The 3 Key Computing Skills: Computer Science   Information Technology (IT)   Digital literacy

Our Curriculum

	Unit 1 - Autumn Term	Unit 2 - Spring Term	Unit 3 - Summer Term
Year 1	Programming 1 - Algorithms unplugged *No devices (unplugged)* Recognising that some devices are input devices and others are output devices. Learning that decomposition means breaking a problem down into smaller parts. Using decomposition to solve unplugged challenges. Developing the skills associated with sequencing in unplugged activities. Following a basic set of instructions. Assembling instructions into a simple algorithm. Learning to debug instructions when things go wrong. Learning to debug an algorithm in an unplugged scenario.	Programming 2 - Programming: Bee-Bot *Beebots, iPads to record* Learning how to explore and tinker with hardware to find out how it works. Learning how to operate a camera to take photos and videos. 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. Programming a floor robot (Bee-Bot) to follow a planned route. Learning to debug instructions when things go wrong. Using programming language to explain how a floor robot works. Learning to debug an algorithm in an unplugged scenario. Taking and editing photographs.	Data Handling - Introduction to data *iPads* Learning how to explore and tinker with hardware to find out how it works. Recognising that some devices are input devices and others are output devices. Learning where keys are located on the keyboard. Developing control of the mouse through dragging, clicking and resizing of images to create different effects. Developing understanding of different software tools. Recognising devices that are connected to the internet. Understanding that technology can be used to represent data in different ways: pictograms, tables, pie charts, bar charts, block graphs etc. Using data representations to answer questions about data. Using software to explore and create pictograms and branching databases

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Year 2	Computing systems and networks 1 - What is a computer?	Programming 1 - Algorithms and debugging	Creating Media - Stopmotion: Using tablet devices
	iPads	*iPads*	*iPads*
	Understanding what a computer is and that it's made up of different components.	Developing confidence with the keyboard and the basics of touch typing.	Using greater control when taking photos with cameras, tablets or computers.
	Recognising that buttons cause effects and that technology follows instructions.	Articulating what decomposition is.	Using logical thinking to explore software, predicting, testing and explaining what it does.
	Learning how we know that technology is doing what we want it to do via its output.	Decomposing a game to predict the algorithms used to create it.	Using software (and unplugged means) to create story animations.
	Using greater control when taking photos with cameras, tablets or computers.	Learning that there are different levels of abstraction.	
	Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.	Explaining what an algorithm is.	
	Using word processing software to type and reformat text.	Following an algorithm.	
	Creating and labelling images.	Creating a clear and precise algorithm.	
	Learning how computers are used in the wider world.	Learning that programs execute by following precise instructions.	
		Incorporating loops within algorithms.	
		Using logical thinking to explore software, predicting, testing and explaining what it does.	
		Using an algorithm to write a basic computer program.	
		Developing word processing skills, including altering text, copying and pasting and using keyboard shortcuts.	

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Year 3	Computing systems and networks 2 - Google: Emailing	Programming - Programming: Scratch	Creating Media - Video trailers: Using iPads
	Laptops	*iPads*	*iPads*
	Learning to log in and out of an email account.	Using decomposition to explore the code behind an animation.	Using logical thinking to explore more complex software; predicting, testing and explaining what it does.
	Writing an email including a subject, 'to' and 'from'.	Using repetition in programs.	Taking photographs and recording video to tell a story.
	Sending an email with an attachment.	Use logical reasoning to explain how simple algorithms work.	Using software to edit and enhance their video adding music, sound and text on screen with transitions.
	Replying to an email.	Explaining the purpose of an algorithm.	
	Understanding the purpose of emails.	Forming algorithms independently.	
	Learning about cyberbullying.	Using logical thinking to explore more complex software; predicting, testing and explaining what it does.	
	Learning that not all emails are genuine, recognising when an email might be fake and what to do about it.	Incorporating loops to make code more efficient.	
		Continuing existing code.	
		Making reasonable suggestions for how to debug their own and others' code.	

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Year 4	Data Handling - Investigating weather: Google *Laptops, green screen*	Programming 1 - Further coding with scratch: Google *Laptops*	Computing systems and networks - Collaborative learning: Google *Laptops*
	Using tablets or digital cameras to film a weather forecast.	Using decomposition to solve a problem by finding out what code was used,	Understanding that computer networks provide multiple services, such as the World Wide Web, and opportunities for communication and collaboration.
	Understanding that weather stations use sensors to gather and record data which predicts the weather.	Using decomposition to understand the purpose of a script of code.	Using online software for documents, presentations, forms and spreadsheets.
	Using keywords to effectively search for information on the internet.	Creating algorithms for a specific purpose.	Using software to work collaboratively with others.
	Searching the internet for data.	Coding a simple game.	Understanding that software can be used collaboratively online to work as a team.
	Designing a device which gathers and records sensor data.	Incorporating variables to make code more efficient.	Recognising what appropriate behaviour is when collaborating with others online.
	Recording data in a spreadsheet independently.	Remixing existing code.	
	Sorting data in a spreadsheet to compare using the 'sort by…' option.		
	Understanding that data is used to forecast weather.		

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Year 5	Programming - Programming music: Scratch	Data Handling - Mars Rover 1	Computing systems and networks - Bletchley Park: Google
	Laptops	*Laptops*	*Laptops*
	Predicting how software will work based on previous experience.	Learning that external devices can be programmed by a separate computer.	Learning about the history of computers and how they have changed over time.
	Writing more complex algorithms for a purpose.	Recognising how the size of RAM affects the processing of data.	Using past experiences to help solve new problems.
	Iterating and developing their programming as they work.	Learning the vocabulary associated with data: date and transmit.	Writing increasingly complex algorithms for a purpose.
	Confidently using loops in their programming.	Recognising that computers transfer data in binary and understanding simple binary addition.	Debugging quickly and effectively to make a program more efficient.
	Using a more systematic approach to debugging code, justifying what is wrong and how it can be corrected.	Relating binary signals (Boolean) to the simple character-based language, ASCII.	Remixing existing code to explore a problem.
	Writing code to create a desired effect.	Learning that messages can be sent by binary code, reading binary up to 8 characters and carrying out binary calculations.	Changing a program to personalise it.
	Using a range of programming commands.	Understanding how data is collected in remote or dangerous places.	Evaluating code to understand its purpose.
	Using repetition within a program.	Understanding how data might be used to tell us about a location.	Predicting code and adapting it to a chosen purpose.
	Amending code within a live scenario.	Learn about different forms of communication that have developed with the use of technology.	Using search and word processing skills to create a presentation.
	Using logical thinking to explore software more independently, making predictions based on their previous experience.		Understanding how search engines work.
	Using a software program (Scratch) to create music.		Understanding the importance of secure passwords and how to create them.
	Identify ways to improve and edit programs, videos, images etc.		Using search engines safely and effectively.

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| **Year 6** | Creating media - History of computers: Google *Laptops*
Learning about the history of computers and how they have changed over time.
Using the understanding of historic computers to design a computer of the future.
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 media - Stop motion animation *iPads*
Decomposing animations into a series of images.
Decomposing a story to be able to plan a program to tell a story.
Using video editing software to animate. | Programming 2 - Micro:bit *Micro:bits*
Decomposing a program without support.
Predicting how software will work based on previous experience.
Writing more complex algorithms for a purpose.
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.
Using logical thinking to explore software more independently, making predictions based on their previous experience.
Identify ways to improve and edit programs, videos, images etc. |

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Year Group	Online Safety Skills
Year 1	Recognising devices that are connected to the internet. Understanding that we are connected to others when using the internet. Understanding some of the ways we can use the internet. Recognising common uses of information technology, including beyond school. 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. To be able to recognising what a digital footprint is and how to be careful about what we 'post'
Year 2	Identifying whether information is safe or unsafe to be shared online. Learning how to create a strong password. 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. 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.
Year 3	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.
Year 4	Understanding why some results come before others when searching. Understanding that information found by searching the internet is not all grounded in fact. Learning to make judgments about the accuracy of online searches. Identifying forms of advertising online. Reflecting on the positives and negatives of time online. Identifying respectful and disrespectful online behaviour. Recognising that information on the internet might not be true or correct and that some sources are more trustworthy than others.
Year 5	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.
Year 6	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. Recognising that updating software can help to prevent data corruption and hacking.