Computing
Key Strands - Progression from EYFS through to Year 6

Strand	EYFS	Year 1 & 2	Year 3 & 4	Year 5 & 6
Computer Science	*Explore and use a range of technology for different purposes e.g. simple programmable toys. Using simple language and communication skills when interacting with devices or with peers during digital play*	*understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. create and debug simple programs. use logical reasoning to predict the behaviour of simple programs.*	*design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. use sequence, selection, and repetition in programs; work with variables and various forms of input and output. use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs*	
	Topics: Programming - Beebots	Topics: Programming A - Moving a robot (Y1) Programming B - Programming animations (Y1) Programming A - Robot algorithms (Y2) Programming B - Programming quizzes (Y2)	Topics: Programming A – Sequencing sounds (Y3) Programming B – Events and actions in programs (Y3) Programming A – Repetition in shapes (Y4) Programming B – Repetition in games (Y4)	Topics: Programming A – Selection in Physical computing (Y5) Programming B – Selection in quizzes (Y5) Programming A – Variables in Quizzes (Y6) Programming B – Sensing Movement (Y6)
Key Questions	**1. Exploring and using technology for different purposes:** • What kind of technologies do you like to use in your daily life? • How do you use them? • How can we use different tools and devices to help us learn or play? • Can you show me how to make this toy or device work? • What happens when you press this button? • What happens if we press the buttons in a different order? • How can technology help us solve a problem or complete a task? **2. Using simple programmable toys:** • What do you think will happen if we tell the toy to move in a certain direction? • How do you program the toy to follow a path or do something specific? • What is the next step when you want the toy to do something new? • What happens if the toy doesn't do what you expect? • How can we fix it? **3. Using simple language and communication skills:** • Can you explain how you used the device or toy to a friend or adult? • How do you ask the toy to do something? • What words or actions do you use? • How can we help each other when we're using these toys or devices? • What words or phrases help us understand what the device is doing? • Can you share what happened when you and your friend worked together to solve a problem with technology?	**1. Understanding what algorithms are:** • What do you think an algorithm is? Can you describe it in your own words? • How do you think an algorithm helps us solve problems? • Can you think of an example of an algorithm in your everyday life? • How would you give someone step-by-step instructions to do something, like making a sandwich or tying your shoes? **2. How algorithms are implemented as programs on digital devices:** • What happens when we type or give instructions to a computer or tablet? • How do you think a program follows the instructions we give it? • Can you think of a program you've used that follows certain steps, like a game or an app? What happens when you follow the steps? • How do we tell a device exactly what to do so it works correctly? **3. Programs execute by following precise and unambiguous instructions:** • What do you think happens if we give the computer unclear instructions? • Why is it important to be clear and specific when we create instructions for a program? • If we make a mistake in the instructions, what do you think will happen when the program runs? **4. Creating and debugging simple programs:** • How would you tell the computer to do something using a sequence of instructions? • What do you do if the program doesn't work the way you expected? How can we fix it? • Can you think of a mistake you might make when coding? How would you find and fix that mistake? • How do you know if a program is working correctly? Can you test it? **5. Using logical reasoning to predict the behaviour of simple programs:** • What do you think will happen if we change one part of the program? • Can you predict what will happen if we follow these steps in this order? • What do you think will happen if we add a new instruction to the program? • If the program isn't behaving as expected, how can we figure out why it's not working?	**1. Designing and Writing Programs:** • What is the purpose of this program, and what specific goal do we want it to accomplish? • How can we break down a complex problem into smaller, more manageable parts (decomposition)? • Which programming constructs (sequence, selection, repetition) do we need to use to solve the problem? • How will we use variables to store and manipulate data? • What forms of input will the program need (keyboard, mouse, sensor, etc.), and how will we handle this input? • What types of output will the program produce (e.g., text, images, sounds), and how can we display or use this output effectively? **2. Debugging and Logical Reasoning:** • What errors might occur in our program, and how can we identify them? • How can we test our program to check if it works as expected? • What steps can we take to fix bugs or errors when they appear? • How does the use of logical reasoning help us understand and explain how an algorithm works? • If the program isn't working, what specific part of the algorithm or code could be wrong, and how can we fix it? • How can we use the process of trial and error to test and refine our program? • What tools or techniques can we use to help us debug (e.g., print statements, breakpoints)? **3. Using Logical Reasoning:** • What assumptions are we making about the data and how can we check them? • How do we know if an algorithm will always give the correct result? • How can we improve the efficiency of our program by using different algorithms or optimizing our code?	

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Information Technology	*Explore and use a range of technology for different purposes, such as: Computers or tablets to access learning games or activities, Cameras and other digital devices, Smartboards and other interactive displays*	*use technology purposefully to create, organise, store, manipulate and retrieve digital content*	*select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information*	
	Doodle buddy creating pictures Word processing - Add own name to a Christmas card Basic skills Word processing Revelation natural art- link to Geography weather Mouse control skills	Data and Information – Grouping Data (Y1) Data and information – Pictograms (Y12) Creating Media – Digital painting (Y1) Creating Media – Digital writing (Y1) Creating Media – Digital Photography (Y2) Creating Media – Digital Music (Y2)	Data and information – Branching databases (Y3) Data and Information – Data Logging (Y4) Creating Media – Photo Editing (Y4) Creating Media – Stop frame animation (Y3) Creating media – Desktop Publishing (Y3) Creating Media – Audio Production (Y4)	Data and Information – Flat-file Databases (Y5) Data and Information – Introduction to spreadsheets (Y6) Creating Media – Video Production (Y5) Creating Media – Introduction to vector graphics (Y5) Creating Media – Web page creation (Y6) Creating Media – 3D Modelling (Y6)
Key Questions	**1. Exploring Technology:** • What happens when you press this button on the tablet/computer? • Can you show me how to open a game or activity on this device? • How can we use this camera to take a picture or a video? • What happens if we touch the screen of the smartboard? • Can you find the app that helps us learn about numbers/letters/animals? • How does the tablet/computer help you learn new things? • What happens when you move your finger on the screen (or use a mouse/trackpad)? **2. Using Technology for Different Purposes:** • How can you use the camera to take a photo of something important? • What picture can you draw on the smartboard? • How do you play a game on the tablet that helps you learn? • Can you use the computer or tablet to find a video about your favorite animal? • How can we use the interactive display (smartboard) to play a game or do an activity together? • What can you use the tablet for if you want to watch a story or listen to a song? • How can you show your learning to others using technology (e.g., taking a photo of your artwork or showing a video)? **3. Understanding Technology:** • What is the difference between pressing a button on the tablet and tapping the screen? • Can you tell me what the picture on the screen means? • How does the computer/tablet make sounds or show pictures when you touch or press things? • What is the smartboard used for? How do we interact with it? • What happens if you swipe your hand across the screen on the tablet?	**1. Creating Digital Content:** • How can we use a computer or tablet to draw a picture or create something new? • What happens if you add a new shape or color to your digital artwork? • Can you type your name or a message using the keyboard? • How can you add text to your work on the screen? • What tools can you use to create a story or a presentation on the computer? **2. Organizing and Storing Digital Content:** • Where do you think your work is saved on the computer? • Can you find the file you saved earlier? • How do you save your picture or document so you can come back to it later? • What's the difference between saving your work and opening it again later? • How do you organize your files so they are easy to find? **3. Manipulating Digital Content:** • How can you change the color or size of something in your digital picture? • What happens if you move this picture or text around on the screen? • How can you make your text bigger or change the font? • What happens when you copy and paste something on the screen? • Can you resize your image or adjust it in any way to make it look different? **4. Retrieving Digital Content:** • How do you find the picture or document you worked on yesterday? • Can you search for a file you saved earlier? • How do you open a saved file to make changes to it? • How do you use the computer to open a game or activity you like to play? • Can you find your saved artwork or writing and share it with someone else?	**1. Selecting and Using Software:** • Which software or tool will help you accomplish the task you need to do (e.g., creating a game, making a presentation, or analyzing data)? • How do you choose the best program for your project (e.g., drawing, writing, programming, or creating a website)? • What features does this software have that will help you reach your goal? • How do you use a variety of programs together to create something? For example, can you combine a word processor and a graphics tool? • How can you use the internet to find tools or services that help with your project (e.g., creating a survey or learning about a topic)? **2. Designing and Creating Programs, Systems, and Content:** • What do you want your program, system, or content to do, and how can you plan your design to achieve this goal? • Can you break down the steps needed to create your program or system? • How will you use the software to design or create your content (e.g., adding text, images, sound, or interactive features)? • How can you test and improve your program or content to make sure it works as planned? • How can you combine different types of media (e.g., images, text, sound, video) in your project to make it more engaging or informative? **3. Collecting, Analyzing, and Presenting Data:** • What data do you need to collect, and how will you gather it (e.g., through surveys, experiments, or internet research)? • How can you organize the data you collect (e.g., using tables, spreadsheets, or graphs)? • What tools can you use to analyze the data and identify trends or patterns? • How can you present your findings clearly and effectively (e.g., using charts, graphs, presentations)? • How can you use software to evaluate your data, and what conclusions can you draw from it? • Can you explain how the data you've collected helps answer a question or solve a problem? **4. Evaluating and Improving Content:** • How can you check if your program, system, or content meets the goal you set out to achieve? • What feedback have you received, and how can you use it to improve your work? • What changes can you make to improve your project based on how it works or how others interact with it? • How can you assess whether the data you collected is accurate and useful? • What could you do differently next time to make your project better?	

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<table>
<tr><td rowspan="2">Digital Literacy</td><td>Recognize and describe technology in their everyday lives, such as mobile phones, household appliances, or machines they encounter.

Listening and speaking when engaging with educational technology</td><td>recognise common uses of information technology beyond school</td><td colspan="2">understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration

use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</td></tr>
<tr><td>To name technology around us

Familiarisation</td><td>Computer Systems and Networks - Technology around us (Y1)

Computer systems and Networks – IT around us (Y2)</td><td>Computing systems and networks - Connecting Computers (Y3)

Computing systems and networks – The internet (Y4)</td><td>Computing systems and networks – Systems and searching (Y5)

Computing systems and networks – Communication and Collaboration (Y6)</td></tr>
<tr><td>Key questions</td><td>1. Recognizing and Describing Technology:
What do you think this machine does? How does it help us? (e.g., referring to household appliances like a washing machine, microwave, or fridge)
Can you name some things you see around the house that are technology? What do they do?
What happens when you press this button on the TV or remote control?
Have you seen a phone before? What do you think it is used for?
How does the computer/tablet help us learn or play?
What other types of technology do you see at school or at home? Can you describe them?
Can you think of a time when you used a tablet or phone? What did you do with it?
What sounds can you hear when we use this device? How do we know it's working?
2. Listening and Speaking with Educational Technology:
What did the computer or tablet ask you to do next in the game?
Can you listen carefully to the instructions the computer gives you and repeat them?
What happens when you talk to this device (like a voice assistant)? What does it do?
Can you follow the steps the educational game or app tells you?
What did you learn from the video or story you listened to on the tablet?
How can you tell if the instructions in the game or on the app are correct?
What questions do you have after listening to the activity or game?
Can you talk about what you've done on the tablet or computer with your friends or teachers?</td><td>1. Recognizing Information Technology in the Wider World:
Can you think of any technology we use at home? What do they help us do?
Have you seen a phone or tablet being used outside of school? What do people use them for?
What kinds of technology do you see when you go shopping or visit places like the supermarket?
What are some things technology can do in our homes? For example, how does a microwave or washing machine work?
How do you think technology helps people at work? What kind of technology do they use?
What are some ways you've seen people use the internet outside of school (e.g., for shopping, finding information, or talking to friends)?
What kinds of technology do you see when you watch TV or listen to music?
Can you think of any games or apps you can use outside of school? What do they help you learn or do?
How do you use a phone or tablet to watch videos or play games?
What are some things technology can do to help people stay in touch with family and friends?</td><td colspan="2">1. Understanding Computer Networks and the Internet:
What is the internet, and how does it connect people and computers around the world?
Can you explain what a computer network is and how it helps us share information?
How does the World Wide Web (WWW) work? What can we do on the web?
What is the difference between the internet and the World Wide Web?
How do you think emails, messages, and videos travel across the internet?
How can we use the internet to communicate with people, for example, through emails, video calls, or social media?
What are some ways we can work together on the internet, like collaborating on documents or projects?
What are some examples of services the internet provides, like video streaming, games, or news?
How can the internet help us learn new things, find information, or discover new ideas?
2. Using Search Technologies Effectively:
How do you use a search engine to find information on the internet?
What kind of words or phrases do you need to type into a search engine to get the best results?
Can you explain what happens when you type something into a search engine? How do the results show up?
How do search engines decide which websites show up first in the search results?
Why do you think some search results are more helpful than others?
What can you do to make sure the information you find online is reliable and accurate?
What should you do if you find conflicting information when searching the web?
How can you narrow down your search to find more specific or detailed information?
Why is it important to check who created a website or article before trusting the information on it?
3. Evaluating Digital Content:
How do you know if a website is trustworthy or safe to use?
What clues can you look for to decide if information you find online is accurate?
How can you tell if an online source is biased or unreliable?
What should you do if you see something inappropriate or untrue on the internet?
Why is it important to only use information from trusted websites or experts?
How can you decide whether a digital source (like a video or blog) is good for your project or research?
What should you do before you share information you found online with others?</td></tr>
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E-Safety	*safe, responsible use of technology, including understanding how to stay safe when interacting with devices, respecting privacy, and communicating appropriately online*	*use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.*	*use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.*	
	Chicken Clickin – How to be safe online	National Computer Security Day Safer Internet Day Digital Wellbeing (PSHE)	National Computer Security Day Safer Internet Day Digital Wellbeing (PSHE)	National Computer Security Day Safer Internet Day Digital Wellbeing (PSHE) Snap Trap theatre
Key questions	**1. Safe Use of Technology:** • What should you do if you see something on the screen that makes you feel uncomfortable or scared? • Why is it important to ask an adult before you use a new app or website? • What should you do if you don't know how to use a device safely? • What can you do to make sure you're sitting in a good position when using the computer or tablet? • How can you protect your eyes when you use a screen for a long time? • Why should you take breaks when using a tablet or computer? **2. Respecting Privacy:** • What does "privacy" mean, and why is it important to keep your personal information private? • What kinds of information should you keep to yourself when using a device (e.g., your name, where you live, your phone number)? • Why should you not share your password with others? • Can you tell an adult if you see something online that isn't safe? • Why is it important to keep your pictures and videos private and only share them with trusted people? **3. Communicating Appropriately Online:** • What is a good way to talk to people when using the computer or tablet? • How do we say "please" and "thank you" when we talk to others online, just like we do in person? • What should you do if you receive a message or email from someone you don't know? • What is the right thing to do if someone says something that makes you feel sad or upset online? • Why is it important to be kind and respectful when we talk to others on the internet? • How can you make sure you're only communicating with people you trust when using technology?	**1. Using Technology Safely and Respectfully:** • Why is it important to be kind and respectful when talking to people online? • What should you do if someone is being unkind to you online? • How can you make sure that you are being safe when using the internet or playing games online? • What are some ways we can show respect when we share things online, like pictures or videos? • Why is it important to use polite words and be friendly when chatting online? **2. Keeping Personal Information Private:** • What kind of information should you keep private when using technology? (e.g., your full name, address, phone number) • Why shouldn't you share your password with anyone, even if they ask you? • Can you explain why it's important to keep your personal information safe when using devices or the internet? • How do we know when it's okay to share information online and when it's not safe? • What kind of information might be safe to share online, and what should always be kept private? **3. Knowing Where to Go for Help and Support:** • If something on the internet makes you feel worried or scared, who can you talk to? • What should you do if you see something on the screen that doesn't seem right or makes you feel upset? • If you get a message from someone you don't know, what should you do? • Where can you go to ask for help if you're not sure about something online? • Who can you talk to if you are unsure whether a website or an app is safe to use? • Why is it important to tell an adult if something on the internet makes you feel uncomfortable?	**1. Using Technology Safely, Respectfully, and Responsibly:** • What does it mean to use technology responsibly? Can you give an example? • Why is it important to respect others when communicating online? • How can you show respect to others when you're gaming or chatting online? • What should you do if you notice someone being unkind to others online? • Why should we be careful with what we post or share on the internet? • How do you balance your time online to make sure you're also doing other things like playing outside or reading? **2. Recognizing Acceptable and Unacceptable Behavior:** • What is acceptable behavior when using the internet or communicating online? • Can you think of some examples of unacceptable behavior online, such as cyberbullying or sharing personal information without permission? • Why is it important to think before we send a message or comment online? • What should you do if someone sends you a message or comment that makes you feel uncomfortable or upset? • How can we encourage others to behave kindly and responsibly online? **3. Reporting Concerns About Content and Contact:** • If you see something online that makes you feel worried or uncomfortable, what should you do? • What is the first thing you should do if someone you don't know contacts you online? • Where can you report inappropriate content or contact you encounter online? • How can you report someone who is being unkind or bullying you or others online? • What can you do if you come across content online that seems inappropriate, harmful, or upsetting? • Why is it important to talk to a trusted adult or teacher if you have concerns about something you've seen or experienced online? • How can you use privacy settings or other tools to help keep yourself safe online?	