

## Progression of Knowledge and Skills in Computing



Children become confident and safe users of computers and devices, with the knowledge, skills and understanding that is necessary for them to successfully navigate an ever-changing digital world. Children learn about technology and its uses and risks, develop computing skills, and apply what they have learnt across all areas of the curriculum and daily life.

Statutory Framework	Understanding the World
<b>Educational Programmes</b>	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.
<b>Early Learning Goals</b>	There are no ELG that relate to Computing
<b>Possible Teaching links to Computing</b>	<ul style="list-style-type: none"> <li>- taking photos of our local environment i.e.: on a shape and number hunt in maths</li> <li>- taking photos for an art project</li> <li>- writing stories in apps such as Book Creator or Clicker</li> <li>- researching information to help answer our questions and extend our learning</li> <li>- using apps linked to current themes i.e.: AR dinosaurs, archaeology, oceans, space</li> </ul>
<b>Skills and knowledge</b>	<ul style="list-style-type: none"> <li>- using a variety of age appropriate apps</li> <li>- how to take and edit photos (i.e.: delete, look through album)</li> <li>- how to turn on and operate an iPad, including using the home button, scrolling, pinching</li> <li>- how to use simple programmable toys such as BeeBots</li> <li>- how to use the touchscreen, such as changing pens and colours</li> <li>- how to use other tools such as digital camera, voice recorders, torches, microscopes, wildlife cameras</li> </ul>
<b>Vocabulary</b>	<ul style="list-style-type: none"> <li>- iPad, home button, scroll, pinch, app, open, close</li> <li>- programme</li> <li>- select, edit, delete</li> </ul>
<b>Other curriculum links</b>	Physical Development Communication and Language

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	Literacy Expressive Arts and Design
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E-Safety	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>National Curriculum</b>	Use technology safely and respectfully  Keep 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.		Use technology safely, respectfully and responsibly  Recognise acceptable/unacceptable behaviour  Identify a range of ways to report concerns about content and contact.			
<b>Skills and knowledge</b>	Keep passwords private and explain what personal information is.  Report something unexpected or worrying online to an adult.  Start to discuss how to be respectful online. Recognise an age appropriate website.  Agree and follow sensible e-Safety rules	Explain why passwords and personal information needs to be private.  Describe things that happen online that must be reported to an adult.  Discuss why it is important to be online for a short amount of time  Explain why it is important to be respectful and kind online and in real life.	Discuss what makes a secure password and why they are important.  Protect own personal information when doing different things online.  Use the safety features of websites as well as reporting concerns to an adult. Recognise websites and games appropriate for my age.	Choose a secure password when using a website.  Discuss how to protect themselves and friends from harm online.  Use the safety features of websites as well as reporting concerns to an adult.  Understand that anything posted online can be seen by others.	Protect password and other personal information.  Explain importance of protecting themselves and others and the best ways to do this, including reporting concerns to an adult.  Begin to understand that everything posted online can be seen, used and may affect others.  Discuss the dangers of spending too long	Explain the consequences of sharing too much about themselves online.  Support peers to protect themselves and make good choices online, including reporting concerns to an adult.  Explain the consequences of spending too much time online or on a game.

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		<p>Know that not everyone is who they say are on the internet.</p>	<p>Make good choices about how long they should spend online.</p> <p>Checking with an adult before downloading files and games from the Internet.</p>	<p>Choose websites and games that are age appropriate.</p> <p>Understand and explain why permission is needed before downloading files and games from the Internet.</p> <p>Comment positively and respectfully online</p>	<p>online or playing a game.</p> <p>Explain the importance of communicating kindly and respectfully.</p> <p>Discuss the importance of choosing an age-appropriate website or game.</p> <p>Explain why computers or devices need protecting from harm.</p> <p>Know which resources on the Internet I can download.</p>	<p>Explain the consequences of not communicating kindly and respectfully.</p> <p>Protect computer or device from harm on the Internet.</p>
<b>Vocabulary</b>	E-safety, online, respect, password, personal information, private	E-bullying, impersonating, appropriate/inappropriate sites, digital footprints,	Secure, downloads, protecting, reporting,	Commenting, posting, permission, downloading,	Reporting, block, mute Viruses, spyware, malware, Messaging	Data breach, addictive, anti-virus,
<b>Possible Teaching</b>						
<b>Other curriculum links</b>						

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Programming	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>National Curriculum</b>	<p>Understand what algorithms are</p> <p>How they are implemented as programs on digital devices programs execute by following precise and unambiguous instruction</p> <p>Create and debug simple programs</p> <p>Use logical reasoning to predict the behaviour of simple programs</p>		<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</p> <p>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</p>			
<b>Skills and knowledge</b>	<p>Give instructions to classmates and follow their instructions to move around</p> <p>Describe what buttons on a robot do</p> <p>Press buttons in correct order to make a floor robot follow a desired path</p>	<p>Give concise instructions to a peer (using forwards, backwards and turns) and follow their instructions</p> <p>Order instructions for a desired outcome using the word algorithm.</p> <p>Program a robot/software to do a particular task</p>	<p>Break an open-ended problem up into smaller parts.</p> <p>Input programming commands into a sequence to achieve a specific outcome.</p> <p>Testing program and can recognise areas to debug.</p> <p>Use repeat commands.</p> <p>Describe the algorithm needed for a simple task.</p>	<p>Use logical thinking to solve an open-ended problem by breaking it up into smaller parts.</p> <p>Use an efficient procedure to simplify a program.</p> <p>Use a sensor to detect a change which can select an action within a program.</p> <p>Understand the importance of regular</p>	<p>Decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program.</p> <p>Refine a procedure using repeat commands to improve a program.</p> <p>Use a variable to increase programming possibilities.</p>	<p>Deconstruct a problem into smaller steps, recognising similarities to solutions used before.</p> <p>Explain and program each of the steps in my algorithm.</p> <p>Evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm.</p>

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	<p>Understand that the order of instructions effects the outcome and start using the word algorithm</p> <p>Begin to predict the outcome for a short sequence of instructions</p> <p>Begin to use software/apps to create movement and patterns on a screen.</p> <p>Use the word debug when correcting mistakes in a program.</p>	<p>Look at another program and explain what will happen</p> <p>Use programming software to make objects move</p> <p>Watch a program execute and spot errors to debug</p>	<p>Detect a problem in an algorithm which could result in unsuccessful programming.</p>	<p>testing throughout the programming process.</p> <p>I can use a variety of tools to create a program.</p> <p>Recognise an error in a program and debug it.</p> <p>Recognise that an algorithm will help me to sequence more complex programs.</p> <p>Recognise how algorithms will also help solve problems in other learning such as Maths, Science and Design and Technology.</p>	<p>Change an input to a program to achieve a different output.</p> <p>Use 'if' and 'then' commands to select an action.</p> <p>Discuss computer model can provide information about a physical system.</p> <p>Use logical reasoning to detect and debug mistakes in a program.</p> <p>Use logical thinking, imagination and creativity to extend a program.</p>	<p>Recognise when to use variable to achieve a required output.</p> <p>Use a variable and operators to stop a program.</p> <p>Use different inputs (including sensors) to control a device or onscreen action and predict what will happen.</p> <p>Use logical reasoning to detect and correct errors in an algorithms and programs</p>
<b>Vocabulary</b>	<p>Instructions, sequence, algorithm, program, debug, robot</p>	<p>Software, debug, programming, outcome, turns, predict</p>	<p>Sequence instructions Sequence debugging Test + improve Logo commands Sequence programming</p>	<p>Type + edit logo commands Sensors Open-ended problems Bugs in programs Complex programming</p>	<p>Explore procedures Refine procedures Variable Hardware + software control Change inputs</p>	<p>Predicting outputs Plan, program, test &amp; review a program Program writing Control mimics + devices Sensors</p>

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					Different outputs Articulate solutions Commands	Measure input Create variables Link errors
<b>Possible teaching</b>	Beebots, Unplugged robots  Scratch junior – creating a digital picture	Scratch junior – creating a story  Scratch junior - quizzes	Scratch – Sequencing music Scratch - maze	Scratch – Draw patterns Scratch – Repetition in animation		
<b>Other curriculum links</b>						

<b>Data handling</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>National Curriculum</b>	Elect, 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					
<b>Skills and knowledge</b>	Talk about the different ways in which information can be shown  Use technology to collect information including photos, video and sound.	Discuss different ways I use technology to collect information (using camera, microscope or sound recording)  Add information to a pictograph online	Describe different ways data can be organised.  Search a ready-made database to answer questions.  Collect data to answer a question. Add to a database.	Organise data in different ways.  Collect data and identify where it could be inaccurate.  Plan, create and search a database to answer questions.	Use a spreadsheet and database to collect and record data.  Choose an appropriate tool to help me collect data.  Present data in an appropriate way.	Plan the process needed to investigate the world around me.  Select the most effective tool to collect data for my investigation. Check the data collected for accuracy and plausibility.

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	Sort different kinds of information and present it to others	<p>Make and save a chart or graph from data I collect</p> <p>Explain the data that is shown in my chart or graph</p> <p>Begin to understand a branching database</p> <p>Describe the information required to help investigate a question</p>	<p>Make a branching database.</p> <p>Use a data logger to monitor changes and can talk about the information collected.</p>	<p>Choose the best way to present data to class.</p> <p>Use a data logger to record and share my readings.</p>	<p>Search a database using different operators to refine my search.</p> <p>Talk about mistakes in data and suggest how it could be checked.</p>	<p>Interpret the data I collect and present it in an appropriate way.</p> <p>Use the skills developed to interrogate a database</p>
<b>Vocabulary</b>	Information, Photographs, videos, sounds,	Data, technology, graph, pictogram, branching database	Questioning Database Construct Contribute Recording data Data logger Present data	Database creation Database searches Inaccurate data	Spreadsheets Complex searches (and/or: </>) Problem solving Present answers Analyse information Question data Interpret	Generate Process Interpret Store Present information Plausibility Appropriate data tool Interrogate Investigations
<b>Possible teaching</b>		<a href="https://teachcomputing.org/curriculum/key-stage-1/data-and-information-pictogram">https://teachcomputing.org/curriculum/key-stage-1/data-and-information-pictogram</a>	<a href="https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging">https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging</a>	<a href="https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging">https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging</a>	<a href="https://teachcomputing.org/curriculum/key-stage-2/data-and-information-flat-file-databases">https://teachcomputing.org/curriculum/key-stage-2/data-and-information-flat-file-databases</a>	<a href="https://teachcomputing.org/curriculum/key-stage-2/data-and-information-spreadsheets">https://teachcomputing.org/curriculum/key-stage-2/data-and-information-spreadsheets</a>

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<b>Other curriculum links</b>		Maths – data handling				
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<b>Multi-media</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>National Curriculum</b>	Use technology purposefully to create, organise, store, manipulate and retrieve 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			
<b>Skills and knowledge</b>	<p>Be creative with different technology tools</p> <p>Use technology to create and represent personal ideas</p> <p>Use the keyboard or a word bank on a device to enter text</p> <p>Save information and retrieve it on different devices</p>	<p>Use technology to organise and present ideas in different ways</p> <p>Use the keyboard on a device to add, delete and space text</p> <p>Talk about online tools that will help share ideas</p> <p>Save and open files on different devices</p>	<p>Create different effects with different technology tools.</p> <p>Combine a mixture of text, graphics and sound to share my ideas and learning.</p> <p>Use appropriate keyboard commands to amend text on my device, including making use of a spellchecker.</p> <p>Evaluate my work and improve its effectiveness.</p>	<p>Use photos, video and sound to create an atmosphere when presenting to different audiences.</p> <p>Explore new media confidently to extend what I can achieve.</p> <p>Change the appearance of text to increase its effectiveness.</p> <p>Create, modify and present documents for a particular purpose.</p> <p>Use a keyboard confidently and make use of a spellchecker to write and review my work.</p>	<p>Use text, photo, sound and video editing tools to refine my work.</p> <p>Use the skills I have already developed to create content using unfamiliar technology.</p> <p>Select, use and combine the appropriate technology tools to create effects that will have an impact on others.</p> <p>Select an appropriate online or offline tool to create and share ideas.</p>	<p>Talk about audience, atmosphere and structure when planning a particular outcome.</p> <p>Identify the potential of unfamiliar technology to increase my creativity.</p> <p>Combine a range of media, recognising the contribution of each to achieve a particular outcome.</p> <p>Tell you why I select a particular online tool for a specific purpose.</p> <p>Be digitally discerning when evaluating the effectiveness of my own</p>



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			Use an appropriate tool to share my work online.	Use an appropriate tool to share my work and collaborate online.  Share constructive feedback to their peers to help them improve their work and refine my own work.	Review and improve my own work and support others to improve their work.	work and the work of others.
<b>Vocabulary</b>	Text, word processing, save, key board, space, backspace, enter, camera stills, sounds, image bank	Paint effects Templates Animation Documents Index finger typing Enter/return Caps lock Backspace	Multimedia Presentations Alignment Brush size Repeats Reflections Green screening Amend Copy Paste	Creating + modifying Specific purpose Photo modifying Keyboard shortcuts Bullet points Spell check Constructive feedback	Online sharing Multimedia effects Multimedia modification Transitions Hyperlinks Editing tools Refining Online sharing	Appropriate online tools Audience Atmosphere Structure Copyright Information collection HTML code Storing
<b>Possible teaching</b>	Digital sketches	Self Portrait using Sketch  Making music – Garage band	Stop motion animation	Photo editing Podcast		Web page creation 3D modelling
<b>Other curriculum links</b>						

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Technology in the world	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>National Curriculum</b>	Recognise common uses of information technology beyond school		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			
<b>Skills and knowledge</b>	<p>Recognise the ways we use technology in our classroom and home.</p> <p>Use links to the websites to find information</p> <p>Begin to identify some of the benefits of using technology</p>	<p>Explain why I use technology in the classroom and home</p> <p>Starting to understand that other people have created the information I use</p> <p>Identify benefits of using technology including find information, creating and communicating</p> <p>Discuss differences between the internet and things in the physical world</p>	<p>Save and retrieve work on the Internet, the school network or my own device.</p> <p>Talk about the parts of a computer.</p> <p>Discuss ways to communicate with others online.</p> <p>Describe the World Wide Web as the part of the Internet that contains websites.</p> <p>Use search tools to find and use an appropriate website.</p>	<p>Decide whether a resource I am using is on the Internet, the school network or my own device.</p> <p>Identify key words to use when searching safely on the World Wide Web.</p> <p>Discuss reliability of information I read on the World Wide Web.</p> <p>Explain how to check who owns photos, text and clipart.</p> <p>Create a hyperlink to a resource on the World Wide</p>	<p>Describe different parts of the Internet.</p> <p>Use different online communication tools for different purposes.</p> <p>Use a search engine to find appropriate information and check its reliability.</p> <p>Recognise and evaluate different types of information I find on the World Wide Web.</p> <p>Describe the different parts of a webpage.</p> <p>Find out who the information on a webpage belongs to.</p>	<p>can tell you the Internet services I need to use for different purposes.</p> <p>Describe how information is transported on the Internet.</p> <p>Select an appropriate tool to communicate and collaborate online.</p> <p>Discuss the way search results are selected and ranked.</p> <p>Check the reliability of a website.</p> <p>Discuss copyright and acknowledge the sources</p>

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			Discuss whether to use images that are found online in our work.			of information that I find online.
<b>Vocabulary</b>	Purpose Online tools Communicate	Information sources Communication Purposes Website content	School network Devices Computer parts Collaborate Appropriate online communication Search tools Appropriate websites Owner	Different networks Information collection Reliability Owners	Computing devices Internet parts Collaboration Responsibility Searching strategies Webpages	Information movement Connecting devices Different audiences Research strategies Search result rankings Acknowledge resources
<b>Possible teaching</b>	Technology around us – parts of known technology	Technology around us Digital Footprint	Connecting digital devices			
<b>Other curriculum teaching</b>						