CHJS Computing Progression of Knowledge & Skills

Knowledge	Year 3	Year 4	Year 5	Year 6
Computer Science *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*	Know how to break an open-ended problem up into smaller parts. Input programming commands into a sequence to achieve a specific outcome. Test and debug algorithms. Use repeat commands. Orally outline an algorithm for a specific task.	Use logical thinking to solve an open-ended problem by breaking it up into smaller parts. Use an efficient procedure to simplify an algorithm. Test and debug algorithms. Use a variety of tools to create a program. Explain how an algorithm helps with sequencing more complex programs.	Decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program. Refine a procedure using repeat commands to improve a program. Understand how using if/then commands and variables will make programs more efficient and alter outcomes. Orally explain how a computer model can provide information about a physical system. Test and debug algorithms.	Decompose a problem to design an algorithm for a specific outcome and compare this to solutions they have found before. Explain how each individual step in a programme impacts the outcome. Critically evaluate the effectiveness and efficiency of their own algorithms, including testing and debugging. Use variables and operators to stop or start a programme.
Digital Literacy *Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways*	Explain what makes a secure password and why they are important. Orally explain ways to protect personal information online and model this through their use of digital media. Know how to report upsetting material to adults and online.		Protect passwords and other personal information. Explain the consequences of sharing too much information about myself online. Know how to report upsetting material to adults and online.	

to report concerns about content and contact. *Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content* *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*	Judge the appropriateness of websites, apps and games and make good choices over their use, including length of use. Understand the potential ramifications of posting positive and negative comments online. Recognise the dangers of downloading files from unknown sources.	Recognise the consequences of spending too much time online or on a game. Understand the public nature of posting online. Explain the importance of communicating kindly and respectfully.
Information Technology *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*	Create different effects with different technology tools such as sound and images and select these to suit the audience. Combine a mixture of text, graphics and sound to share my ideas and learning. Explore new media and assess how it may be used to achieve a specific outcome. Know how appropriate keyboard commands can amend text on a device, including making use of a spellchecker. Give and receive constructive feedback and act on it to improve their work. Identify keywords to search safely and efficiently online.	Consider audience, atmosphere and structure when planning a particular outcome and use text, photo, sound and video editing tools to refine. Identify potential applications of unfamiliar technology and use the skills already developed to create content. I can combine a range of media to achieve a particular outcome and explain the purpose and effectiveness of each. Be digitally discerning when evaluating the effectiveness of their work and the work of others. Use a search engine to find appropriate information and check its reliability, including recognising how results are ranked.

	Save and retrieve work on the internet, the school network or my own device. Understand the parts of a computer or device and explain differences and similarities. Create a hyperlink. Know a variety of ways in which they can communicate online.			
Skills	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Computer Science *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*	Write a program on Hour of Code. Use more advanced Scratch programming, including pen up / pen down / change colour. Change the costume and background and create interaction between sprites using a short story format. Use the 'repeat' (loop) command within a series of instructions. Evaluate the effectiveness of own script	Navigate the Scratch programming environment. Create a background and sprite for a game. Add inputs to control their sprite. Use conditional statements (if… then) within their game. Use variables to configure external outputs within Scratch Use conditional statements and infinite loops Write scripts for games with more than one sprite and more than one background	Create a game with multiple backgrounds and sprites using an online tool. Create a sprite for an animation and design it's costumes Use external triggers and infinite loops to control sprites. Create and edit variables Use variables to configure external outputs Use external inputs to control external outputs	Design their own game including sprites, backgrounds, scoring and/or timers. Use conditional statements, loops, variables and broadcast messages. Their game finishes if the player wins or loses and the player knows if they have won or lost. Declare variables Use a range of statements Use selection algorithms Use comparison and numerical operators

	Orally explain what can be done to make the script more successful Introduce more than one back ground and change costume	Use the 'wait' function to sequence the script.	Use conditional statements and infinite loops	Evaluate the effectiveness of their programs and debug if required
Digital Literacy *Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.* *Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content* *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*	Question the "validity" of what they see on the internet. Use a browser address bar not just search box and shortcuts. Suggest consequences of sending/posting comments. Recognise online behaviors that would be unfair. Add websites to favourites. Use a search engine to find a range of media, e.g. images, text. Talk about the reliability of information on the internet, e.g. the difference between fact and opinion.	Recognise social networking sites and social networking features built into other things (such as online games and handheld games consoles). Make judgments in order to stay safe, whilst communicating with others online. Tell an adult if anything worries them online. Identify dangers when presented with scenarios, social networking profiles, etc. and identify report buttons. Articulate examples of 'good' and 'bad' behaviour online.	Judge when to answer a question online and when not to. Be a good online citizen and friend, not a 'digital bystander'. Articulate what constitutes good behaviour online. Use different sources to double check information found. Use advanced search functions in Google, e.g. quotations. Use strategies to check the reliability of information, e.g. cross checking with books.	Find *report* and *flag* buttons in commonly used sites and name sources of help (Childline, Cyber mentors, etc.) Discuss scenarios involving online risk. State the source of information found on the internet. Use advanced search functions in Google, e.g. quotations. Use strategies to check the reliability of information, e.g. cross checking with books. Use their knowledge of domain names to aid their

	Log in to an email, open emails, create and send replies. Attach files to an email. Download and save files from an email. Email more than one person and participate in group emails by 'replying to all'. Type in a URL to find a website.	Use a search engine to find a range of media, e.g. images, text. Think of search terms to use linked to questions they are finding the answers for. Talk about the reliability of information on the internet, e.g. the difference between fact and opinion.	Use their knowledge of domain names to aid their judgment of the validity of websites. Understand files may be saved off their device in 'clouds' (servers). Upload/download a file to on different devices	judgment of the validity of websites.
Information Technology *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*	Capture video. Discuss which videos to keep and why. Select text and make simple changes including bold, italic and underlined	Acquire, store and combine images from cameras or the internet for a purpose. Use the print screen function to capture an image. Select certain areas of an image and resize, rotate an image. Edit pictures using various tools in paint or photo-manipulation software	Collect audio from a variety of sources including own recordings and internet clips. Create a multi-track recording using effects. Edit and refine their work to improve outcomes. Consider the appearance and timings of the presentation and the effect it has on the viewer.	Storyboard and capture videos for a purpose. Plan for the use of special effects/transitions to enhance their video. Trim, arrange and edit audio levels of video to improve the quality of their outcome. Add titles, credits, transitions, special effects. Export their video in different formats for different purposes

				Create presentations using sound, text and images combined
Typing Speed	15 wpm	15 wpm	20 wpm	20 wpm