

Early Years Computing Progression Map

Understanding the world

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

Links to Personal, Social, Emotional Development and Physical development

3 and 4 Year olds

Technology	<ul style="list-style-type: none"> To know how to operate simple equipment. To show an interest in technological toys with knobs or pulleys, or real objects. To show skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images. To know that information can be retrieved from computers.
PSED	<ul style="list-style-type: none"> Remember rules without needing an adult to remind them
Physical Development	<ul style="list-style-type: none"> Match their developing skills to tasks and activities in the setting – EG. Dials, switches, buttons
Understanding the world	<ul style="list-style-type: none"> Explore how things work.

Reception

Technology	<ul style="list-style-type: none"> To complete a simple program on a computer. To interact with age-appropriate computer software
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Early Learning Goals – To be used as a guide at the end of reception for a 'best fit' approach.

- To recognise that a range of technology is used in places such as homes and schools. To select and use technology for particular purposes.
- Managing self – explain the reasons for rules
- Fine motor skills – use a range of small tools
- Comprehension – anticipate – where appropriate – key events in stories
- Creating with materials – safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function
- Share their creations, explaining the process they have used.

KS1 and KS2 Computing Progression Map

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.		Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.			
	To understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that an algorithm written for a computer is called a program.	To explain that an algorithm is a set of instructions to complete a task. When designing simple programs, to show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code.	To 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. To identify an error within their program that prevents it following the desired algorithm and then fix it.	When turning a real-life situation into an algorithm, their design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. To make more intuitive attempts to debug their own programs.	May attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. To be 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.	To be 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. To 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 .
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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	Create and debug simple programs.		Use sequence, selection and repetition in programs; work with variables and various forms of input and output.			
	<p>To work out what is wrong with a simple algorithm when the steps are out of order and write their own simple algorithm.</p> <p>To know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code</p>	<p>To explain that an algorithm is a set of instructions to complete a task.</p> <p>When designing simple programs, to show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code</p>	<p>To demonstrate the ability to design and code a program that follows a simple sequence.</p> <p>They experiment with timers to achieve repetition effects in their programs.</p> <p>Begin to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects.</p> <p>To understand how variables can be used to store information while a program is executing.</p>	<p>To use 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. To be able to use and manipulate the value of variables. To make use of user inputs and</p>	<p>To 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. To start combining sequence, selection and repetition with other coding structures to achieve their algorithm design.</p>	<p>To 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 button clicks and the value of functions.</p>

				outputs such as 'print to screen'.		
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Computer Science	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Use logical reasoning to predict the behaviour of simple programs.		Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.			
	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. For example, interpret where the turtle will end up at the end of the program.	<p>To create a simple program that achieves a specific purpose. They can also identify and correct some errors.</p> <p>To program designs display a growing awareness of the need for logical, programmable steps.</p> <p>To 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.</p>	To design 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. To make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. To 'read' programs with several steps and predict the outcome accurately.	To design their programs to show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. To trace code and use step-through methods to identify errors in code and make logical attempts to correct this. To 'read' programs with several steps and predict the outcome accurately.	When coding, 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 variables.	To 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 program as a whole.

			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>To 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</p> <p>To describe appropriate email conventions when communicating in this way.</p>	<p>To recognise the main component parts of hardware which allow computers to join and form a network. 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>To 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. To select the most appropriate form of online communications contingent on audience and digital content,</p>	<p>To understand and can explain in some depth the difference between the internet and the World Wide Web. To know what a WAN and LAN are and can describe how they access the internet in school.</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Information Technology	Use technology purposefully to create, organise, store, manipulate and retrieve digital content.		Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.			
	To are able to sort, collate, edit and store simple digital content e.g. to name, save and retrieve their work and follow simple instructions to access online resources, or using pictogram software	<p>To demonstrate an ability to organise data using, for example, a database and can retrieve specific data for conducting simple searches.</p> <p>To are able to edit more complex digital data such as music compositions</p> <p>To are confident when creating, naming, saving and retrieving content.</p> <p>To use a range of media in their digital content including photos, text and sound.</p>	<p>To carry out simple searches to retrieve digital content.</p> <p>To start 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>To understand the function, features and layout of a search engine.</p> <p>To appraise selected webpages for credibility and information at a basic level. .</p>	<p>To search with greater complexity for digital content when using a search engine.</p> <p>To explain in some detail how credible a webpage is and the information it contains.</p>	<p>To readily apply filters when searching for digital content.</p> <p>To be able explain in detail how credible a webpage is and the information it contains.</p> <p>To compare a range of digital content sources and are able to rate them in terms of content quality and accuracy.</p> <p>To use critical thinking skills in everyday use of online communication.</p>

			Year 3	Year 4	Year 5	Year 6
			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>To collect, analyse, evaluate and present data and information using a selection of software.</p> <p>To consider what software is most appropriate for a given task.</p> <p>To create purposeful content to attach to emails.</p>	<p>To be able to make improvements to digital solutions based on feedback.</p> <p>To make informed software choices when presenting information and data.</p> <p>They create linked content using a range of software.</p> <p>To share digital content within their community i.e. using Virtual Display Boards.</p>	<p>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.</p> <p>They objectively review solutions from others.</p> <p>To be able to collaboratively create content and solutions using digital features within software such as collaborative mode.</p> <p>They are able to use several ways of sharing digital content.</p>	<p>To make clear connections to the audience when designing and creating digital content.</p> <p>To design and create their own blogs to become a content creator on the internet.</p> <p>To be able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Literacy	Recognise common uses of information technology beyond school.		Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.			
	<p>To understand what is meant by technology and can identify a variety of examples both in and out of school.</p> <p>They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.</p>	<p>To can effectively retrieve relevant, purposeful digital content using a search engine.</p> <p>They can apply their learning of effective searching beyond the classroom. They can share this knowledge,</p> <p>To make links between technology they see around them, coding and multimedia.</p>	<p>To demonstrate the importance of having a secure password and not sharing this with anyone else.</p> <p>To explain the negative implications of failure to keep passwords safe and secure.</p> <p>To understand the importance of staying safe and the importance of their conduct when using familiar communication tools</p> <p>They know more than one way to report unacceptable</p>	<p>To explore how digital footprint can lead to identity theft, understand how to keep information safe.</p> <p>To understand the meaning of plagiarism and content online that is acceptable to use.</p> <p>To identify the positive and negative influences of technology.</p> <p>To know a range of ways of reporting inappropriate content and contact.</p>	<p>To 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.</p> <p>To implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.</p> <p>To understand and question the reliability of information found online.</p>	<p>To demonstrate the safe and respectful use of a range of different technologies and online services.</p> <p>They identify more discreet inappropriate behaviours through developing critical thinking.</p> <p>They recognise the value in preserving their privacy when online for their own and other people's safety.</p> <p>To identify the consequences of inappropriate behaviour online.</p>
	Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns the internet or other online technologies					

			content and contact.			
	<p>To understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons.</p> <p>To take ownership of their work and save this in their own private space</p>	<p>To know the implications of inappropriate online searches.</p> <p>To begin to understand how things are shared electronically. They develop an understanding of using email safely and to know ways of reporting inappropriate behaviours and content to a trusted adult.</p>	<p>Understand the importance of age restrictions.</p>			<p>To understand the negative aspects of screen time.</p>