



## Progression of Skills and Knowledge

one page per year group

## Computing Skills in the Early Years

Computer Science	Information Technology	Digital Literacy
<p>Use simple coding to making toys work using buttons and switches.</p> <p>Put simple sequences in order and follow simple instructions.</p> <p>Plan and talk about a route for a friend, toy vehicle or a floor robot and make simple predictions about where it/they will end up.</p>	<p>Use touchscreen devices purposefully to make pictures, videos and music, record their voice digitally and playback the sounds.</p> <p>Take and open digital photographs.</p>	<p>Talk about and identify different ways that they can use technology around them both at home and in school.</p> <p>Understand why we need to take care with devices, plugs and wires.</p> <p>Know that their work belongs to them and what it means for something to be private.</p> <p>Talk about how their body feels if they are not comfortable with something and know who can help them if they are worried.</p>



# Computing Progression

## N.C. Statements KS1 Year 1

	Computer Science			Information Technology	Digital Literacy	
Statement	<p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p>	<p>Create and debug simple programs.</p>	<p>Use logical reasoning to predict the behaviour of simple programs.</p>	<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p>	<p>Recognise common uses of information technology beyond school.</p>	<p>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.</p>
Outcome	<p><i>Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand</i></p>	<p><i>Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code.</i></p>	<p><i>When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program.</i></p>	<p><i>Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash <b>2Quiz</b> example (sorting shapes), <b>2Code</b> design mode (manipulating backgrounds) or using pictogram software such as <b>2Count</b>.</i></p>	<p><i>Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.</i></p>	<p><i>Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.</i></p>

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Tel: +44(0)208 203 1781 | Email: support@2simple.com | Twitter: @2simplesoftware



# Computing Progression

## N.C. Statements KS1 Year 2

	Computer Science			Information Technology	Digital Literacy	
Statement	<p>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</p>	<p>Create and debug simple programs.</p>	<p>Use logical reasoning to predict the behaviour of simple programs.</p>	<p>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</p>	<p>Recognise common uses of information technology beyond school.</p>	<p>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.</p>
Outcome	<p><i>Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code.</i></p>	<p><i>Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug Challenges: Chimp. Children's program designs display a growing awareness of the need for logical, programmable steps.</i></p>	<p><i>Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.</i></p>	<p><i>Children demonstrate an ability to organise data using, for example, a database such as <b>2Investigate</b> and can retrieve specific data for conducting simple searches. Children are able to edit more complex digital data such as music compositions within <b>2Sequence</b>. Children are confident when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound.</i></p>	<p><i>Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. <b>2Publish example template</b>. Children make links between technology they see around them, coding and multimedia work they do in school e.g. <b>animations</b>, <b>interactive code</b> and <b>programs</b>.</i></p>	<p><i>Children know the implications of inappropriate online searches. Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using <b>2Respond</b> activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.</i></p>



# Computing Progression

## N.C. Statements KS2 Year 3

	Computer Science				Information Technology		Digital Literacy
Statement	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.	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.	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.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	<i>Children can 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. Children can identify an error within their program that prevents it following the desired algorithm and then fix it.</i>	<i>Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects.</i>	<i>Children's designs for their programs 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, repetition and use of timers. They make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. e.g. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.</i>	<i>Children can list a range of ways that the Internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way.</i>	<i>Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines.</i>	<i>Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond.</i>	<i>Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. They know more than one way to report unacceptable content and contact.</i>

# Computing Progression

## N.C. Statements KS2 Year 4

	Computer Science				Information Technology		Digital Literacy
Statement	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.	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.	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.	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	<i>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. Children make more intuitive attempts to debug their own programs.</i>	<i>Children's use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. 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. 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. Children can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code.</i>	<i>Children's designs for their programs 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. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.</i>	<i>Children recognise the main component parts of hardware which allow computers to join and form a network. 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.</i>	<i>Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level.</i>	<i>Children are able to make improvements to digital solutions based on feedback. Children make informed software choices when presenting information and data. They create linked content using a range of software such as <b>2Connect</b> and <b>2Publish+</b>. Children share digital content within their community, i.e. using Virtual <b>Display Boards</b>.</i>	<i>Children can explore key concepts relating to online safety using concept mapping such as <b>2Connect</b>. They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact.</i>