Computing

Progression of knowledge and skills

Subject leader overview EYFS - Year 6 Condensed

An overview of the **skills** covered in each year group and strand and how these skills develop through our condensed Computing scheme of work.

This document also shows how **knowledge** builds in our key areas.

This document was last updated on 12.02.26. Please check here for the most up-to-date version.

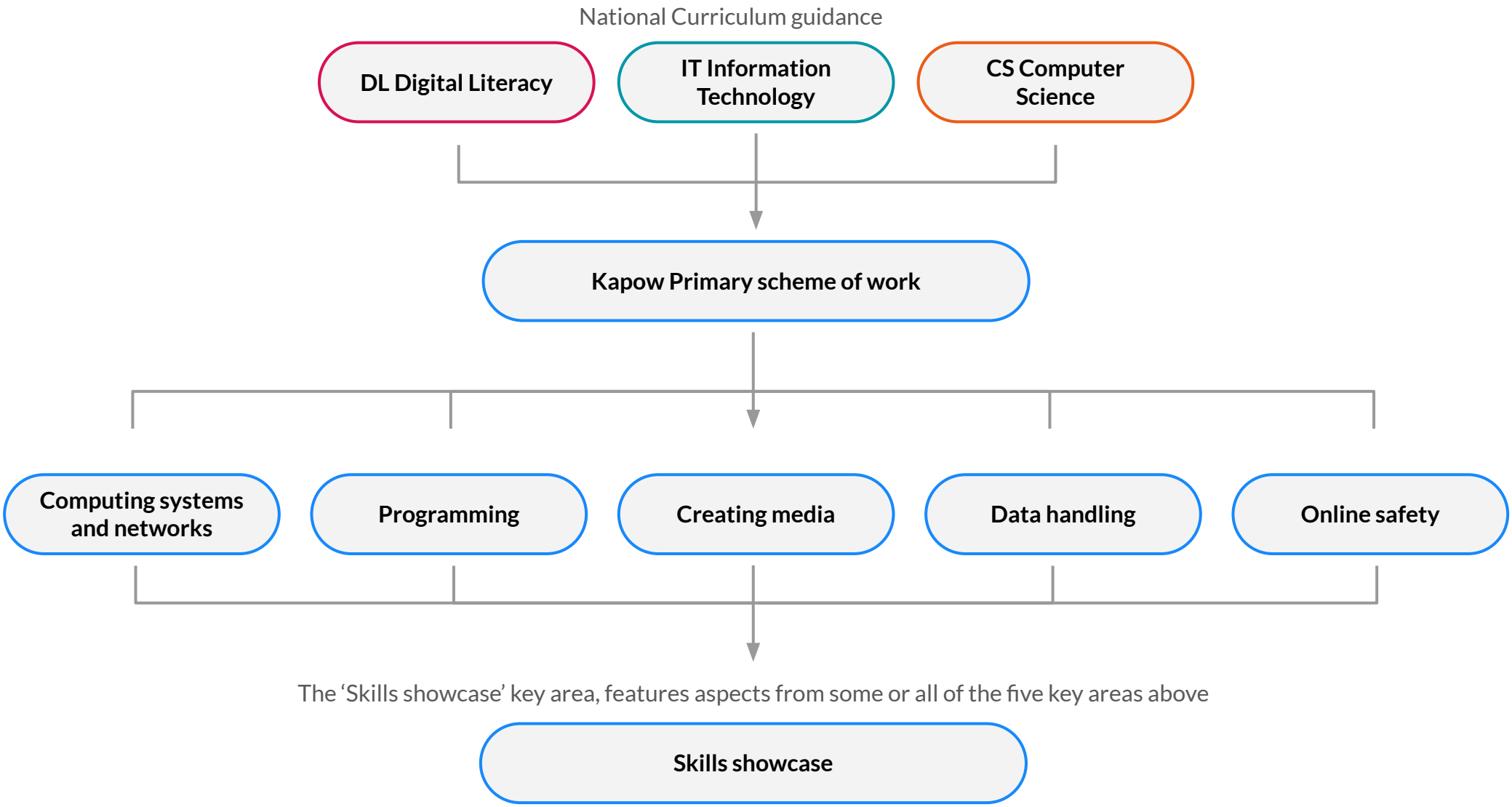
Other related documents:

If you would like to see the skills and knowledge covered in each unit, then please see our Computing key skills and knowledge by unit

If you are following our Mixed-age Computing long-term plan, then please use the accompanying Progression of skills and knowledge - mixed-age

If you are following our standard Computing long-term plan, then please use the accompanying Progression of skills and knowledge

How is Kapow Primary's Computing scheme of work organised?



	EYFS	Year 1	Year 2
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.	Learning how to operate a camera or tablet to take photos and videos. Learning how to explore and tinker with hardware to find out how it works. Learning where keys are located on the keyboard.	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. Developing confidence with the keyboard and the basics of touch typing.
Networks and data representation	N/A	N/A	N/A

	EYFS	Year 1	Year 2
Computational thinking	Using logical reasoning to understand simple instructions and predict the outcome.	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. Following a basic set of instructions. Assembling instructions into a simple algorithm.	Articulating what decomposition is. Decomposing a game to predict the algorithms used to create it. Learning that there are different levels of abstraction. Explaining what an algorithm is. Following an algorithm. Creating a clear and precise algorithm.
Programming	Following instructions as part of practical activities and games. Learning to give simple instructions. Learning to debug instructions, with the help of an adult, when things go wrong.	Programming a Floor robot to follow a planned route. Learning to debug instructions when things go wrong. Learning to debug an algorithm in an unplugged scenario. Recognising that robots are programmed by humans. Explaining what they are trying to achieve with their algorithms. Writing clear, sequenced algorithms for familiar tasks. Using terms like 'start,' 'end' and 'next' to describe the steps in algorithms. Changing their instructions or algorithms into code that the robot understands. Beginning to identify errors in algorithms. Making suggestions for how to fix errors in algorithms.	Using logical thinking to explore software, predicting, testing and explaining what it does. Using an algorithm to write a basic computer program. Recognising examples of computers being programmed by humans to perform simple tasks (computer games, animations, computer-generated music). Explaining what they are trying to achieve with their program. Verbally planning what they aim to achieve with a program. Looking at different forms of code and predicting how a program will execute.

	Year 3	Year 4	Year 5	Year 6
Hardware	Understanding what the different components of a computer do and how they work together. Drawing comparisons across different types of computers. Learning about the purpose of routers.	Using tablets or digital cameras to film a weather forecast. Understanding that weather stations use sensors to gather and record data which predicts the weather.	Learning that external devices can be programmed by a separate computer.	Learning about the history of computers and how they have evolved over time. Understanding and identifying barcodes, QR codes and RFID. Identifying devices and applications that can scan or read barcodes, QR codes and RFID. Identify different types of AI and their applications in everyday life.
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 wireless. Understanding that websites and videos are files that are shared from one computer to another. Learning about the role of packets. Understanding how networks work and their purpose. Recognising links between networks and the internet. Learning 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 transmit. Recognising that computers transfer data in binary and understanding simple binary addition. Learning that messages can be sent by binary code, reading binary up to eight characters and carrying out binary calculations.	N/A

	Year 3	Year 4	Year 5	Year 6
Computational thinking	Explaining the purpose of an algorithm. Using logical thinking to explore more complex software; predicting, testing and explaining what it does. 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. Using decomposition to solve a problem by finding out what code was used. Using decomposition to understand the purpose of a script of code. 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. Working towards a given goal that a program needs to accomplish. Breaking down what they want to achieve into smaller, manageable parts.	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.	Decomposing a program into an algorithm. Using past experiences to help solve new problems. Writing increasingly complex algorithms for a purpose. Analysing the effectiveness of prompts and refine them for improved AI outputs.

	Year 3	Year 4	Year 5		Year 6	
Programming	Tinkering with an existing text-based code to see how it affects a program. Remixing code to alter and add to an existing program. 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.	Creating algorithms for a specific purpose. Coding a simple game. Using abstraction and pattern recognition to modify code. Incorporating variables to make code more efficient. Tinkering with an existing text-based code to see how it affects a program. 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. Recognising the relationship between what is happening in a program and the written (block) code.	Programming an animation. Iterating and developing their programming as they work. Confidently using loops in their programming. Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected. Writing code to create a desired effect. Using a range of programming commands. Using repetition within a program. Amending code within a live scenario.	Decomposing a program independently when given a specific outcome or task to achieve. Altering existing code with a new, specific outcome in mind. Independently using loops to make code more efficient in text-based programs. Using nested loops to make code more efficient. Using variables in block-based programming languages and understanding the impact of changing the variables in their code. 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 identify mistakes, problems or 'bugs' in a program.	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. Applying coding skills like decomposition and pattern recognition to interact with AI applications. Recognising a wider range of text-based programming languages. Live coding (improvising with code).	Making links between different programming interfaces they are faced with. Recognising examples of programming elements in real-life applications. Decomposing a program independently when given a specific outcome or task to achieve. Altering existing code with a new, specific outcome in mind. Independently using loops to make code more efficient in text-based programs. Using nested loops to make code more efficient. 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.

	EYFS	Year 1	Year 2
Using software	Using a simple online paint tool to create digital art.	Using a basic range of tools within graphic editing software. Taking and editing photographs. Developing control of the mouse through dragging, clicking and resizing of images to create different effects. Developing understanding of different software tools.	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 (and unplugged means) to create story animations. Creating and labelling images.
Using email and internet searches	N/A	Recognising devices that are connected to the internet. Understanding that we are connected to others when using the internet.	Searching for appropriate images to use in a document.
Using data	Representing data through sorting and categorising objects in unplugged scenarios. Exploring branch databases through physical games.	N/A	Collecting and inputting data into a spreadsheet. Interpreting data from a spreadsheet.
Wider use of technology	N/A	Recognising common uses of information technology, including beyond school. Understanding some of the ways we can use the internet.	Learning how computers are used in the wider world.

	Year 3	Year 4	Year 5	Year 6
Using software	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.	Use online software for documents, presentations, forms and spreadsheets. Using software to work collaboratively with others.	Using logical thinking to explore software more independently, making predictions based on their previous experience. Using software programme Sonic Pi/Scratch to create music. Using the video editing software to animate. Identify ways to improve and edit programs, videos, images etc. Independently learning how to use 3D design software package TinkerCAD.	Using logical thinking to explore software independently, iterating ideas and testing continuously. Using search and word processing skills to create a presentation. Using text-based AI tools to generate content.
Using email and internet searches	N/A	Understanding why some results come before others when searching. Understanding that information found by searching the internet is not all grounded in fact. Searching the internet for data.	Developing searching skills to help find relevant information on the internet.	Understanding how search engines work.

	Year 3	Year 4	Year 5	Year 6
Using data	N/A	Understanding that data is used to forecast weather. Recording data in a spreadsheet independently. Sorting data in a spreadsheet to compare using the 'sort by…' option. Designing a device which gathers and records sensor data.	Understanding how data is collected in remote or dangerous places. Understanding how data might be used to tell us about a location.	Understanding how barcodes, QR codes and RFID work. Gathering and analysing data in real time. Creating formulas and sorting data within spreadsheets.
Wider use of technology	Recognising how social media platforms are used to interact.	Understanding that software can be used collaboratively online to work as a team.	Learn about different forms of communication that have developed with the use of technology.	Learning how 'big data' can be used to solve a problem or improve efficiency.

EYFS	Year 1	Year 2	
Recognising that a range of technology is used for different purposes. Learning to log in and log out.	Logging in and out and saving work on their own account. 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. Understanding how to interact safely with others online. Recognising how actions on the internet can affect others. Recognising what a digital footprint is and how to be careful about what we post.	Learning how to create a strong password. Understanding how to stay safe when talking to people online and what to do if they see or hear something online that makes them feel upset or uncomfortable Identifying whether information is safe or unsafe to be shared online. Learning to be respectful of others when sharing online and ask for their permission before sharing content. Learning strategies for checking if something they read online is true.	
Year 3	**Year 4**	**Year 5**	**Year 6**
Recognising that different information is shared online including facts, beliefs and opinions. Learning how to identify reliable information when searching online. Learning how to stay safe on social media. Considering the impact technology can have on mood. Learning about cyberbullying. Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.	Recognising that information on the internet might not be true or correct and that some sources are more trustworthy than others. Learning to make judgements about the accuracy of online searches. Identifying forms of advertising online. Recognising what appropriate behaviour is when collaborating with others online. Reflecting on the positives and negatives of time spent online. Identifying respectful and disrespectful online behaviour.	Identifying possible dangers online and learning how to stay safe. Evaluating the pros and cons of online communication. Recognising that information on the internet might not be true or correct and learning ways of checking validity. Learning what to do if they experience bullying online. Learning to use an online community safely	Learning about the positive and negative impacts of sharing online. Learning strategies to create a positive online reputation. Understanding the importance of secure passwords and how to create them. Learning strategies to capture evidence of online bullying in order to seek help. Using search engines safely and effectively. Recognising that updated software can help to prevent data corruption and hacking. Exploring ethical considerations around AI use and its impact on society.

Computing systems and networks

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To be able to understand what a computer keyboard is and recognising 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. To know that different types of technology can be found at home and in school. To know that you can take simple photographs with a camera or iPad. To know that you must hold the camera still and ensure the subject is in the shot to take a photo.	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. To know that when we create something on a computer it can be more easily saved and shared than a paper version. To know some of the simple graphic design features of a piece of online software.	To know the difference between a desktop and laptop computer. To know that people control technology. To know that buttons are a form of input that give a computer an instruction about what to do (output). To know that computers often work together.	To know what a tablet is and how it is different from a laptop/desktop computer. To know the components that make up a network (Wireless access point/WAP, Network switch, Router, Server and devices). To know that a server is central to a network and responds to requests made. To know that the internet connects all the networks around the world. To know what a packet is and why it is important for website data transfer. 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 understand that software can be used collaboratively online to work as a team. To know that you can use images, text, transitions and animation in presentation slides.	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 understand what copyright is. To know the difference between ROM and RAM.	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 AI is artificial intelligence and is used in everyday life. To know that AI is trained on data to recognise patterns and generate outputs. To know that AI can be used to generate written content. To know that there are ethical issues surrounding AI, including data privacy, bias and responsible use.

Programming

EYFS	Year 1	Year 2	
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.	To understand that an algorithm is when instructions are put in an exact order. 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'. 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 know humans need to give robots instructions to follow and that they will carry out these instructions exactly, even if they are wrong. To know humans need to give instructions in the correct language for the robot to understand. To know an algorithm is a set of instructions used to carry out a task. To know algorithms must give every step of a task. To know algorithms must give clear, sequenced instructions. To know there may be an error if a set of instructions (an algorithm) does not give the expected result. To know errors could result from sequencing issues, unclear instructions or missing steps.	To understand what machine learning is and how that enables computers to make predictions. To know that abstraction is the removing of unnecessary detail to help solve a problem. To know that coding is writing in a special language so that the computer understands what to do. To understand that the character in ScratchJr is controlled by the programming blocks. To know that you can write a program to create a musical instrument or tell a joke. To know that programming a computer or device involves giving it instructions to perform specific tasks.	To know that video games, phones, websites and apps are all created using programming. To know that different devices and programs use different programming languages or 'codes'. To know that an algorithm is a set of instructions used to carry out a task. To know that an algorithm becomes a program when it is coded. To know that programs execute the exact instructions they are given, even if they are incorrect. To know that a program is a series of instructions (algorithms) that are written for a computer to follow. To know that a person can program a device by giving it an algorithm/algorithms to follow. To know that there must be an error if a program does not execute as expected. To know that an error in a computer program is known as a 'bug' and fixing errors is known as 'debugging'.

Programming

Year 3	Year 4		Year 5		Year 6
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.	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. To know that combining computational thinking skills (sequence, abstraction, decomposition etc) 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.	To know 'decomposition' is the process of breaking down a task or problem into smaller parts. To know breaking down a problem into smaller parts makes it easier to solve the problem. To know 'abstraction' is identifying the important detail and ignoring irrelevant information. To know It is important to identify where the mistake is in the programming as part of the debugging process. To know errors in a program could result from sequencing errors, coding errors or missing code.	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 code while performing their music. To know that a Micro:bit is a programmable device. To know that Micro:bit uses a block coding language similar to Scratch. To understand and recognise coding structures including variables. To know what techniques to use to create a program for a specific purpose (including decomposition).	To know that Programmers often save time when creating code by taking code from one program and turning it into another. To know that nested loops are loops within loops. To know that running a program to identify errors should be done before checking the code. To know that errors in a program could be as a result of forgetting to 'end' a loop. To know that typing and spacing are very important in text-based languages and can cause errors in code if used incorrectly.	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.

Creating media

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
N/A	To understand that holding the camera still and considering angles and light are important to take good pictures. To know that you can edit, crop and filter photographs. To know how to search safely for images online.	N/A	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.	N/A	To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph. To know that decomposition of an idea is important when creating stop-motion animations. To know that editing is an important feature of making and improving a stop motion animation.	N/A

Data handling

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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 a branching database.	N/A	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. To know that computers can be used to monitor supplies.	N/A	To know that computers can use different forms of input to sense the world around them so that they can record and respond to data. This is called 'sensor data'. To know that a weather machine is an automated machine that responds to sensor data. To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.	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 know what simple operations can be used to calculate bit patterns.	To know that data contained within barcodes and QR codes can be used by computers. 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.

Online safety

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
N/A	To know that the internet is many devices connected to one another. To know that you should tell a trusted adult if you feel unsafe or worried online. 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.	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.	To know that not everything on the internet is true: people share facts, beliefs and opinions online. To understand that the internet can affect your moods and feelings. To know that privacy settings limit who can access your important personal information Information, such as your name, age, gender etc. To know what social media is and that age restrictions apply.	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.	To know different ways we can communicate online. 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.	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. To understand what it means to have a positive online reputation. To know some common online scams.

Version history

This page shows recent updates to this document:

Date	Update
30.08.22	Updated to reflect the changes to the Computing: Long-term plan — condensed.
20.08.24	Updated to reflect refreshed units published on the website.
25.09.24	Updated to add the new MakeCode unit for Year 2.
04.10.24	Updated to add in the new Exploring AI unit for Year 6.
28.03.25	Updated to reflect newly published units.
04.07.25	Updated to reflect newly published units.
23.10.25	Updated to reflect newly published units.
16.12.25	Removed some statements covered only in archived units. The intent of the removed statements is covered in the remaining statements. No skills and knowledge are lost; just refined.