Computing Skills Ladder

	Foundation Stage	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Topic Links to other subjects							
Collecting (working with data)	Collect and represent data. Use data to answer questions. e.g. tally charts, pictograms made with stickers? 2simple (Infant video toolkit – 2graph)	Organises, stores, edits and manipulates data in different digital formats. e.g. Microsoft word document, 2 simple graph, pic collage	Recognises the different types of data e.g. text and number. Recognises that data can be structured in tables to make it useful. Begins to recognise the difference between data and information. e.g. 2 simple graph. Make a table on a spreadsheet and create simple graph.	Can talk about the different ways data can be organised. Can search a ready-made database to answer questions. Can collect data help answer a question and add to a database. Create Bar charts. E.g data logger, spreadsheet Excel	Can clearly explain the difference between data and information. Knows ways that can improve searching for information. Create a series of yes/no questions to identify an object, create a tree diagram of it, create a branching database. e.g. data logger, spreadsheet Excel	Recognises that poor-quality data leads to unreliable results and inaccurate conclusions. Use graphs to provide supporting evidence for their conclusions. Enter data and formulae into cells, e.g. budget and costings for a party. Use 'SUM' e.g. data logger, spreadsheet Excel	Knows that digital computers use binary to represent all data. Knows that computers transfer data in code. Identify and enter the correct formulae into cells, modify the data, make predictions of changes and check them. Copy formulae to create tables of results. Create graphs from spreadsheets. Create and use a spreadsheet to answer a 'What if …..?' mathematical investigation. Excel
Controlling (algorithms, programming and development)	Can understand and follow instructions and begin to write own algorithms. E.g. recipe, directions, planting a bean, making a sandwich. Completes a simple program on a computer or device. E.g. Beebot	Understand what an algorithm is. Write a simple set of instructions with a purpose using symbols. Creates simple programs e.g. on programmable robots, or beebot app. Executes, checks and changes programs. Understands that programs execute by following precise instructions 2simple	Write a simple set of instructions with a purpose. Predict outcomes and correct any errors (debug). Understand that computers need precise instructions. Understand that algorithms are used on digital devices as programs. Plans and develops their own programs e.g. robots. Predicts the behaviour of programs and debugs to correct errors. IPAD – beebot game, daisy dinosaur, junior scratch. Laptop – 2 simple modelling toolkit / 2 go	Designs algorithms that use repetition and two-way selection (i.e if, then, else.) Uses diagrams to express solutions. Scratch / kudo Create programs that implement algorithms to achieve given goals. Identifies and assigns variables in programs. Uses loop commands and selection statements including if, then, else. Scratch / kudo. Use reasoning to detect and correct errors in algorithms and programs (debugging).	Knows which tasks best completed by human or computers. Designs solutions by breaking down a problem. Recognises that there is more than one solution to a problem. Controls 'endings' in programs. Use reasoning to detect and correct errors in algorithms and programs (debugging). Knows that a procedure can be used to hide details in programs. Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions). Scratch / Kudo	Recognises that there are several solutions to the same problem. Understands that various algorithms exist for different functions. Begins to identify patterns in algorithms that help to solve specific problems. Understands that programming bridges the gap between algorithmic solutions and computers. Solve a problem to accomplish a specific goal which includes variables and a range of inputs and outputs. Use reasoning to detect and correct errors in algorithms and programs (debugging). Starts to apply these in the context of program control (e.g. input/process/output.) Lego Wedo	Understands the use of a loop to repeat a process. Recognises that different algorithms exist for the same problem. Detects errors in algorithms. Can identify similarities and differences in situations and can use these to solve problems (pattern recognition.) Use reasoning to detect how a simple algorithm works. Design, program and test a program to achieve a specific goal e.g. a game. (KODU). Understands that programming bridges the gap between algorithmic solutions and computers. Use a range of sensing tools (including proximity, user inputs, loudness and mouse position to control events or

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		Modelling toolkit or 2Go					actions. Microbit/Lego Wedo
Communicating safely (E-safety)	**Know what to do when a command box opens, or the page changes unexpectedly (e.g. hector / turning monitor off – then tell an adult)** Discussion around what is safe to share on the school website / class blog: first names, photographs of work etc. Listen to and discuss stories with morals and stranger danger	Know the school Acceptable Use Policy and the SMART online rules: Safe/Meeting/Accepting/Reliable/Tell. Know what to do if they view content they think is inappropriate or upsetting (school policy) e.g. know how to minimise a screen if they see something inappropriate on a website and tell a trusted adult. Begin to evaluate web sites by giving opinions about preferred sites. Know that you can be diverted from a website through a link to a new website, advertising or pop-up. Know that anyone can create a web site and it is sometimes difficult to know if information is true. Know to keep personal information private when communicating online Know that online communication is not always confidential and that it can be monitored. https://www.thinkuknow.co.uk/5_7/leeandkim/		Be aware of the school Acceptable use Policy and the SMART online rules: Safe/Meeting/Accepting/Reliable/Tell. Know what to do if content is inappropriate or upsetting (school policy) e.g. know who to report to and talk to. Be aware that taking text or images from some sites may be stealing other people's work. Understand the Internet contains fact, fiction and opinion and begin to distinguish between them. Know that the aim of many sites is to sell something or gain personal information. Know when an email should not be opened or messages ignored. Know to keep personal information and passwords private when communicating online (including email, blogging and instant messaging Understand that online communication is not always confidential and that it can be monitored. Know that anyone can create a user showing any age or gender and people you meet online may not be who they say they are (social networking, chat rooms and instant messenger). Know they can create an alias or avatar when online. https://www.thinkuknow.co.uk/8_10/		Use a range of sources to evaluate information found online, consider plausibility and develop strategies to make judgements on the sources used e.g. cross-referencing a number of websites. Understand the impact of an individual sending or uploading inappropriate content to a wider audience. Understand wikis are multi-authored and can be hard to verify (e.g. Wikipedia). Have an awareness of the need to check a resource has copyright or can be legally downloaded free of charge from the internet and whether it can be re-used. Check the validity of a website, e.g. look for the author via the 'Contact us' or 'About us' area of the website, or through 'Whois' sites that list the author's details. Know that many commercial providers have sophisticated ways of trying to sell on the internet (e.g. Hoax 'You have a virus' message box to sell antivirus software). Demonstrate safe practice when selecting images or content for uploading to an online space. Understand some malicious adults use the internet to make contact and "groom" young children. Know how to report any suspicions (Think You Know REPORT ABUSE page). Understand the need for privacy settings on any social networking sites (and that those privacy settings may not be observed by online 'friends' who can use/share/download your images/content).	
Communicating (Use of ICT)	Use drawing software. Knowing common uses of IT beyond the classroom e.g. use buttons to pause, play stop on CD player. Enter words / letters using keyboard, using space bar.	Save / copy / paste. Enter words / letters using keyboard, using space bar. Explore paint packages and tools. Record videos, sounds / music. Use hyperlinks, forward and back buttons, search engine safely. Open, close and minimise programs.	Log in / out. Open and save work. Position fingers to type using multiple fingers. Use right click on mouse. Change text font, size, colour, alignment. Send email. Select and use appropriate tools to create pictures, edit. Create stop-frame animation. Use favourites to open web pages.	Use cut, paste, delete. Change font / appearance for specific audiences. Use spell check and thesaurus. Begin to use all fingers for typing and thumb for space bar. Import, save and retrieve images and video. Create music for purpose. Find and use images in their work. Save favourite webpage.	Forward and send to multiple recipients. Touch type with more speed. Edit images – crop, brightness, contrast and resize. Find and import sound / images into presentation. Understand copyright issues for music, images and videos.	Discuss appropriate use of ICT skills. Use publishing / multimedia package to create presentation for particular audience. Touch type quicker. Import videos into video editing package, add titles, credits and transitions. Export and save a video. Create multimedia text with hyperlinking. Use advanced search techniques e.g. image size and keywords.	Evaluate presentation on the basis of content and appropriate style. Refine quality of presentation as a result of peer review. Choose most suitable apps and devices to communicate to a specific audience. Touch type quicker. Edit picture to remove items, add backgrounds, a merge 2 photos. Film and edit video. Use 3D drawing program to create realistic representation of real world object.

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