

## Progression Grid - Computing

<b>Computer Science</b>	<b>EYFS</b>	
	<b>Nursery</b>	<b>Reception</b>
<b>Hardware</b>	<p>Tinker with hardware to develop familiarity and introduce relevant vocabulary.</p> <p>Operate simple equipment for a range of purposes: camera, CD player, remote control, IWB.</p> <p>Explore technological toys.</p> <p>Navigate touch-capable technology with support.</p> <p>Investigate sound, music and images through toys.</p>	<p>Explore and tinker with hardware to develop familiarity and introduce relevant vocabulary more confidently.</p> <p>Operate simple equipment for a range of purposes, with greater independence: Bee-Bots, camera, CD player, remote control, IWB.</p> <p>Navigate touch-capable technology with more independence.</p> <p>Recognise and identify familiar letters and numbers on a keyboard.</p> <p>Develop basic mouse skills.</p>
<b>Computational Thinking</b>	<p>Know that information can be retrieved from digital devices and the internet.</p>	<p>Following instructions as part of practical activities.</p>

	<p>Explore a range of materials to understand 'cause' and 'effect'.</p> <p>Follow instructions as part of practical activities.</p>	<p>Explain simple instructions and predict the outcome.</p>
<b>Programming</b>	<p>Develop basic coding skills through online games.</p>	<p>Follow and use simple instructions.</p> <p>Develop basic coding skills through online games, with more independence.</p> <p>Begin to debug instructions with support.</p> <p>Experiment with programming and giving commands to basic equipment.</p>
<b><u>Computer Science</u></b>	<b>KS1</b>	
	<b>Year 1</b>	<b>Year 2</b>
<b>Hardware</b>	<p>Have developing confidence when with computer hardware.</p> <p>Distinguish between input and output devices.</p> <p>Begin to operate a camera or tablet (photos and videos).</p> <p>Locate keys on a keyboard.</p>	<p>Recognise the different components of a computer.</p> <p>Have greater control when operating a camera or tablet or computer (photos and videos).</p> <p>Have developing confidence with a computer keyboard.</p> <p>Have greater confidence when distinguishing between input and output devices.</p>

		Recognise that technology follows instructions.
<b>Computational Thinking</b> <i>(unplugged activities)</i>	<p>Begin to describe decomposition (breaking down a problem into smaller parts).</p> <p>Practise decompositioning.</p> <p>Predict the behaviour of simple programs.</p> <p>Follow a basic set of instructions.</p> <p>Assemble instructions into a simple algorithm.</p> <p>Have developing sequencing skills.</p>	<p>Have developing confidence with decomposition.</p> <p>Describe and follow an algorithm clearly.</p> <p>Write clear and precise algorithms, adding loops for efficiency.</p> <p>Explain what abstraction is (to pick out important information).</p> <p>Identify how programs execute information.</p>
<b>Programming</b>	<p>Apply 'debugging skills' to a range of scenarios.</p> <p>Explain how to program a Floor robot using correct terminology.</p>	<p>Explore, predict, test and explain certain software.</p> <p>Have greater confidence when using algorithms.</p> <p>Have greater confidence with loop blocks.</p>
<b>Computer Science</b>	<b>LKS2</b>	
	<b>Year 3</b>	<b>Year 4</b>
<b>Hardware</b>	<p>Recognise how the different components of a computer work together.</p>	<p>Use tablets confidently for a range of purposes.</p>

	<p>Draw comparisons across different computer types.</p> <p>Understand that networks connect to the internet via a router.</p>	<p>Gather and record data to help in making predictions.</p>
<p><b>Networks and Data Representation</b></p>	<p>Recognise the key components of a network.</p> <p>Identify the key components within a network.</p> <p>Recognise the links between networks and the internet.</p> <p>Explain that websites are split into small pieces (packets) to be sent via the internet.</p> <p>Recognise that a network is two or more devices connected.</p> <p>Explain how information moves around a network and the role of the server.</p>	<p>Explain how computer networks provide multiple services.</p> <p>Recognise that computer networks provide communication and collaboration opportunities.</p>
<p><b>Computational Thinking</b></p>	<p>Have greater confidence when using decomposition.</p> <p>Perform repetition in programs.</p>	<p>Have greater confidence when using decomposition for certain purposes.</p> <p>Explain 'pattern recognition' and 'abstraction'.</p>

	<p>Use logical reasoning to explain how algorithms work and their purpose.</p> <p>Form algorithms independently.</p>	<p>Apply pattern recognition and abstraction to problems.</p> <p>Apply computational thinking to problems they face.</p>
<b>Programming</b>	<p>Explore, predict, test and explain more complex software.</p> <p>Make code more efficient with loop blocks.</p> <p>Apply existing code skills.</p> <p>Apply 'debugging' skills to a range of scenarios.</p>	<p>Create algorithms independently.</p> <p>Apply existing coding skills with greater confidence.</p> <p>Apply pattern recognition and abstraction skills.</p> <p>Make code more efficient with certain variables.</p>
<b><u>Computer Science</u></b>	<b>UKS2</b>	
	<b>Year 5</b>	<b>Year 6</b>
<b>Hardware</b>	<p>Explain how certain devices can be programmed.</p> <p>Describe the 'fetch, decode, execute' cycle.</p> <p>Explain the differences between ROM and RAM.</p> <p>Recognise how the size of the computer RAM affects data processing.</p>	<p>Explain clearly how computers have evolved over time.</p> <p>Apply their understanding of computers for design purposes.</p> <p>Have greater confidence with input or output devices.</p>

		<p>Recognise how computer corruption can occur when transferring data.</p> <p>Identify barcodes, QR codes and RFID (Radio Frequency Identification) and devices that can recognise these codes.</p>
<p><b>Networks and Data Representation</b></p>	<p>Use vocabulary associated with data, independently.</p> <p>Recognise that computers communicate and transfer data through binary code.</p> <p>Read and translate binary code and calculations.</p> <p>Explain that a pixel is the smallest element of a digital image.</p> <p>Recognise the difference in image file size.</p> <p>Describe how the data for digital images can be compressed.</p>	<p>Explain confidently how computer networks provide multiple services.</p>
<p><b>Computational Thinking</b></p>	<p>Have greater confidence when using decomposition independently, for a range of purposes.</p>	<p>Have greater confidence when using decomposition independently, for a range of purposes.</p>

	<p>Predict how software will work based on previous experiences.</p> <p>Form complex algorithms independently.</p>	<p>Form increasingly complex algorithms independently, for a range of purposes.</p>
<b>Programming</b>	<p>Program an animation.</p> <p>Tinker with programming software.</p> <p>Apply a range of programming commands.</p> <p>Use loops in programming confidently.</p> <p>Explain and solve debugging scenarios confidently.</p> <p>Apply existing coding skills with a high level of confidence.</p>	<p>Use debugging skills quickly and effectively.</p> <p>Evaluate code to understand its purpose.</p> <p>Predict code and adapt it to certain purposes.</p> <p>Tinker with programming software; adapt and use nested loops.</p> <p>Explain how to change a program for personalisation purposes.</p>

<b>Information Technology</b>	<b>EYFS</b>	
	<b>Nursery</b>	<b>Reception</b>
<b>Using Software</b>	<p>Interact with age-appropriate computer software with support.</p>	<p>Develop confidence when interacting with age-appropriate computer software independently.</p> <p>Use a simple online paint tool.</p>

		<p>Begin to edit photos using a device.</p> <p>Create content using device applications.</p>
<b>Using Data</b>	Sort and categorise objects.	<p>Represent, sort and categorise objects for data purposes.</p> <p>Explore branch databases through physical games.</p>
<b>Information Technology</b>	<b>KS1</b>	
	<b>Year 1</b>	<b>Year 2</b>
<b>Using Software</b>	<p>Develop mouse control.</p> <p>Explain how to take and edit photographs.</p> <p>Develop understanding of software tools.</p>	<p>Perform simple word processing skills.</p> <p>Have greater confidence with word processing software.</p> <p>Have greater confidence with animation software.</p> <p>Describe how to create and label images.</p>
<b>Using Email and Internet Searches</b>	<p>Use devices that are connected to the internet.</p> <p>Recognise how to download images from the internet safely.</p> <p>Recognise how the internet is responsible for connections with others.</p>	<p>Recognise how to search and download images safely and independently.</p> <p>Explain what online information is.</p>



<b>Using Data</b>	<p>Identify how technology can be used to represent data in different ways.</p> <p>Ask and answer questions about data.</p> <p>Represent data in different ways.</p>	<p>Have developing confidence when inputting and interpreting data.</p>
<b>Wider use of Technology</b>	<p>Recognise common uses of information technology (including beyond school).</p> <p>Identify some of the ways the internet can be used.</p>	<p>Have developing confidence when explaining how computers can be used in the wider world.</p>
<b><u>Information Technology</u></b>	<b>LKS2</b>	
	<b>Year 3</b>	<b>Year 4</b>
<b>Using Software</b>	<p>Explain how to take and edit photographs.</p> <p>Predict, test and explain elements of new software with developing confidence.</p>	<p>Predict, test and explain elements of new software with greater confidence.</p> <p>Explain how to work collaboratively with others when using software.</p>
<b>Using Email and Internet Searches</b>	<p>Explain how to log in and out of an email account.</p> <p>Explain how to send and receive an email with an attachment.</p>	<p>Perform an internet search for a range of purposes.</p> <p>Recognise the purpose of using specific keywords within an internet search.</p> <p>Recognise that not all information on the internet is accurate.</p>

<b>Using Data</b>	<p>Explain what is meant by 'field,' 'record,' and 'data.'</p> <p>Sort, filter and interpret data in a spreadsheet.</p> <p>Distinguish between paper and computerised databases.</p>	Gather, record and sort data in a spreadsheet independently.
<b>Wider use of Technology</b>	<p>Explain the purpose of sending and receiving emails for communication purposes.</p> <p>Recognise how social media platforms are used to interact with others.</p>	Explore how software can be used to collaborate with others.
<b><u>Information Technology</u></b>	<b>UKS2</b>	
<b>Using Software</b>	<b>Year 5</b>	<b>Year 6</b>
	<p>Use logical thinking to explore software more independently.</p> <p>Apply previous knowledge to explore new software more independently.</p> <p>Identify ways to edit and improve programs.</p>	<p>Use logical thinking to explore software more independently, iterating ideas and testing continuously.</p> <p>Apply previous knowledge to explore new software more independently.</p> <p>Perform word processing skills with confidence.</p>

<b>Using Email and Internet Searches</b>	<p>Have greater confidence when performing an internet search for a range of purposes.</p> <p>Have developing confidence in how to search engines effectively.</p>	<p>Explain how search engines work, with confidence.</p>
<b>Using Data</b>	<p>Explain how data is collected in certain locations (in remote places etc).</p> <p>Explain how data may be used for location purposes.</p>	<p>Gather, record, analyse and sort data in a spreadsheet independently and confidently.</p> <p>Explain how to create formulas in a spreadsheet.</p> <p>Apply understanding of barcodes, QR codes and RFID (Radio Frequency Identification).</p>
<b>Wider use of Technology</b>	<p>Explore how software can be used to collaborate with others.</p> <p>Explore how different methods of communication have developed through the use of technology.</p>	<p>Recognise links between the Internet of Things and Big Data.</p> <p>Explain how 'big data' can be used to solve a problem or improve efficiency.</p>

<u>Digital Literacy</u>	<b>EYFS</b>	
	<b>Nursery</b>	<b>Reception</b>
	<p>Recognise that a range of technology is used in places such as homes and schools.</p>	<p>Access, interact and understand a range of technologies.</p>

	<p>Discuss the benefits of 'low technologies' in households.</p> <p>Recognise what safe use of technology looks like.</p> <p>Develop awareness of how to stay safe in social situations.</p> <p>Develop online safety awareness through storytelling.</p> <p>Ask and answer basic questions about online safety.</p>	<p>Have greater confidence when understanding what safe use of technology looks like.</p> <p>Have greater confidence with online safety through storytelling.</p> <p>Ask and answer questions about online safety.</p> <p>Explore the concept of logging in and out.</p> <p>Find and retrieve appropriate information from the internet, with adult support.</p>
	<b>KS1</b>	
	<b>Year 1</b>	<b>Year 2</b>
<b><u>Digital Literacy</u></b>	<p>Explain how to log in and out on a device securely.</p> <p>Explain how to save work securely on a device.</p> <p>Respond in the correct way when faced with something that worries them online.</p> <p>Recognise what a 'digital footprint' is and how to be careful about what we post.</p> <p>Understand how to interact safely with others online.</p>	<p>Explain how to create a strong password and the importance of this.</p> <p>Explain the importance of staying safe when talking to people online.</p> <p>Respond in the correct way when they may see or hear something online that makes them feel upset or uncomfortable.</p> <p>Recognise how to be respectful of others when sharing online.</p>

	Recognise how actions on the internet can affect others.	Recognise the importance of asking for permission before sharing content online.  Identify strategies when distinguishing between 'fake news' and real news.
	<b>LKS2</b>	
	<b>Year 3</b>	<b>Year 4</b>
<b><u>Digital Literacy</u></b>	<p>Explain what 'cyberbullying' is and the importance of responding to this in the correct way. Recognising that different information is shared online including facts, beliefs and opinions.</p> <p>Recognising an email that may not be genuine and responding to this in the correct way.</p> <p>Identify reliable information when searching online.</p> <p>Explain how to stay safe on social media.</p> <p>Recognise the impact that technology and 'screen time' can have on mood.</p>	<p>Recognise and distinguish between 'trustworthy' and 'untrustworthy' sources. Explain how to make judgements about the accuracy of online searches.</p> <p>Identify forms of advertising online and the impact this may have.</p> <p>Recognise what appropriate behaviour is when collaborating with others online.</p> <p>Identify respectful and disrespectful online behaviour and respond to this sensibly.</p> <p>Evaluate the positives and negatives of time spent online.</p>
	<b>UKS2</b>	
	<b>Year 5</b>	<b>Year 6</b>

**Digital Literacy**

Identify possible dangers online and actions to take to avoid these where possible.

Evaluate pros and cons of online communication.

Recognise what is considered as 'fake news' and the importance of checking validity.

Explain confidently what 'cyberbullying' is and the importance of responding to this in the correct way.

Explain how to use an online community safely and confidently.

Explain the importance when asking for permission before sharing content online, and the negative impact this could potentially have.

Recognise how to create a positive online reputation.

Recognise the importance of secure passwords and how to create them.

Use search engines effectively and safely.  
Recognise that updated software can help prevent data corruption and hacking.

Explore how to capture evidence of potential online bullying claims and the importance of this.