



Computing skills progression

	F2	Y1	Y2
Computer science	Hardware		
	<ul style="list-style-type: none"> • 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 • Learning how to operate a camera • Recognising that a range of technology is used in places such as homes and schools • Learning what a keyboard is and how to locate relevant keys • Learning what a mouse is and developing basic mouse skills such as moving and clicking 	<ul style="list-style-type: none"> • Learning how to explore and tinker with hardware to find out how it works • Understanding that computers and devices around us use inputs and outputs, identifying some of these • Learning where keys are located on the keyboard • Learning how to operate a camera 	<ul style="list-style-type: none"> • Understanding what a computer is and that it's made up of different components • Recognising that buttons cause effects and that technology follows instructions • Learning how we know that technology is doing what we want it to do via its output. • Using greater control when taking photos with tablets or computers • Developing confidence with the keyboard and the basics of touch typing
	Networks and data representation		
		<ul style="list-style-type: none"> • Understanding what the internet is 	
	Computational thinking		
	<ul style="list-style-type: none"> • Using logical reasoning to read simple instructions and predict the outcome 	<ul style="list-style-type: none"> • Learning that decomposition means breaking a problem down into smaller parts • Using decomposition to solve unplugged challenges • Using logical reasoning to predict the behaviour of simple programs • Developing the skills associated with sequencing in unplugged activities • Learning that an algorithm is a set of step by step instructions used to carry out a task, in a specific order 	<ul style="list-style-type: none"> • Articulating what decomposition is • Decomposing a game to predict the algorithms used to create it • Using decomposition to decompose a story into smaller parts • Learning what abstraction is • Learning that there are different levels of abstraction • Explaining what an algorithm is • Following an algorithm • Creating a clear and precise algorithm

		<ul style="list-style-type: none"> ● Follow a basic set of instructions ● Assembling instructions into a simple algorithm 	<ul style="list-style-type: none"> ● Learning that computers use algorithms to make predictions ● Learning that programs execute by following precise instructions ● Incorporating loops within algorithms
Programming			
	<ul style="list-style-type: none"> ● Following instructions as part of practical activities and games and learning to debug when things go wrong ● Learning to give simple instructions ● Learning that an algorithm is a set of instructions to carry out a task, in a specific order ● Experimenting with programming a Bee-bot/Bluebot and learning how to give simple commands ● Learning to debug instructions, with the help of an adult, when things go wrong 	<ul style="list-style-type: none"> ● Programming a Bee-bot/Virtual Bee-bot to follow a planned route ● Learning to debug instructions when things go wrong ● Developing a how to video to explain how the Bee-bot works ● Learning to debug an algorithm in an unplugged scenario 	<ul style="list-style-type: none"> ● Using logical thinking to explore software, predicting, testing and explaining what it does ● Using an algorithm to write a basic computer program ● Learning what loops are ● Incorporating loops to make code more efficient
Information technology	Using software		
	<ul style="list-style-type: none"> ● Using a simple online paint tool to create digital art 	<ul style="list-style-type: none"> ● Using a basic range of tools within graphic editing software ● Taking and editing photographs ● Understanding how to create digital art using an online paint tool ● Developing control of the mouse through dragging, clicking and resizing of images to create different effects ● Developing understanding of different software tools 	<ul style="list-style-type: none"> ● Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts ● Using word processing software to type and reformat text ● Using software to create story animations ● Creating and labelling images
	Using internet and email		
	<ul style="list-style-type: none"> ● Participating in group image searches, led by the teacher 	<ul style="list-style-type: none"> ● Searching and downloading images from the internet safely ● Understanding that we are connected to others when using the internet 	<ul style="list-style-type: none"> ● Understanding that personal information should not be shared on the internet ● Learning how to be respectful to others when sharing content online
Using data			

	<ul style="list-style-type: none"> ●Representing data through sorting and categorising objects in unplugged scenarios ●Representing data through pictograms ●Exploring branch databases through physical games 	<ul style="list-style-type: none"> ●Introduction to spreadsheets ●Representing data in tables, charts and pictograms ●Sorting data and creating branching databases ●Identifying where digital content can have advantages over paper when storing and manipulating data 	<ul style="list-style-type: none"> ●Collecting and inputting data into a spreadsheet ●Interpreting data
Wider use of technology			
		<ul style="list-style-type: none"> ●Recognising common uses of information technology, including beyond school ●Understanding some of the ways we can use the internet 	<ul style="list-style-type: none"> ●Learning how computers are used in the wider world
Digital literacy	<ul style="list-style-type: none"> ●Recognising that a range of technology is used in places such as homes and schools ●Learning to log in and log out ●When using the internet alongside an adult, or independently, learning what to do if they come across something that worries them or makes them feel uncomfortable 	<ul style="list-style-type: none"> ●Logging in and out and saving work on their own account ●Understand the importance of a password ●When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable ●Recognising when someone has been unkind online ●Learning some top tips for staying safe online ●Understanding how we 'share' information on the internet 	<ul style="list-style-type: none"> ●Understanding that personal information should not be shared on the internet ●Learning how to be respectful to others when sharing content online

	Y3	Y4	Y5	Y6
Computer science	Hardware			
	<ul style="list-style-type: none"> • Understanding what the different components of a computer do and how they work together • Drawing comparisons across different types of computers • Learning what a server does 	<ul style="list-style-type: none"> • Learning about the purpose of routers 	<ul style="list-style-type: none"> • Learning that external devices can be programmed by a separate computer • Learning the difference between ROM and RAM • Recognising how the size of RAM affects the processing of data • Understanding the fetch, decode, execute cycle 	<ul style="list-style-type: none"> • Learning about the history of computers and how they have evolved over time • Using the understanding of historic computers to design a computer of the future • Understanding and identifying barcodes, QR codes and RFID • Identifying devices and applications that can scan or read barcodes, QR codes and RFID • Acknowledging that corruption can happen within data during transfer (for example when downloading, installing, copying and updating files)
Computer science	Networks and data representation			
	<ul style="list-style-type: none"> • Learning what a network is and its purpose • Identifying the key components within a network, including whether they are wired or wireless • Recognising links between networks and the internet • Learning how data is transferred 	<ul style="list-style-type: none"> • Consolidating understanding of the key components of a network • Understanding that websites & videos are files that are shared from one computer to another • Learning about the role of packets • Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities 	<ul style="list-style-type: none"> • Learning the vocabulary associated with data: data and transmit • Learning how the data for digital images can be compressed • Recognising that computers transfer data in binary and understanding simple binary addition • Relating binary signals (Boolean) to the simple character-based language, ASCII 	<ul style="list-style-type: none"> • Understanding that computer networks provide multiple services

		for communication and collaboration	<ul style="list-style-type: none"> ● Learning that messages can be sent by binary code, reading binary up to 8 characters and carrying out binary calculations ● Understanding how bit patterns represent images as pixels 	
Computational thinking				
	<ul style="list-style-type: none"> ● Using decomposition to explain the parts of a laptop computer ● Using decomposition to explore the code behind an animation ● Using repetition in programs ● Understanding that computers follow instructions ● Using an algorithm to explain the roles of different parts of a computer ● Using logical reasoning to explain how simple algorithms work ● Explaining the purpose of an algorithm ● Forming algorithms independently 	<ul style="list-style-type: none"> ● Solving unplugged problems by decomposing them into smaller parts ● Using decomposition to understand the purpose of a script of code ● Using decomposition to help solve problems ● Identifying patterns through unplugged activities ● Using past experiences to help solve new problems ● Using abstraction to identify the important parts when completing both plugged and unplugged activities ● Creating algorithms for a specific purpose 	<ul style="list-style-type: none"> ● Decomposing animations into a series of images ● Decomposing a program without support ● Decomposing a story to be able to plan a program to tell a story ● Predicting how software will work based on previous experience ● Writing more complex algorithms for a purpose 	<ul style="list-style-type: none"> ● Decomposing a program into an algorithm ● Using past experiences to help solve new problems ● Writing increasingly complex algorithms for a purpose
Programming				

	<ul style="list-style-type: none"> ●Using logical thinking to explore more complex software; predicting, testing and explaining what it does ●Incorporating loops to make code more efficient ●Remixing existing code ●Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected 	<ul style="list-style-type: none"> ●Understanding that websites can be altered by exploring the code beneath the site ●Coding a simple game ●Using abstraction and pattern recognition to modify code ●Incorporating variables to make code more efficient ●Remixing existing code ●Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected 	<ul style="list-style-type: none"> ●Programming an animation ●Iterating and developing their programming as they work ●Beginning to use nested loops (loops within loops) ●Debugging their own code ●Writing code to create a desired effect ●Using a range of programming commands ●Using repetition within a program ●Amending code within a live scenario 	<ul style="list-style-type: none"> ●Debugging quickly and effectively to make a program more efficient ●Remixing existing code to explore a problem ●Using and adapting nested loops ●Programming using the language Python ●Changing a program to personalise it ●Evaluating code to understand its purpose ●Predicting code and adapting it to a chosen purpose ●Altering a website's code to create changes
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Information technology	Using software			
	<ul style="list-style-type: none"> ●Taking photographs and recording video to tell a story ●Using software to edit and enhance their video adding music, sounds and text on screen with transitions 	<ul style="list-style-type: none"> ●Building a web page and creating content for it ●Designing and creating a webpage for a given purpose ●Use Google online software for documents, presentations, forms and spreadsheets ●Work collaboratively with others 	<ul style="list-style-type: none"> ●Using logical thinking to explore software more independently, making predictions based on their previous experience ●Using a software programme (Sonic Pi or Scratch) to create music ●Using video editing software or animation software to animate ●Identify ways to improve and edit programs, videos, images etc. ●Independently learning how to use 3D design software package TinkerCAD 	<ul style="list-style-type: none"> ●Using logical thinking to explore software independently, iterating ideas and testing continuously ●Using search and word processing skills to create a presentation ●Planning, recording and editing a radio play ●Creating and editing sound recordings for a specific purpose ●Creating and editing videos, adding multiple elements: music, voiceover, sound, text and transitions to create a video advert ●Using design software TinkerCAD to design a product

- Creating a website with embedded links and multiple pages

Using internet and email

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| <ul style="list-style-type: none"> ● Learning to log in and out of an email account ● Writing an email including a subject, 'to' and 'from' ● Sending an email with an attachment ● Replying to an email ● Identifying useful terms and phrases for search engines | <ul style="list-style-type: none"> ● Understanding why some results come before others when searching ● Understanding that information on the internet is not all grounded in fact | <ul style="list-style-type: none"> ● Developing searching skills to help find relevant information on the internet ● Understanding how apps can access our personal information and how to alter the permissions | <ul style="list-style-type: none"> ● Understanding how search engines work |
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Using data

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| <ul style="list-style-type: none"> ● Understanding the vocabulary associated with databases: field, record, data ● Learning about the pros and cons of digital versus paper databases ● Sorting and filtering databases to easily retrieve information ● Creating and interpreting charts and graphs to understand data | <ul style="list-style-type: none"> ● Designing a weather station which gathers and records sensor data | <ul style="list-style-type: none"> ● Understanding how data is collected | <ul style="list-style-type: none"> ● Understanding how barcodes, QR codes and RFID work ● Gathering and analysing data in real time ● Creating formulas and sorting data within spreadsheets |
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Wider use of technology

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| <ul style="list-style-type: none"> ● Understanding the purpose of emails ● Learning what a search engine is ● Recognising how social media platforms are used to interact | <ul style="list-style-type: none"> ● Understanding that software can be used collaboratively online to work as a team | <ul style="list-style-type: none"> ● Learn about different forms of communication that have developed with the use of technology | <ul style="list-style-type: none"> ● Learning about the Internet of Things and how it has led to 'big data' ● Learning how 'big data' can be used to solve a problem or improve efficiency |
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<p>Digital literacy</p>	<ul style="list-style-type: none"> ● Learning to be a responsible digital citizen; understanding their responsibilities to treat others respectfully and recognising when digital behaviour is unkind ● Learning about cyberbullying ● Learning that not all emails are genuine, recognising when an email might be fake and what to do about it ● Learning that not all information on the internet is factual ● Understanding who personal information should/ should not be shared with 	<ul style="list-style-type: none"> ● Recognising what appropriate behaviour is when collaborating with others online ● Recognising that information on the Internet might not be true or correct and that some sources are more trustworthy than others ● Learning about different forms of advertising on the internet 	<ul style="list-style-type: none"> ● Learning about how permissions work and how to change them ● Identifying possible issues with online communication ● Considering the effects of screen-time on physical and mental wellbeing ● Learning about online bullying and where to seek advice 	<ul style="list-style-type: none"> ● Understanding the importance of secure passwords and how to create them, along with two-step authentication ● Using search engines safely and effectively ● Recognising that updated software can help to prevent data corruption and hacking ● Considering their digital footprint and online reputation and future implications they may have ● Learning about how to collect evidence and report online bullying concerns
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Please also see – Online Safety document