

Computing Progression of Skills



Computing in EYFS

The table below outlines the most relevant statements taken from the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for computing.

The most relevant statements for computing are taken from the following areas of learning:

- Personal, Social and Emotional Development
- Physical Development
- Understanding the World
- Expressive Arts and Design

In the EYFS, children are encouraged to select and use technology for a purpose e.g. taking a photograph or using a voice recorder. Children have a range of educational programmes that they have access to support learning. Children have access to a variety of computing devices such as Beebot, touch screen whiteboard, cd player, iPad, Toni Boxes, Yoto player etc. Children are taught about E Safety and the importance of keeping safe on the computer. Continuous Provision activities enable children to explore a range of technology throughout the year for the children to access, both independently and with an adult.

Nursery & Reception	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery 3-4 Year Olds	Super Duper Me	If You Go Down to the Woods Today...	Artic Adventure	Down in the Jungle	In the Garden	Splish, Splash, Splosh
	<p>Personal, Social and Emotional Development Managing Self With support, begin to follow classroom routines and rules.</p> <p>Physical Development Fine Motor Skills Use some one-handed tools and equipment.</p> <p>Understanding the World Natural World Begin to explore how things work.</p> <ul style="list-style-type: none"> • Model and introduce a range of technology e.g. the interactive whiteboard and microphone to record performances. <p>Implementation: Explain why safety is an important factor in handling tools and moving equipment and materials through</p>	<p>Personal, Social and Emotional Development Managing Self Increasingly follow classroom routines and rules (with reduced practitioner guidance/reminders).</p> <p>Physical Development Gross Motor Skills Begin to match developing physical skills to tasks and activities in setting</p> <p>Understanding the World Natural World Begin to explore how things work.</p> <ul style="list-style-type: none"> • Begin to learn how to use a Toni Box works. • Continue to use the Interactive Whiteboard and microphone recorder with support <p>Implementation: Explain why safety is an important factor in handling tools and moving equipment and materials through daily discussions.</p>	<p>Personal, Social and Emotional Development Managing Self Increasingly follow rules, understanding why they are important. Do not depend on an adult to remind them of a rule.</p> <p>Physical Development Gross Motor Skills Match developing physical skills to tasks and activities in setting. Choose the right resource to carry out chosen plan.</p> <p>Understanding the World Natural World Explore how things work.</p> <ul style="list-style-type: none"> • Continue to use a Toni Box works. • Continue to use the Interactive Whiteboard with support • Introduce children to the iPad Camera <p>Implementation:</p>			

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	<p>daily discussions. Children will be introduced to a range of technology and taught how to use them safely e.g. Interactive Whiteboard, microphone recorder.</p>		<p>Model using the Interactive Whiteboard to paint a scene. Use the microphone recorder to record and play back. Explain why we have rules and display a number of necessary rules as reminders. Safer Internet Day.</p>		<p>Explain why we have rules and display a number of necessary rules as reminders- E Safety. Explain why safety is an important factor in handling tools and moving equipment and materials through daily discussions. Encourage children to refer to books, wall displays and online resources. Provide the children with an iPad camera. Can they take photographs? Talk about the photographs to link learning.</p>	
Key Vocabulary	<p>Rules, safe, Interactive Whiteboard, mouse, play, stop, record, microphone, listen</p>		<p>Rules, safe, Interactive Whiteboard, mouse, play, stop, record, microphone, listen, paint, tool, Toni Box, E safety Day</p>		<p>Rules, safe, Interactive Whiteboard, mouse, play, stop, record, microphone, listen, paint, tool, Toni Box, computer, screen, iPad, camera, photograph</p>	
Reception	All About Me/Farmyard	Light and Dark	Journeys	Explorers	Animal Growth / Minibeasts	Under the Sea
	<p>Personal, Social and Emotional Development Self-Regulation Begin to set own goals and show resilience and perseverance in the face of challenge.</p> <ul style="list-style-type: none"> Be confident to try new activities and demonstrate a growing independence. I can wait a short amount of time for something I want e.g.: a computer loading / an App to work. I know how to complete a familiar task independently and with support will try new things. E.g.: a computer programme / Beebots. I can select tools and resources that I need to complete a task of my own choosing. <p>Physical Development Fine Motor Skills Continue to develop small motor skills so that they can use a range of tools competently, safely and confidently.</p> <ul style="list-style-type: none"> Daily Fine Motor opportunities. I know how to use an iPad or tablet appropriately. I know how to use my fingers on a touch screen, and control a mouse/touchpad on a computer. <p>Understanding the World</p>		<p>Personal, Social and Emotional Development Manging Self Know and talk about the different factors that support their overall health and wellbeing: sensible amounts of 'screen time', having a good sleep routine, being a safe pedestrian.</p> <ul style="list-style-type: none"> E safety, road safety. I know how to be safe online. <p>Physical Development Fine Motor Skills Develop small motor skills so that they can use a range of tools competently, safely and confidently.</p> <ul style="list-style-type: none"> Daily Fine Motor opportunities. I know how to use an iPad or tablet appropriately. I know how to use my fingers on a touch screen, and control a mouse/touchpad on a computer. <p>Understanding the World Natural World Begin to understand some important processes. Continue to use Beebot and a range of technology e.g.</p>		<p>Physical Development Fine Motor Skills Use a range of small tools, including scissors, paint brushes and cutlery.</p> <ul style="list-style-type: none"> Fine motor activities I know how to use an iPad or tablet appropriately. I know how to use my fingers on a touch screen, and control a mouse/touchpad on a computer. <p>Understanding the World Natural World Continue to use Beebot and a range of technology e.g. listening Centre, iPad, Microphone recorder, Yoto Box. Continue to use the Interactive Whiteboard to follow a simple programme.</p> <p>Expressive Arts and Design Creating with materials Explore, use and refine a variety of artistic effects to express their ideas and feelings.</p> <ul style="list-style-type: none"> Explore painting tools on the iPad and computer. Safely use a range of technology for a purpose. 	

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	<p>Natural World</p> <p>How things work</p> <p>Begin to use an iPad correctly and use the Interactive Whiteboard to follow a simple programme.</p> <p>Begin to use the listening centre and microphone recorder to listen to a story, press play and stop.</p> <p>Implementation: <i>Children will be introduced to a range of technology and taught how to use them safely e.g. I Pads, touch screen computer, listening center, Beebot, microphone recorder.</i> <i>Children will use Beebot to follow a map.</i> <i>Children learn about sensible amounts of screen time and e-safety.</i> <i>Numbots logins sent home.</i> <i>Children will use the listening center to a variety of songs and stories.</i> <i>Some carefully selected resources and programmes from Purple Mash will be used to support the implementation of our intended EYFS Curriculum.</i></p>	<p>listening Centre, iPad, Microphone recorder, Yoto Box.</p> <p>Begin to use the camera tool on an iPad.</p> <p>Continue to use the Interactive Whiteboard to follow a simple programme</p> <p>Implementation: <i>Children will use a range of technology and taught how to use them safely e.g. I Pads, touch screen computer, listening center, Beebot, microphone recorder, Yoto Box.</i> <i>Children will use Beebot to interact with map work.</i> <i>Children will take part in Safer Internet Day and learn about sensible amounts of screen time and e-safety.</i> <i>Children will use the listening center to a variety of songs and stories.</i> <i>Some carefully selected resources and programmes from Purple Mash will be used to support the implementation of our intended EYFS Curriculum.</i></p>	<p>Implementation: <i>Children will use a range of technology and taught how to use them safely e.g. I Pads, touch screen computer, listening center, Beebot, microphone recorder, Yoto Box. Children learn about sensible amounts of screen time and e-safety.</i> <i>Children will use Beebot to interact with map work. Children will record their own songs and performances from the role-play stage.</i> <i>Children will listen to a variety of stories and songs on the listening center.</i> <i>Some carefully selected resources and programmes from Purple Mash will be used to support the implementation of our intended EYFS Curriculum.</i></p>
<p>Key Vocabulary</p>	<p>Beebot, listening center, I Pad, computer, play, stop, safe, screen time, e-safety, online, internet, programe, record, play back, microphone, Purple Mash</p>	<p>Beebot, listening center, I Pad, computer, play, stop, safe, screen time, e-safety, online, internet, programe, record, play back, microphone, Yoto Box, Purple Mash, tools, mouse, E Safety Day, rules</p>	<p>Beebot, listening center, I Pad, computer, play, stop, safe, screen time, e-safety, online, internet, programe, record, play back, microphone, Yoto Box, Purple Mash, tools, mouse, screen, print out, rules</p>
<p>Early Learning Goals By the end of Reception children are expected to:</p>	<p>Personal, Social and Emotional Development</p> <p>Managing Self</p> <ul style="list-style-type: none"> • Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. • Explain the reasons for rules, know right from wrong and try to behave accordingly. <p>Expressive Arts and Design</p>		

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	Creating with Materials <ul style="list-style-type: none">• Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.
Mapping Curriculum Objectives <p>How the early learning goals feed into objectives from the Year 1 National Curriculum.</p>	Year 1 National Curriculum Objective <ul style="list-style-type: none">• 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.• Use technology purposefully to create, organise, store, manipulate and retrieve digital content.• Recognise common uses of information technology beyond school.• 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 technology.

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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 <u>2Quiz</u> example (sorting shapes), <u>2Code</u> design mode (manipulating backgrounds) or using pictogram software such as <u>2Count</u>.</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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N.C. Statements KS1 Year 2

		Computer Science		Information Technology	Digital Literacy		
S t a t e m e n t		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.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	Recognise common uses of information technology beyond school.	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.
	O u t c o m e	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.	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.	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.	Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches. Children are able to edit more complex digital data such as music compositions within 2Sequence . 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.	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. <u>2Publish example template</u> . Children make links between technology they see around them, coding and multimedia work they do in school e.g. <u>animations, interactive code and programs</u> .	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 <u>2Respond</u> activities on Purple Mash and know ways of reporting inappropriate behaviours and content to a trusted adult.

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N.C. Statements KS2 Year 3

		Computer Science				Information Technology		Digital Literacy
S t a t e m e n t		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.
	O u t c o m e	<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>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.</p>	<p>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.</p>	<p>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.</p>	<p>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.</p>	<p>Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (<u>2Question</u>), using software such as <u>2Graph</u>. Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. <u>2Respond</u>.</p>	<p>Children demonstrate the importance of having a secure password and not sharing this with anyone else.</p> <p>Furthermore, children can explain the negative implications of failure to keep passwords safe and secure.</p> <p>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.</p>

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N.C. Statements KS2 Year 4

		Computer Science				Information Technology		Digital Literacy
S t a t e m e n t		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.
	O u t c o m e		<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 <u>2Connect</u> and <u>2Publish+</u>. Children share digital content within their community, i.e. using <u>Virtual Display Boards</u>.</i>

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N.C. Statements KS2 Year 5

		Computer Science				Information Technology		Digital Literacy
S t a t e m e n t		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.
	O u t c o m e	Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. 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.	Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.	When children code, they are beginning 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	Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.	Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains.	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 . They objectively review solutions from others. 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, i.e. 2Blog, Display Boards and 2Email .	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.

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N.C. Statements KS2 Year 6

		Computer Science				Information Technology		Digital Literacy
S t a t e m e n t		<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>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</p>	<p>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</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>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</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>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.</p>
	O u t c o m e	<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. 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 <u>problem</u>.</p>	<p>Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as <u>button clicks and the value of functions</u>.</p>	<p>Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the <u>program as a whole</u>.</p>	<p>Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the <u>Internet in school</u>.</p>	<p>Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication.</p>	<p>Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the Internet, e.g. <u>2Blog</u>. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.</p>	<p>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, e.g. <u>2Respond</u> activities. They recognise the value in preserving their privacy when online for their own and other people's safety.</p>