

Computing Vision

We aim to prepare children to thrive in an increasingly digital world. Computing at Columbia enriches our wider curriculum by providing children with the opportunity to express themselves and develop their ideas. All children are entitled to quality hardware and software to support their learning. Through our Computing curriculum, we develop children's knowledge and understanding of the following areas: Code, Communicate and Connect. When learning to communicate, children develop an understanding of technology and how it can help them. Coding equips pupils with the skills to create programs, systems and a range of content. Finally, children learn how to connect with each other safely and respectfully online.

Computing - Knowledge and Skills Progression

The progression in Computing skills starts in the EYFS as *Understanding the World, Expressive Arts & Design, Personal Social & Emotional Development* and *Physical Development* with children understanding and following rules. Children notice and talk about how we can communicate with others using tablets and other technology and what to do if something makes them feel uncomfortable when using devices and the internet. Children develop fine motor skills to control toys and express their ideas using different tools and materials.

	Aims	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Code</p> <p><i>Introduce early programming concepts. Learners will explore using individual commands both with other learners and as part of a computer program.</i></p>	<p>Understand what an algorithm is.</p> <p>Know that programs follow instructions.</p>	<p>Break down instructions into steps.</p> <p>Know that a robot can follow instructions.</p>	<p>Know that 'algorithms' are instructions.</p> <p>Know that an on-screen character can follow instructions.</p>	<p>Begin to understand that instructions given must be precisely ordered.</p> <p>Use given commands in different orders to notice how the order affects the outcome.</p>	<p>Break down more complex tasks into precise instructions.</p> <p>Know that algorithms can be used to program a device.</p>	<p>Know that algorithms are a sequence of steps or instructions that can lead to a desired outcome.</p>	<p>To understand that algorithms are turned into programming languages which helps us write instructions that computers understand – code.</p>
	<p>Create and debug programs.</p> <p><i>Design, write and debug programs that accomplish specific goals;</i></p> <p><i>Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</i></p>	<p>Use algorithms to control a floor robot.</p> <p>Identify errors by noticing unintended outcomes.</p>	<p>Use programming blocks on Scratch Jr to create a simple on-screen program.</p> <p>Know that a 'bug' is an error in a program.</p>	<p>Use programming blocks on Scratch to create an algorithm which is in the correct order.</p> <p>Begin to recognise bugs and take steps to correct them by editing the steps. Know this is called 'debugging'.</p>	<p>Use programming blocks on Scratch to control an onscreen character using simple keyboard commands.</p> <p>Use the repeat command to make programs more efficient.</p> <p>Give feedback to others on possible problems with a program.</p>	<p>Use programming blocks on Scratch to create an animation using a range of commands including repeat, event and control commands. Write a program that involves several characters or scenes.</p> <p>Adjust an algorithm after testing and finding problems with the outcome. Find the relevant section of code and edit it.</p>	<p>Design, plan and write a program to create a game with goals, variables, selection, interactivity and a clear final outcome.</p> <p>Use a range of commands including repeat, event, variable and control commands.</p>
	<p>Predict the behaviour of program</p> <p><i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</i></p>	<p>Predict what the buttons on a floor robot might do.</p>	<p>Predict what the programming blocks on Scratch Jr might do.</p>	<p>Predict what the programming blocks on Scratch might do.</p> <p>Begin to identify the part of a program or algorithm that has problems.</p>	<p>Predict the behaviour of a program based on a sequence of blocks.</p> <p>Begin to work systematically through a program to find errors.</p>	<p>Look at similarities and differences between code and use logical reasoning to explain how this will change the outcome.</p> <p>Evaluate a program and work systematically to detect and correct errors.</p>	<p>Use logical reasoning to explain how algorithms work.</p> <p>Use feedback to detect and correct errors in algorithms and programs.</p>
<p>Communicate</p> <p><i>Develop learners'</i></p>	<p>Use technology purposefully</p>	<p>Identify machines and devices that need fuel or power.</p>	<p>Use digital technology to store and retrieve content.</p> <p>Begin to recognise</p>	<p>Know how to log onto the school system.</p> <p>Find useful information on</p>	<p>Design and create online content in response to a given goal.</p>	<p>Select an appropriate ICT or online tool to create and share ideas.</p>	<p>Select, use and combine a range of programs on multiple devices to create and share ideas.</p>

<p><i>understanding of technology and how it can help them. They will become more familiar with the different components of a computer by developing their keyboard and mouse skills.</i></p>	<p><i>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,</i></p>	Use digital technology to access content with support.	whether a source of information is reliable or unreliable.	pre-selected websites. Know the features of a website. Use simple apps to communicate ideas.			
	<p>Create, organise, store and manipulate digital content.</p> <p><i>Collect, analyse, evaluate and present data and information,</i></p>	<p>Begin to use a touch screen to navigate.</p> <p>Know what it means to open and save.</p>	<p>To use a touch screen to navigate.</p> <p>Know what it means to open and save documents.</p> <p>Begin to develop typing skills on an on-screen keyboard, including capitalisation.</p>	<p>Use a mouse to navigate around the computer screen.</p> <p>Begin developing typing skills on a physical keyboard, including capitalisation, enter and delete commands.</p>	<p>Create and begin to edit documents and text, experimenting with fonts, size, colour and alignment for emphasis & effect. To enter, revise and edit text.</p> <p>To select and use copy and paste tools to collect images or information.</p> <p>Know common places to save and appreciate the importance of naming documents appropriately and regularly saving work.</p>	<p>Begin to use a keyboard effectively, including the use of keyboard shortcuts.</p> <p>Use font sizes appropriately for audience and purpose.</p>	<p>Confidently and regularly use text shortcuts such as cut, copy and paste and delete to organise text.</p> <p>Look at own work and consider how it can be improved for effectiveness.</p>
	<p>Retrieve digital content</p> <p><i>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i></p>	<p>Know that the internet can be a source of information.</p>	<p>Know what a search engine is.</p> <p>Search using keywords.</p> <p>Know that content on the web is not checked.</p>	<p>Explore websites to find useful information</p> <p>Write a simple review of a website, evaluating its design and suitability for purpose.</p>	<p>Compare a selection of digital sources by looking for the same information from each. Understand that content on the web is unregulated.</p>	<p>Evaluate several websites focussing on layout, design, age range, educational value, ease of use, graphics, navigation etc. Explore a fake website and identify some of the ways to check accuracy and purpose.</p>	<p>Know how to find information about a website's owners, authors and potential bias. Make useful choices about which websites or online resources to use, with reasons.</p>
	<p>Recognise common uses of information technology beyond school</p> <p><i>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</i></p>	<p>Talk about what electronic devices they use in school and at home.</p>	<p>Describe some of the uses of technology they see in the world around them.</p>	<p>Talk about how familiar technology and devices help us in our lives.</p>	<p>Discuss some positive and negative consequences of technology.</p>	<p>Discuss what life was like before the invention of everyday technology.</p> <p>Explain how the invention of technology has changed and improved lives.</p>	<p>To know that there are negative as well as positive results to the development of technology.</p> <p>Discuss some implications of computer systems on safety and privacy.</p>
<p>Connect</p> <p><i>Introduce that while the internet can be an exciting</i></p>	<p>Use technology safely and respectfully</p>	<p>Understand how to look after school ICT equipment.</p>	<p>Understand the school rules about using the internet.</p>	<p>Understand that they should only use their own username and password at school.</p>	<p>Understand the implications of posting hurtful or unpleasant comments on a public</p>	<p>Discuss some of the cyber-bullying issues around the use of social networks.</p>	<p>Understand the difference between 'live' chat and sending messages that can be read later or offline.</p>

<p><i>place where children can learn and have fun, sometimes they may encounter things online which make them feel worried, scared or sad. Children will be taught to understand that they should seek help from an adult they trust.</i></p>		Know it is wrong to take other people's ICT equipment without asking.		Be able to make online comments appropriately and responsibly.	network.		Discuss some of the cyber-bullying issues around the use of social networks.
	Keep personal information private	<p>Know what personal means</p> <p>Understand that they should keep a password secret.</p>	<p>Know what personal information they should not reveal to strangers (their real name or address or talk to strangers online)</p>	<p>Understand that information shared with others or posted online is very difficult to remove.</p> <p>Know that they shouldn't share other people's information without permission.</p>	<p>Understand that people they meet on the internet may not be who they say they are.</p>	<p>Recognise that social networks are provided to the user free of charge in order to collect data about them to sell to advertisers</p>	<p>Know that websites contain adverts, toolbars and popups that are designed to encourage clicks (clickbait) and may be unsafe.</p>
	Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	<p>Understand that technology is not always safe and that they should check with an adult first.</p>	<p>Know that they should tell a trusted adult if they feel worried or uncomfortable about something they've seen or done online.</p>	<p>Work with others to create a set of class rules about using the internet and ICT resources safely.</p>	<p>Describe some strategies for staying safe online.</p>	<p>Know that it is often possible to block a user if necessary.</p> <p>Be able to explain how they would report concerns or inappropriate behaviour that they might encounter online.</p> <p>Know when to contact an adult/police immediately.</p>	<p>Know that 'trolling' and other negative online behaviour can have serious consequences.</p> <p>Be able to support friends who are in need of help and advice about e-safety and know where to direct them.</p>