

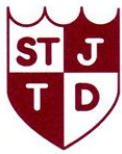


Progression of knowledge & skills in Computing

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Science	Computational Thinking	<p>Understand algorithms are sets of instructions</p> <p>Predict what a simple program eg beebot will do when you press buttons</p> <p>Understand how algorithms are implemented as programs on devices, eg beebots</p> <p>Write a simple program on a device eg by pressing buttons on beebot</p> <p>Understand a problem can be caused by your instructions</p> <p>Identify problems in an algorithm with support from an adult/peer.</p> <p>Fix problems with support from an adult/peer.</p>	<p>Understand the need for precise, unambiguous and ordered instructions.</p> <p>Understand computers need more precise instructions than humans.</p> <p>Understand that an algorithm is the written version of these instructions.</p> <p>Understand that a program is the computer version of these instructions.</p> <p>Create more precise programs including numbers for steps eg Daisy the Dinosaur or basic Logo</p> <p>Develop more effective ways to record algorithms.</p> <p>Identify problems in an algorithm by replaying and seeing where it went wrong.</p> <p>Correct these errors more independently.</p>	<p>Write simple program with specific goal in mind eg Logo to draw a shape/pattern</p> <p>Sequence instructions in a program</p> <p>Write own simple program and explain what it does</p> <p>Identify errors in the program independently as linked to the algorithm when it does not achieve the intended goal</p> <p>Identify linked inputs and outputs through a computer eg microphone → speakers, digital camera → graphics</p>	<p>Write simple programs which use the repeat function.</p> <p>Understand what variables are.</p> <p>Write simple programs which include variables – when if</p> <p>eg to add a score to a game</p> <p>Explain what the program does in your own words.</p> <p>Predict the outcome of a program based on a given algorithm</p> <p>Identify the errors in own program as linked to the algorithm, and correct with peer/adult support</p> <p>Understand how to decompose a real-life situation eg organising library alphabetically by identifying steps to solving that problem</p> <p>Understand how inputs and outputs communicate through digitised/analogue code</p>	<p>Use diagrams to help design and explain algorithms and programs</p> <p>Create a program to accomplish a specific goal that simulate physical systems eg Tynker, Flowol4 or Go Control</p> <p>Write programs that include selection if else Then ...</p> <p>Refine a program using repeat commands to improve the efficiency of a program</p> <p>Use decomposition by identifying what a program does not do/ does that it shouldn't and break down into the individual errors in own program and correct with increasing independence</p> <p>Understand the benefit of decomposing is re-using code.</p> <p>Use variety of inputs eg sensors</p>	<p>Write programs that include repetition and selection</p> <p>Write programs that use more than one variable</p> <p>Revise and improve programs to increase efficiency while programming</p> <p>Decompose errors into smaller parts and correct independently</p> <p>Use different inputs to control a device eg Probot, Lego Mindstorm</p> <p>Re-use code and modify to create a new program.</p>
	Knowledge of networks	<p>Understand that the school computers are linked together on a network.</p> <p>Understand something that is saved on one computer can be accessed on a different computer on the same network.</p>	<p>Understand the internet is a network which is why you can access the same website in different places and on different devices.</p>	<p>Understand computer networks, including the internet, are made up on computers/devices that are connected together.</p> <p>Understand the internet can be used to send data around the world.</p> <p>Identify ways internet can be used for communication eg blog, skype, social networks, emails, game chats</p>	<p>Understand that computers pass data around networks using radio or satellite signals that cannot be seen (wireless) or through copper/fibre-optic cables (wired)</p> <p>Understand and experience opportunities for collaboration, eg email, sharing attachments</p>	<p>Understand that data is broken down and sent in small packets and then stitched back together the other end, travelling at near light speed.</p> <p>Understand and experience opportunities for real-time collaboration eg twiddla, skype</p>	<p>Know how search engines rank results.</p> <p>Know how and why websites get their rankings on search engines improved.</p> <p>Understand and experience opportunities for real-time collaboration to achieve a set goal eg google drive</p>
Digital Literacy	Online Safety	<p>Understand the internet is good for finding out information and communicating.</p> <p>Know who to tell and what to do if they see something upsetting online.</p> <p>Communicate safely and respectfully online.</p> <p>Write positive comments on the school website/blog.</p>	<p>Understand the importance of keeping personal information private.</p> <p>Create an appropriate avatar for use online.</p> <p>Understand why you should only make friends with people you know in real life.</p>	<p>Identify which websites are safe to use</p> <p>Communicate safely and respectfully.</p> <p>Explain that being unkind to someone online is a form of bullying called 'cyberbullying'.</p> <p>Know that some things you publish are public and permanent.</p> <p>Choose a safe password.</p>	<p>Understand the risks of communicating with strangers online and the possibility they may hide their true identity</p> <p>Protect personal information online, being aware of privacy settings on certain websites.</p> <p>Understand responsible use of the internet includes choosing age-appropriate websites and apps</p>	<p>Understand what behaviours constitute 'cyberbullying' and understand the range of device this includes</p> <p>Understand how to prevent and respond to cyberbullying</p> <p>Understand the impact of online behaviour on your own and others' relationships</p> <p>Understand how to be constructive and positive when communicating with others online</p>	<p>Understand what is appropriate and suitable to say and do on social networking sites</p> <p>Understand the impact of online behaviour on your own and others' self-image and reputation</p> <p>Understand how to be constructive and positive when collaborating with others online</p> <p>Know who to tell and where to report harmful content including extremist ideologies</p>



	Using information	Recognise common uses of information technology in the home and school environment.	Recognise common uses of information technology beyond school	Understand that digital content is owned and you may need to get permission to use some things, eg photostock Use keywords effectively on search engines	Understand why you need permission to use some digital content eg music Use key phrases as well as key words on search engines Evaluate whether information found in a search engine is true, useful and relevant.	Understand what copyright is. Use advanced search functions and filters. Create a bank of trustworthy online sources of information	Understand the difference between main results and sponsored results. Understand that search engines collect information about you and this informs pop ups and adverts
Information Technology	Word Processing	Use keyboard letters, space bar and full stops buttons to type simple sentences onto word processing document.	Open and save a document. Use caps lock/shift to make capital letters. Use delete/backspace to delete. Use arrows or mouse to move around document.	Change text font, colour and size. Use underline, bold and italics functions. Use enter/return to move down lines.	Use shift plus numbers to add symbols. Align text. Create own folder. Save document to folder.	Use mouse to copy and paste. Use thesaurus and spell check features. Check document on print preview and print document for purpose.	Learn keyboard shortcuts and apply when typing a document.
	Animation	Animate a single or pair of characters using an app eg Chatterpix or Puppet Pals.	Move a character as part of story. Take turns to record stop-motion animation as whole-class. Add sound supported by the teacher.	Plan, create and record silent animations in groups.	Add titles to animation. Add sound to animation using a microphone as an input.	Plan, create and record animations with sound and text in pairs.	Add transitions and effects to animation.
	Presentations	Create a single slide in a group presentation in a pre-selected slide format.	Create a single slide in a group presentation, selecting slide format. Change font size and colour with audience in mind.	Create several slides in a group presentation. Change background design on slide to suit purpose.	Insert images and video clips into a presentation. Create an individual multi-media presentation.	Create an individual multi-media presentation with an audience in mind. Add transitions and timings between slides.	Duplicate slides to improve efficiency. Add notes to the presentation for the presenter. Print slide handouts/notes pages.
	Audio	Record sound using hardware eg easi-speak mic, talking photo albums. Replay sound.	Add sound to an existing project eg film/animation/presentation, supported to speak slowly and audibly into the microphone.	Add sound to short sequences, eg Scratch Junior	Record and edit sound files by adding different effects for a purpose eg adding sound to stop-motion animation. Add sound files to project with support.	Record and edit sound files by adding different effects for a purpose eg adding sound to stop-motion animation. Add sound files to project independently.	Record and edit sound files by adding different effects and splitting clips for a purpose.
	Photography	Use ipad to take photo of still object. Press record button to take photo. Look at photo afterwards.	Use ipad to take photo of moving object/person. Understand effect of movement. Understand difference between landscape/portrait orientation.	Select photos based on success criteria. Delete rejected photos. Upload photos with support. Use a printer as an output to print photos for a purpose eg create a display.	Upload photographs onto a computer, creating and editing an album. Name album. Look at album through thumbnails.	Plan and take photos in different settings, understanding the effects of lighting and composition.	Explore editing photos eg through filters.
	Film	Use ipad to record short film. Press record button to start and stop filming. Replay the film.	Understand the importance of holding a recording device still when moving during filming. Pan around a scene slowly. Delete video clips on the ipad.	Create a class film, planning and recording the film in turns. Upload the film into editing software eg Windows Movie Maker. Edit film clips with support.	Plan, record and edit a film with a purpose and chosen audience in mind. Split clips during editing. Add titles and text to films.	Understand different types of shots. Duplicate clips during editing eg to repeat a section to allow enough time for sound clip.	Plan and use different types of shots in film. Add transitions and effects to films.
	Blogs	Understand what a blog is. Contribute to an existing class blog.	Add safe, appropriate comments to a class blog. Understand a blog is public.	Create a class blog. Contribute independently to blog through text to share ideas.	Select appropriate and relevant images to embed into class blog. Embed images into class blog.	Create own blog, embedding images independently.	Embed video content into own blog.
	Email	Understand what an email is. Contribute ideas to a class email to be sent.	Create a class email account, selecting an appropriate and safe username and password.	Create an individual email account, selecting an appropriate and safe username and password.	Compose and send a new email to be sent to a school email account.	Understand the difference between inboxes/outboxes/sent and junk.	Know what to do with spam, junk and phishing emails.



		Read the reply received.	Understand who can see an email. Contribute ideas to a class email to an outside organisation about project/trip.	Understand who you should share your email address with. Understand email etiquette.	Reply to and send an email to a school email account.	Add attachments to an email. Use email to communicate with an organisation outside of school to enhance a project or topic.	
	Data Handling	Use simple graph-making software, eg www.j2e.com to create simple pictogram to answer a question. Drag labels. Use + and – buttons to represent number chosen.	Use simple graph-making software, eg www.j2e.com to create simple bar chart to answer a question. Type data into table to create bar chart. Print bar chart for purpose.	Use simple graph-making software, eg www.j2e.com to create a simple branching diagram to sort pictures. Type questions. Drag pictures to sort them. Play back the branching diagram as a game.	Collect data, eg sound, light, temperature, using a simple data logger as an input.	Upload data to computer to view recordings from data logger. Choose how data is displayed eg bar chart/table/graph.	Use data logger to collect and present data for a purpose, eg to find sunniest place to put plants in classroom.

*With thanks to Crown Lane Primary School