

Malvern Primary School

Computing Curriculum

Digital technology is driving extraordinary global changes that some are calling the Fourth Industrial Revolution.¹ Navigating these changes effectively and safely requires a significant understanding of digital literacy, information technology and computer science.



Malvern's curriculum provides pupils with the substantive and disciplinary knowledge they require in order to thrive.

Declarative Knowledge: Declarative knowledge, often referred to as conceptual knowledge in the literature, consists of facts, rules and principles and the relationships between them. It can be described as 'knowing that'.

Procedural Knowledge: procedural knowledge is knowledge of methods or processes that can be performed. It can be described as 'knowing how'.

This distinction is helpful when considering knowledge within the subject. Many aspects of computing use skills such as programming, creating digital artefacts and being able to use a search engine. It is helpful to consider these skills in terms of procedural knowledge, as they are methods and processes that can be performed. This makes identifying the knowledge required to perform these processes skilfully much easier. They are enabled by declarative knowledge such as knowledge of suitable data types and structures, knowledge of appropriate font sizes and styles and knowledge of suitable key words to use when performing searches.

Adapting the curriculum for pupils with SEND

- Teachers at Malvern plan lessons carefully to anticipate and overcome barriers that may arise through adaptive teaching techniques
- Teachers identify and break down components of the curriculum into manageable chunks to promote cognition and learning. At times, these steps may look different than they do for most pupils, to avoid overload on working memory.
- Teachers make use of scaffolds to support learners where appropriate.
- Overlays, spaced or enlarged print and audio description of images may be utilised.



Holistic Aspects	EYFS
<i>Building a Strong Foundation</i>	Take a photograph with a camera or tablet
<i>Building Problem Solving Skills</i>	Scan a QR code.
<i>Encouraging Resilience</i>	Search for information on the internet.
	Play games on the interactive whiteboard.
	Explore old machinal toys.
	Use a Beebot
	Watch a video clip.
	Listen to music.
	Listen to stories.

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Aspect	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Mandatory Skills	<p>I can use iPads and computers to carry out basic tasks e.g. play music, draw, type on a keyboard.</p> <p>I can take photos/videos using iPad and digital cameras.</p>	<p>I can save, share and retrieve my digital work (Seesaw) when prompted.</p> <p>I can use technology to organise and present my ideas e.g. a digital poster or short video.</p>	<p>I can troubleshoot and attempt to fix a problem before asking for help e.g. refresh unresponsive webpages, check Wi-Fi on devices is working accordingly, restart unresponsive apps.</p> <p>Use QR codes that link to a resource to be used during lessons.</p>	<p>I can understand what a URL is and how to use them correctly.</p> <p>I can discuss different types of digital content and file types e.g. images, videos, audio. Appropriately receiving these when shared via digital methods (Airplay).</p>	<p>I can label the different types of input connections on devices e.g. USB, HDMI, SD cards, Headphone/speaker jack.</p> <p>I can select appropriate digital content to edit together to produce my own content; saving and opening work effectively.</p>	<p>I can collaborate online to contribute useful ideas to a partner/group.</p> <p>I can independently selected the appropriate app or software for completing a specific task.</p> <p>I can create, edit, save and share work with increasing confidence.</p>
Computer Science	<p>I can understand an algorithm is a sequence of instructions.</p> <p>I can follow a simple algorithm.</p> <p>I can create a simple/ everyday algorithm (with support) and follow it e.g. washing hands.</p> <p>I can create an algorithm using symbols e.g. directional arrows.</p> <p>I can program an algorithm into a robot or digital device.</p> <p>I can program an algorithm into a robot or digital device to complete a specific goal.</p> <p>I can understand what a bug is.</p> <p>I can find a bug in an algorithm.</p> <p>I can use logical reasoning to predict the outcomes of a short sequence of instructions (algorithm).</p>	<p>I can explain what an algorithm is.</p> <p>I can plan and create an algorithm with a sequence of detailed commands to solve a problem (forward 3, backwards 4).</p> <p>I can identify the most precise and clear programs.</p> <p>I can identify bugs in computer programs and use the term debug in context.</p> <p>I can predict the outcome of a sequence of commands.</p>	<p>I can design, write and debug programs with support.</p> <p>I can demonstrate how to solve problems using decomposition (breaking a problem down into manageable sections).</p> <p>I can keep testing a program and recognise where it needs to be debugged.</p> <p>I can use sequence and selection in a program I write.</p> <p>I can work with various forms of input and output e.g. keyboard, headphones, touch screen, microphones, speakers etc...</p> <p>I can use logical reasoning to predict the outcome of algorithms and programs, explaining the steps sequentially.</p>	<p>I can design a program to simulate a physical system (controlling motors and sensors).</p> <p>I can solve a problem by breaking it into smaller manageable sections (decomposition).</p> <p>I can produce a design and write a program to accomplish a specific goal.</p> <p>I can use sequence, selection and repetition in a program I write.</p> <p>I can test existing programs to see how they could be improved or altered using logical reasoning techniques.</p>	<p>I can decompose a problem into smaller parts to plan, write and test my own algorithm and program to accomplish a specific goal.</p> <p>I can design and write a program linked to physical systems (sensors, motors robotics etc...)</p> <p>I can use sequence, selection, repetition as well as exploring variables.</p> <p>I can use logical reasoning to predict and detect bugs (mistakes) in a program of my own creation.</p>	<p>I can design and write and a more complex program, of my own creation, to accomplish a specific goal.</p> <p>I can test, debug and modify a program to improve it.</p> <p>I can use sequence, selection, repetition and variables confidently when working in programs.</p> <p>I can work with various forms of input and output e.g. keyboard, headphones, touch screen, microphones, speakers cameras, robotic devices etc...</p> <p>I can use logical reasoning to detect and correct errors in algorithms and programs, finding the most efficient solution in my own creations.</p>

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Information Technology	<p>I can identify uses of technology in the home.</p> <p>I can navigate a simple webpage/app.</p> <p>I can use technology to create and present my ideas e.g. short video, voice note conveying a concept.</p> <p>I can use simple formatting skills e.g. underlining titles, capitalising letters, adding numbers and punctuation.</p> <p>I can save work and explain the importance of saving content.</p> <p>I can retrieve a piece of digital work from a specific location?</p> <p>I can create and edit a piece of digital content for a specific purpose?</p>	<p>I can consider layout and design to present a piece of work with appropriate fonts sizes, images etc.</p> <p>I can explore information from a given website.</p> <p>I can organise and store data purposefully e.g. in a chart or table.</p> <p>I can create, organise and manipulate e.g. video or edited image with technology (supported).</p> <p>I can organise, store and retrieve my work e.g. storing images in a folder or app on a device.</p> <p>I can identify uses of information technology in the wider community.</p>	<p>I can improve the quality and presentation of my work using editing and formatting techniques with support e.g. images, font, background colours, tables etc.</p> <p>I can create with technology e.g. video, animation, e-book.</p> <p>I can carry out a questionnaire to collect, analyse, evaluate and present data and information.</p> <p>I can understand what key words are and how search engines put most useful websites at the top.</p> <p>I can use advanced search tools including filtering results by adding detail and awareness of most popular results being at the top.</p> <p>I can send a digital message and understand how this works e.g. the message is sent over the internet to other devices.</p> <p>I can collect and store data e.g. sort images/ documents into folders.</p>	<p>I can improve the quality and presentation of my work using editing and formatting techniques with increasing competence (including transitions and sounds) e.g. images, font, background colours, tables etc.</p> <p>I can confidently use a range of apps/software (combined) to create content.</p> <p>I can make judgments of what apps may be required to create e.g. Microsoft word to create a document, iMovie to edit a video clip.</p> <p>I can use a search engine to gather information from a range of sources.</p> <p>I can understand that not all sources are accurate and can check information using different sites.</p> <p>I can explore what a computer network is.</p> <p>I can recall different methods of communication available via the internet.</p> <p>I can explain that any information has to be converted to numbers (binary) on a computer.</p>	<p>I can explain what equipment may be required to record good audio, E.G. for a podcast or Vlog.</p> <p>I can record and produce a short audio podcast and understand basic elements of audio editing e.g. background music, sound effects.</p> <p>I can improve the quality and presentation of my work choosing efficient editing and formatting techniques to accomplish a given goal.</p> <p>When using websites, I am aware that not everything I read online is true and I know strategies to check the validity of information on the internet.</p> <p>I can explain that computers use binary code to transfer information within computer networks.</p> <p>I can identify the different parts of a webpage e.g. heading, adverts, search bar etc.</p> <p>I can understand that HTML is used for creating webpages as part of the world wide web.</p>	<p>I can use a spreadsheet/ database to collect and record data with support e.g. Excel to collect simple data.</p> <p>I can appropriately select and combine a variety of software/ devices in order to create content.</p> <p>I can improve the quality and presentation of my work choosing efficient editing and formatting techniques independently.</p> <p>I can use a search engine and be aware that not everything I read online is correct and that other people may be attempting to influence my opinions e.g. bias news.</p> <p>I can appreciate that different search engines use their own algorithms and select and rank results in different ways.</p> <p>I understand that the internet and the world wide web are not the same.</p> <p>I can understand how information/ data is transported on the internet and between devices using IP addresses.</p>

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Digital Literacy	<p>I can follow the 'code of conduct' rules when using technology in school.</p> <p>I can identify 'trusted adults' and discuss technology/online concerns with them.</p> <p>I can be safe when using technology.</p> <p>I can be respectful when using technology.</p> <p>I can explain what personal information is and give examples of it.</p> <p>I can share information online in a safe and respectful way by following set rules.</p>	<p>I can follow the 'code of conduct' rules when using technology in school and compare these to using technology outside of school.</p> <p>I know that when working with technology, certain activities may require adult supervision or the help of a 'trusted adult'.</p> <p>I know ways to deal with digital content or digital contact I find concerning.</p> <p>I can be safe when using technology and internet services, e.g. not oversharing.</p> <p>I can be respectful when using technology and internet services, e.g. not upsetting others.</p> <p>I know what personal information I should and shouldn't share on technical devices/online.</p>	<p>I can explain the SMART rules about using the internet safely.</p> <p>I can explain what a good digital citizen is.</p> <p>I can explain why I cannot trust everyone online and where to go for help if something concerns/upsets me.</p> <p>I can explain what online bullying/cyber bullying is and know how to get help.</p> <p>I can understand the impact technology can have on my health, well being and lifestyle.</p> <p>I can understand the term 'identity' and can take appropriate measures to protect my own identity.</p> <p>I can understand that people may have different online identity to that in real life.</p> <p>I can explain that content online is owned by the person who created it and copyright helps prevent people from stealing others work.</p> <p>I know that software updates are important.</p>	<p>I can collaborate and use a shared space online to save and share work safely, respectfully and responsibly.</p> <p>I can explain who I can share information with and how to keep my information secure.</p> <p>I can describe strategies to stay safe online in a range of online environments e.g. blocking, reporting, content/users.</p> <p>I can explain the term "digital footprint".</p> <p>I can recall what cyber-bullying might look like and what where it could happen, e.g. when gaming or social media apps.</p> <p>I can describe what an avatar is and explain why using an avatar is advisable.</p> <p>I can explain what a secure, complex password is and give examples of weak and strong passwords.</p> <p>I can define plagiarism and understand the legal and moral reasons not to plagiarise.</p> <p>I know that some apps are paid, some are free and some are free with in-app purchasing.</p> <p>I can choose when and when not to accept 'cookie preferences'.</p>	<p>I know why not to open messages from unknown accounts or users (online strangers).</p> <p>I can explain what Spam is and how to deal with it.</p> <p>I can discuss the positives and negatives of being an online influencer.</p> <p>I can make informed choices about what Fake News is.</p> <p>I can understand that there are people online who may try to upset me. I can make a positive contribution to my online community.</p> <p>I can understand the impact of online bullying and know what to do if I am a victim or witness e.g. helpful websites and support lines to seek advice/help.</p> <p>I can understand the impact technology can have on my health, well being and lifestyle and discuss solutions such as "Digital 5 a day".</p> <p>I understand what PEGI ratings are and the importance of them.</p> <p>I can understand that that identities can be copied by other users (catfishing) and can minimise the risk of this happening e.g. protecting devices from harm, limit personal information, strong passwords etc.</p> <p>I can understand how photos can be altered digitally, distorting perceptions of beauty.</p>	<p>I can explain how to protect my computer or device from harm on the internet (anti-virus, firewall).</p> <p>I can explain the term 'phishing'.</p> <p>I can credit the use of web-sites and others people' work in my own.</p> <p>I can understand that judgements can be made about people based on their online identities and personas.</p> <p>I can support my friends to protect themselves and make good choices online, including reporting concerns to an adult.</p> <p>I can explain the ways in which media can shape our ideas about gender e.g. gender stereotypes. (in particular advertising).</p> <p>I can discuss the benefits of positive online relationships and being mindful of others feelings.</p> <p>I can explain how to capture evidence of online bullying (screen shot/cast) and how to report it e.g. blocking, reporting, unsubscribing.</p> <p>I know that digital technology can be potentially addictive.</p> <p>I can explore the positives and negative of AI (artificial intelligence).</p>

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Vocabulary	iPad, camera, computer, device, digital, sequence, instructions, algorithms, programming, device, robot, bug, debug, video, formatting, keyboard, button, save, edit, retrieve, internet, information, technology, search, website, personal information, trusted adult, online, sign in, password, communicate, browser, search engine(s).	Share, design, computational thinking, Sprite, execute, predict, font, images, data, collect, analyse, interpret, safe sites, trust, control, reputation, submitting/sharing, web address, URL, login, username, passwords, copyright,	Troubleshoot, persevere, Wifi, Jpeg, MP4, PDF, Scratch, code/coding, command, decomposition, selection, repetition, variables, input and output, World Wide Web, email, binary code, web pages, key words, editing, formatting, filtering, fake news, SMART rules, digital citizen, cyber bullying, block, balance, secure, identity,	Inputs, transitions, sound, reliable, evaluate, plagiarism, online risks, reporting, blocking, unsubscribing, avatar, catfishing, digital footprint, distortion, generalisation, PEGI, age restrictions, social network, screen shot/cast	URL, QR codes, audio, sensors, conditions, variables, web, hardware, HTML, podcast, augmented reality, VR, 3D, digital music, data base, search bar, adverts, reliable sources, email, send, reply, attachments, spam, junk mail, pop ups, vlogger, You tuber digital 5 a day, in-app-purchasing, phishing,	Microsoft word, PowerPoint, Excel, logical reasoning, IP addresses, selected, ranked, influence, virus, firewall, security updates, anti-virus, credit, reference, media, stereotypes, evidence, online reputation, addiction, harmful trolling, content, lifestyle, sexting, exclusion, ghosting, AI