Computing Curriculum: Skills Progression by Year Group

	Computer Science **Coding and Computational Thinking**	Information Technology **Spreadsheets; Art and Design/Music; Databases and Graphing; Writing & Presenting**	Digital Literacy **Internet and Email; Communication and networks**
Year 1	* Understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. Know that an algorithm written for a computer is called a program. * Work out what is wrong with a simple algorithm when the steps are out of order, and write their own simple algorithm. * Know that an unexpected outcome is due to the code they have created and make logical attempts to fix the code. * When looking at a program, read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program, including making predictions about the outcomes.	* Sort, collate, edit and store simple digital content. For example, name, save and retrieve their work and follow simple instructions to access online resources, including design modes or using pictogram software.	* Understand what is meant by technology and identify a variety of examples both in and out of school, making a distinction between objects that use modern technology and those that do not, for example, a microwave vs a chair. * Understand the importance of keeping information, such as usernames and passwords, private, and actively demonstrate this in lessons. * Take ownership of their work and save this in their own private space.
Year 2	* Explain that an algorithm is a set of instructions to complete a task. * Show an awareness of the need to be precise with their algorithms when designing simple programs, so that they can be successfully converted into code. * Create a simple program that achieves a specific purpose, identifying and correcting some errors. * Display a growing awareness of the need for logical, programmable steps. * Identify the parts of a program that respond to specific events and initiate specific actions. For example, write a cause and effect sentence of what will happen in a program.	* Demonstrate an ability to organise data using a database and retrieve specific data for conducting simple searches. * Edit more complex digital data. * Be confident when creating, naming, saving, and retrieving content. * Use a range of media in their digital content including photos, text and sound.	* Effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. * Make links between technology they see around them, coding and multimedia work they do in school, for example, animations, interactive code and programs. * Know the implications of inappropriate online searches. * Begin to understand how things are shared electronically, developing an understanding of using email safely and knowing ways to report inappropriate behaviours and content.

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Year 3	* Turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. * Identify an error within their program that prevents it following the desired algorithm, and then fix it. * Demonstrate the ability to design and code a program that follows a simple sequence. * Begin to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects in their programs. * Program designs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures, for example, 'if' statements, repetition and variables. * Understand how variables can be used to store information while a program is executing. * Make good attempts to 'step through' more complex code in order to identify errors in algorithms and correct this * 'Read' programs with several steps and predict the outcome with increasing accuracy.	* List a range of ways that the internet can be used to provide different methods of communication and begin to use some of these methods of communication, for example, being able to open, respond to and attach files to emails. * Describe appropriate email conventions when communicating in this way. * Collect, analyse, evaluate and present data and information using a selection of software. * Consider what software is most appropriate for a given task.	* Carry out simple searches to retrieve digital content and understand that to do this, they are connecting to the internet and using a search engine. * Demonstrate the importance of having a secure password and not sharing this with anyone else. * Explain the negative implications of failure to keep passwords safe and secure. * Understand the importance of staying safe online and the importance of their conduct when using familiar communication tools. * Know more than one way to report unacceptable content and contact.
Year 4	* Be able to turn a real-life situation into an algorithm by designing a program that meets the requirements of the task and incorporates coding structures for selection and repetition. * Make more intuitive attempts to debug their own programs. * Integrate timers into their program designs to achieve repetition effects. * Understand 'if statements' for selection and begin to combine these with other coding structures including variables to achieve the effects that they design in their programs. * Understand how variables can be used to store information while a program is executing, and manipulate the value of these variables. * Make use of user inputs and outputs such as 'print to screen'. * Trace code and use 'step through' methods to identify errors in code and make logical attempts to correct this. * 'Read' programs with several steps and predict the outcome accurately.	* Make improvements to digital solutions based on feedback. * Make informed software choices when presenting information and data. * Create linked content using a range of software. * Share digital content within their community.	* Recognise the main component parts of hardware which allow computers to join and form a network. * Develop understanding of the online safety implications associated with the ways the internet can be used to provide different methods of communication. * Explore key concepts relating to online safety. * Help others to understand the importance of online safety. * Understand the function, features and layout of a search engine. * Appraise selected webpages for credibility and information at a basic level. * Know a range of ways of reporting inappropriate content and contact.

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Year 5	* Attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. * Test and debug programs as they go and use logical methods to identify the approximate cause of any bug. * With support, identify the specific line of code for this process. * Translate algorithms that include sequence, selection and repetition into code with increasing ease. * Combine sequence, selection and repetition with other coding structures to achieve their algorithm design. * Begin to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables.	* Make appropriate improvements to digital solutions based on feedback received, and confidently comment on the success of the solution. * Objectively review solutions from others. * Collaboratively create content and solutions using digital features within software * Use several ways of sharing digital content.	* Understand the value of computer networks whilst also being aware of the main dangers. * Recognise what personal information is and explain how this can be kept safe. * Select the most appropriate form of online communications based on audience and digital content. * Have a secure knowledge of common online safety rules and apply this by demonstrating the safe and respectful use of a few different technologies and online services. * Search with greater complexity for digital content when using a search engine. * Explain in some detail how credible a webpage is and the information it contains. * Relate appropriate online behaviour to their right to personal privacy and the mental wellbeing of themselves and others.
Year 6	* Turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decompose them in a logical way using their knowledge of possible coding structures, applying skills from previous programs. * Test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem. * Translate algorithms that include sequence, selection and repetition into code. * Design their own code that utilises such structures, including nesting structures within each other. * Demonstrate an improving understanding of variables in coding: outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions. * Interpret a program in parts and make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole.	* Make clear connections to the audience when designing and creating digital content. * Design and create blogs to become a content creator on the internet. * Use criteria to evaluate the quality of digital solutions. * Identify improvements, making some refinements.	* Understand and explain in some depth the difference between the internet and the World Wide Web. * Know what a WAN and LAN are and describe how they access the internet in school. * Apply filters when searching for digital content. * Explain in detail how credible a webpage is and the information it contains. * Compare a range of digital content sources and rate them in terms of content quality and accuracy. * Use critical thinking skills in everyday use of online communication. * Demonstrate the safe and respectful use of a range of different technologies and online services. * Identify more discreet inappropriate behaviours through developing critical thinking. * Recognise the value in preserving their privacy when online for their own and other people's safety.