



Progression of Knowledge and Skills in Computing KS2

National Curriculum Objectives	Knowledge & Skills Progression				
Computer Science	Year 3	Year 4	Year 5	Year 6	Covered in
<p>Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p>	<p>Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts.</p> <p>Their design shows that they are thinking of the desired task and how this translates into code.</p> <p>Children can identify an error within their program that prevents it following the desired algorithm and then fix it</p>	<p>When turning a real-life situation into an algorithm, the children’s design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition.</p> <p>Children make more intuitive attempts to debug their own programs.</p>	<p>Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts.</p> <p>Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code.</p>	<p>Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs.</p> <p>Children 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.</p>	<p>3.1 Coding</p> <p>4.1 Coding</p> <p>4.5 Logo</p> <p>5.1 Coding</p> <p>6.1 Coding</p>
<p>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p>	<p>Children demonstrate the ability to design and code a program that follows a simple sequence.</p>	<p>Children’s use of timers to achieve repetition effects are becoming more logical and are</p>	<p>Children can translate algorithms that include sequence, selection and repetition into code with increasing ease</p>	<p>Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they</p>	<p>3.1 Coding</p> <p>4.1 Coding</p> <p>5.1 Coding</p>

	<p>They experiment with timers to achieve repetition effects in their programs.</p> <p>Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects.</p> <p>Children understand how variables can be used to store information while a program is executing.</p>	<p>integrated into their program designs.</p> <p>They understand ‘if statements’ for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs.</p> <p>As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables.</p> <p>Children can make use of user inputs and outputs such as ‘print to screen’. e.g. 2Code.</p>	<p>and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures.</p> <p>They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.</p>	<p>are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other.</p> <p>Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as text and the value of functions.</p>	6.1 Coding
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Children’s designs for their programs show that they are thinking of the structure of a program in logical,	Children’s designs for their programs show that they are thinking of the structure of a program in logical,	When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code	Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm	3.1 Coding 4.1 Coding 4.5 Logo 5.1 Coding

	<p>achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables.</p> <p>They make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this.</p>	<p>achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables.</p> <p>They can trace code and use stepthrough methods to identify errors in code and make logical attempts to correct this. e.g. traffic light algorithm in 2Code.</p> <p>In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.</p>	<p>later, e.g. the use of tabs to organise code and the naming of variables.</p>	<p>together to explain the program as a whole.</p>	<p>6.1 Coding</p>
<p>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.</p>	<p>Children can list a range of ways that the internet can be used to provide different methods of communication.</p> <p>They can use some of these methods of communication, e.g. being able to open, respond to and</p>	<p>Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.</p>	<p>Children recognise the main component parts of hardware which allow computers to join and form a network.</p>	<p>Children understand the value of computer networks but are also aware of the main dangers.</p> <p>Children understand and can explain in some depth the difference between the internet and the World Wide Web.</p>	<p>3.5 Email</p> <p>4.7 Effective Searching</p> <p>4.8 Hardware Investigators (in Y5)</p> <p>6.6 Networks</p>

	<p>attach files to emails using 2Email.</p> <p>They can describe appropriate email conventions when communicating in this way.</p>			<p>Children know what a WAN and LAN are and can describe how they access the internet in school.</p>	
Information Technology					
<p>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p>		<p>Children understand the function, features and layout of a search engine.</p> <p>They can appraise selected webpages for credibility and information at a basic level.</p>			<p>4.7 Effective Searching</p> <p><i>Through online research in other curriculum subjects.</i></p>
<p>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.</p>	<p>Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database such as 2Question).</p> <p>Children can consider what software is most appropriate for a given task.</p>	<p>Children are able to make improvements to digital solutions based on feedback.</p> <p>Children make informed software choices when presenting information and data.</p> <p>They create linked content using a range of software such as 2Connect and 2Calculate</p>	<p>Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief using 2Code.</p> <p>They objectively review solutions from others.</p>	<p>Children make clear connections to the audience when designing and creating digital content.</p> <p>They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.</p> <p>They use spreadsheets including formulae to work out</p>	<p>3.1 Coding 3.5 Email 3.6 Branching Databases</p> <p>4.1 Coding 4.3 Spreadsheets</p> <p>5.1 Coding 5.4 Databases 5.5 Game Creator</p> <p>6.1 Coding 6.3 Spreadsheets 6.7 Quizzing</p>

	They can create purposeful content to attach to emails, e.g. 2Respond.	Children share digital content within their community.	Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content.	solutions to real life problems.	
Digital Literacy					
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond.	Children know a range of ways of reporting inappropriate content and contact.	Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.	Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking. They recognise the value in preserving their privacy when online for their own and other people's safety.	3.5 Email Taught through the ongoing use of technology across the curriculum, including the PSHE scheme of work, ongoing dialogue in computing lessons and specific focused teaching during 'Keeping Safe' week