smaller partsUsing decomposition to solve unplugged challengesUsing logical reasoning to predict the behaviour of simple programsDeveloping the skills associated with sequencing in unplugged activitiesFollowing a basic set of instructionsAssembling instructions into a simple algorithm.	-Articulating what decomposition isDecomposing a game to predict the algorithms used to create itLearning that there are different levels of abstractionExplaining what an algorithm is. Following an algorithmCreating a clear and precise algorithmLearning that programs execute by following precise instructionsIncorporating loops within algorithms.
Programming	-Following instructions as part of practical activities and gamesLearning to give simple instructionsExperimenting with programming a Bee-bot/Blue- bot and learning how to give simple commandsLearning to debug instructions, with the help of an adult, when things go wrong.	-Programming a Floor robot to follow a planned routeLearning to debug instructions when things go wrongUsing programming language to explain how a floor robot worksLearning to debug an algorithm in an unplugged scenario.	-Using logical thinking to explore software, predicting, testing and explaining what it doesUsing an algorithm to write a basic computer programUsing loop blocks when programming to repeat an instruction more than once.

	Year 3	Year 4	Year 5	Year 6
Hardware	-Understanding what the different components of a computer do and how they work togetherDrawing comparisons across different types of computersLearning about the purpose of routers.	-Using tablets or digital cameras to film a weather forecastUnderstanding that weather stations use sensors to gather and record data which predicts the weather.	-Learning that external devices can be programmed by a separate computerLearning the difference between ROM and RAMRecognising how the size of RAM affects the processing of dataUnderstanding the fetch, decode, execute cycle.	-Learning about the history of computers and how they have evolved over timeUsing the understanding of historic computers to design a computer of the futureUnderstanding and identifying barcodes, QR codes and RFID Identifying devices and applications that can scan or read barcodes, QR codes and RFIDUnderstanding how corruption can happen within data during transfer (for example when downloading, installing, copying and updating files).
Networks and data representation	-Understanding the role of the key components of a network. Identifying the key components within a network, including whether they are wired or wirelessUnderstanding that websites and videos are files that are shared from one computer to anotherLearning about the role of packetsUnderstanding how networks work and their purposeRecognising links between networks and the internetLearning how data is transferred.	-Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.	-Learning the vocabulary associated with data: data and transmitLearning how the data for digital images can be compressedRecognising that computers transfer data in binary and understanding simple binary additionRelating binary signals (Boolean) to the simple character-based language, ASCIILearning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculationsUnderstanding how bit patterns represent images as pixels.	-Understanding that computer networks provide multiple services.
Computational thinking	-Using decomposition to explain the parts of a laptop computerUsing decomposition to explore the code behind an animationUsing repetition in programsUsing logical reasoning to explain how simple algorithms workExplaining the purpose of an algorithm.	-Using decomposition to solve a problem by finding out what code was usedUsing decomposition to understand the purpose of a script of codeIdentifying patterns through unplugged activitiesUsing past experiences to help solve new problems.	-Decomposing animations into a series of imagesDecomposing a program without supportDecomposing a story to be able to plan a program to tell a storyPredicting how software will work based on previous experience.	-Decomposing a program into an algorithmUsing past experiences to help solve new problemsWriting increasingly complex algorithms for a purpose.

	-Forming algorithms independently.	-Using abstraction to identify the important parts when completing both plugged and unplugged activities.	-Writing more complex algorithms for a purpose.	
Programming	-Using logical thinking to explore more complex software; predicting, testing and explaining what it doesIncorporating loops to make code more efficientContinuing existing codeMaking reasonable suggestions for how to debug their own and others' code.	-Creating algorithms for a specific purposeCoding a simple gameUsing abstraction and pattern recognition to modify codeIncorporating variables to make code more efficient.	-Programming an animationIterating and developing their programming as they workConfidently using loops in their programmingUsing a more systematic approach to debugging code, justifying what is wrong and how it can be correctedWriting code to create a desired effectUsing a range of programming commandsUsing repetition within a programAmending code within a live scenario.	-Debugging quickly and effectively to make a program more efficientRemixing existing code to explore a problemUsing and adapting nested loopsProgramming using the language PythonChanging a program to personalise itEvaluating code to understand its purposePredicting code and adapting it to a chosen purpose.
Using software	-Taking photographs and recording video to tell a storyUsing software to edit and enhance their video adding music, sounds and text on screen with transitions.	-Building a web page and creating content for itDesigning and creating a webpage for a given purposeUse online software for documents, presentations, forms and spreadsheetsUsing software to work collaboratively with others.	-Using logical thinking to explore software more independently, making predictions based on their previous experienceUsing software programme Sonic Pi/Scratch to create musicUsing the video editing software to animateIdentify ways to improve and edit programs, videos, images etcIndependently learning how to use 3D design software package TinkerCAD.	-Using logical thinking to explore software independently, iterating ideas and testing continuouslyUsing search and word processing skills to create a presentationCreating and editing sound recordings for a specific purposeCreating and editing videos, adding multiple elements: music, voiceover, sound, text and transitionsUsing design software TinkerCAD to design a productCreating a website with embedded links and multiple pages.
Using email and internet searches	-Learning to log in and out of an email accountWriting an email including a subject, 'to' and 'from.' -Sending an email with an attachment. Replying to an email.	-Understanding why some results come before others when searchingUsing keywords to effectively search for information on the internetUnderstanding that information found by searching the internet is not all grounded in factSearching the internet for data.	-Developing searching skills to help find relevant information on the internetLearning how to use search engines effectively to find information, focussing on keyword searches and evaluating search returns.	-Understanding how search engines work.
Using data	-Understanding the vocabulary to do with databases: field, record, data.	-Understanding that data is used to forecast weather.	-Understanding how data is collected in remote or dangerous places.	-Understanding how barcodes, QR codes and RFID work.

	-Learning about the pros and cons of	-Recording data in a spreadsheet	-Understanding how data might be used	-Gathering and analysing data in real
	digital versus paper databases.	independently.	to tell us about a location.	time.
	-Sorting and filtering databases to easily	-Sorting data in a spreadsheet to		-Creating formulas and sorting data
	retrieve information.	compare using the 'sort by' option.		within spreadsheets.
	-Creating and interpreting charts and	-Designing a device which gathers and		
	graphs to understand data.	records sensor data.		
	-Understanding the purpose of emails.	-Understanding that software can be	-Learn about different forms of	-Learning about the Internet of Things
Wider use of	-Recognising how social media platforms	used collaboratively online to work as a	communication that have developed	and how it has led to 'big data'.
technology	are used to interact.	team.	with the use of technology.	-Learning how 'big data' can be used to
				solve a problem or improve efficiency.