Progression of skills in computing for EYFS, KS1 and KS2 2021 – 2022 **Subject lead: Nicole Coakley**

Computing is split into 5 different categories: **E-Safety, Programming, Multimedia, Technology in Our Lives** and **Data Handling**. Please use the following progression of skills map as a reference point when planning and teaching units of work, drawing on later or earlier skills to support and extend children's learning and development. You should focus on one of these skills each half term, although you may find some objectives cross over into other units too.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
E-Safety	▯ Talk about good & bad choices in real life e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you. ▯ Play appropriate games on the Internet. ▯ Talk about good and bad choices when using websites – being kind, telling a grown up if something upsets us ▯ Talk about keeping ourselves safe by keeping information private.	▯ Understand they need to follow certain rules to remain safe when visiting places online. ▯ Begin to understand that if you creative something you own it. ▯ Learn that many websites ask for information that is private and discuss how to responsibly handle such requests. ▯ Explore how emails can be used to communicate with real people within their schools, families & communities. ▯ Learn that directory sites with alphabetical listings offer one way to find things on the Internet	▯ Stay safe online by choosing websites that are good for them to visit. ▯ Explore what cyber-bullying means & what to do when they encounter it. ▯ Know that if they put information online it leaves a digital footprint or "trail" & they need to manage it so it is not hurtful. ▯ Understand that keyword searching is an effective way to locate online information and how to select keywords to produce the best search results. ▯ Discuss criteria for rating informational websites a site. ▯ Realise that not all websites are equally good sources of information.	▯ Agree sensible e-safety rules for the classroom. ▯ Choose a secure password for age-appropriate websites. ▯ Discuss what actions could be taken if they are uncomfortable or upset online e.g. Report Abuse button. ▯ Talk about what games they enjoy playing and what good choices are when playing games e.g. content, screen time. ▯ Use a class blog to share information and talk about who can see it, and how to communicate safely and respectfully ▯ Comment and provide positive feedback on the work of classmates in school or online, or the work of others online.		▯ Agree sensible e-safety rules for the classroom. ▯ Discuss their own personal use of the Internet and choices they make ▯ Discuss how to protect devices from virus threats. ▯ Discuss the importance of keeping an adult informed about what you are doing online, and how to report concerns. ▯ Explore using the safe and responsible use of online communication tools e.g. blogs, messaging.	
Programming	▯ Help adults operate equipment around the school, independently operating simple equipment ▯ Use simple software to make things happen ▯ Press buttons on a floor robot and talk about the movements	▯ Physically follow & give each other instructions to move around ▯ Explore outcomes when buttons are pressed in sequences on a robot ▯ Begin to use software to create movement &	▯ Physically follow and give each other forward, backward & turn (right-angle) instructions ▯ Articulate an algorithm to achieve a purpose ▯ Plan and enter a sequence of instructions to achieve	▯ Plan & enter a sequence of instructions on a robot specifying distance & turn to achieve specific outcomes, debug the sequence where necessary. ▯ Test & improve /	▯ Create & edit procedures typing logo commands including pen up, pen down & changing the trail of the turtle. ▯ Use sensors to 'trigger' an action	▯ Explore procedures using repeat to achieve solutions to problems with Logo & a floor robot ▯ Talk about procedures as parts of a program ▯ Refine procedures	▯ Record in some detail the steps (the algorithm) that are required to achieve an outcome & refer to this when programming ▯ Predict the outputs for the

	▯ Explore options and make choices with toys, software and websites	patterns on a screen ▯ Begin to identify an algorithm to achieve a specific purpose ▯ Execute a program on a floor robot to achieve an algorithm ▯ Use the word debug to correct any mistakes when programming a floor robot ▯ Begin to predict what will happen for a short sequence of instructions in a program	an algorithm, with a robot specifying distance & turn and drawing a trail ▯ Explore outcomes when giving instructions in a simple Logo program ▯ Watch a Logo program execute & debug any problems ▯ Predict what will happen & test results ▯ Talk about similarities & differences between floor robots and logo on screen	debug programmed sequences. ▯ Begin to type logo commands to achieve outcomes. ▯ Explore outcomes when giving sequences of instructions in Logo software. ▯ Use repeat to achieve solutions to tasks. ▯ Solve open-ended problems with a floor robot & Logo including creating simple regular polygons, making sounds & planning movements such as a dance. ▯ Create an algorithm to tell a joke or a simple story. ▯ Sequence pre-written lines of programming into order ▯ Talk about algorithms planned by others & identify any problems & the expected outcome.	such as turning the lights on using Probot if it 'goes through a tunnel', or reversing if it touches something. ▯ Solve open-ended problems with a floor robot, Logo & other software using efficient procedures to create shapes & letters. ▯ Experience a variety of resources to extend knowledge & understanding of programming. ▯ Create an algorithm & a program that will use a simple selection command for a game. ▯ Begin to correct errors (debug) as they program devices & actions on screen, & identify bugs in programs written by others. ▯ Use an algorithm to sequence more complex programming into order	to improve efficiency ▯ Use a variable to replace number of sides in a regular shape ▯ Explore instructions to control software or hardware with an input & using if... then... commands ▯ Explore a computer model to control a physical system ▯ Change inputs on a model to achieve different outputs ▯ Refine & extend a program ▯ Identify difficulties & articulate a solution for errors in a program ▯ Group commands as a procedure to achieve a specific outcome within a program ▯ Write down the steps required (an algorithm) to achieve the outcome that is wanted and refer to this when programming.	steps in an algorithm ▯ Increase confidence in the process to plan, program, test & review a program ▯ Write a program which follows an algorithm to solve a problem for a floor robot or other model ▯ Write a program which follows an algorithm to achieve a planned outcome for appropriate programming software ▯ Control on screen mimics & physical devices using one or more input & predict the outputs ▯ Understand how sensors can be used to measure input in order to activate a procedure or sequence & talk about applications in society ▯ Create variables to provide a score/trigger an action in a game ▯ Link errors in a program to problems in the original

					▯ Link the use of algorithms to solve problems to work in Maths, Science & DT		algorithm.
Multimedia	▯ Use a mouse to rearrange objects and pictures on a screen. ▯ Recognise text, images and sound when using ICT. ▯ Use a camera or sound recorder to collect photos or sound ▯ Use paint programs to create pictures. ▯ Begin to use a keyboard see programming ▯ Develop an interest in ICT by using age appropriate websites or programs.	▯ Record their own voices and play back to an audience. ▯ Use a video or stills camera to record an activity. ▯ Create sounds and simple music phrases using ICT tools. ▯ Add text and images to a template document using an image & word bank ▯ Use index fingers (left and right hand) on a keyboard to build words &sentences. ▯ Know when & how to use the SPACE BAR (thumbs) to make spaces between words	▯ Use an increasing variety of tools and effects in paint programs and talk about their choices. ▯ Use templates to make electronic books individually and in pairs. ▯ Explore the effects of sound and music in animation and video. ▯ Create own documents, adding text and images. ▯ Use keyboard to enter text (index fingers left & right hand). ▯ Know when and how to use the RETURN/ ENTER key. Use SHIFT & CAPS LOCK to enter capital letters. Use DELETE & BACKSPACE buttons to correct text. Create sentences, SAVE & edit later.	▯ Explore & begin to evaluate the use of multimedia to enhance communication. ▯ Create & begin to edit presentation documents & text, experimenting with fonts, size, colour, alignment for emphasis & effect. ▯ Use a range of effects in art programs including brush sizes, repeats, reflections ▯ Explore the use of video, animation & green screening. ▯ Use ICT tools to create musical phrases. ▯ Amend text & save changes. ▯ Use individual fingers to input text & use SHIFT key to type characters. ▯ Amend text by highlighting & using SELECT/	▯ Explore how multimedia can create atmosphere & appeal to different audiences ▯ Be confident in creating & modifying text & presentation documents to achieve a specific purpose. ▯ Use art programs & online tools to modify photos for a specific purpose using a range of effects. ▯ Explore the use of video, animation, & green screening for a specific audience. ▯ Use ICT tools to create music phrases for a specific purpose ▯ Use a keyboard effectively, including the use of keyboard shortcuts. ▯ Use font sizes & effects such as	▯ Select an appropriate ICT or online tool to create and share ideas. ▯ Explore the effects of multimedia (photos, video, sound) in a presentation or video and show how they can be modified. ▯ Develop skills using transitions and hyperlinks to enhance the stricture of presentations. ▯ Use a wide range of effects in art programs and online tools, discussing the choices made and their effectiveness. ▯ Know how to use text and video editing tools in programs to refine their work. ▯ Use online tools to create and share presentations and films.	▯ Identify the purpose for selecting an appropriate online tool. ▯ Discuss audience, atmosphere and structure of a presentation or video. ▯ Collect information and media from a range of sources (considering copyright issues) into a presentation for a specific audience. ▯ Use sound, images, text, transitions, hyperlinks and HTML code effectively in presentations. ▯ Store presentations and videos online where they can be accessed by themselves and shared with others. ▯ Evaluate the effectiveness of their own work

				DELETE & COPY/ PASTE. ▯ Look at own work & consider how it can be improved for effectiveness.	bullet points appropriately. ▯ Know how to use a spell check. ▯ Look at their own, and a friend's work & provide feedback that is constructive & specific.		and the work of others.
Technology in our lives	▯ Recognise purposes for using technology in school and at home. ▯ Understand that things they create belong to them and can be shared with others using technology. ▯ Recognise that they can use the Internet to play and learn.	▯ Recognise uses of technology in their homes and in their community. ▯ Understand that there are online tools that can help them create and communicate.	▯ Begin to understand there are a variety of sources of information and begin to recognise the differences. ▯ Begin to understand what the Internet is and the purposes that it is used for. ▯ Understand the different types of content on websites and that some things may not be true or accurate.	▯ Save work on the school network, on the Internet and on individual devices ▯ Talk about the parts of a computer. ▯ Use appropriate tools to collaborate on-line. ▯ Use appropriate tools to communicate on-line. ▯ Use simple search tools and find appropriate websites. ▯ Talk about the owner of information online.	▯ Talk about the school network & the different resources they can access, including the Internet. ▯ Frame questions & identify key words to search for information on the Internet. ▯ Consider reliability of information & ways it may influence you. ▯ Check who the owner is before copying photos, clipart or text.	▯ Identify different parts of computing devices. ▯ Identify different parts of the Internet. ▯ Choose appropriate tools for communication and collaboration and use them responsibly. ▯ Use effective strategies to search with appropriate search engines. ▯ Talk about the different elements on web pages. ▯ Find out who the information presented on a webpage belongs to.	▯ Describe different services provided by the Internet & how information moves around the Internet. ▯ Describe different parts of a computing device & how it connects to the Internet. Connect a computing device to a keyboard, mouse or printer. ▯ Identify appropriate forms of online communication for different audiences. ▯ Use search engines as part of an effective research strategy. ▯ Describe how search results are selected & ranked. ▯ Acknowledge who resources belong to that they have found on the internet.

Data Handling	• Collect information as photos or sound files. • Use a simple pictogram or set of photos to count and organise information.	• Take photographs, video and record sound to record learning experiences. • Look at how data is representing digitally. • Contribute to and interpret a pictogram.	• Take and save photographs, video & record sound to capture learning. • Use microscopes or other devices to capture and save magnified images. • Ask questions and consider how they will collect information. • Collect data, generate graphs and charts to find answers. • Save & retrieve the data to show to others. • Create paper/ object decision trees & explore a branching database. • Investigate different types of digital data e.g. online encyclopaedias	• Find out information from a pre-prepared database, asking straightforward questions. • Contribute towards a database. • Construct and use a branching database. • Record data in a variety of ways. • Present data for others. • Use a data logger to monitor changes and talk about the outcomes seen.	• Plan and create a database to answer questions. • Identify different types of data. • Ask questions carrying out simple searches on a database. • Identify inaccurate data. • Present data in appropriate format for an audience. • Use a data logger to record and compare individual readings.	• Collect and record information using spreadsheets and databases • Carry out complex searches (e.g. using and/or; ≤ / ≥) • Solve problems and present answers using data tools. • Analyse information and question data. • Identify poor quality data. • Select appropriate use of a data logger for an investigation and interpret the findings.	• Use the whole data process – generate, process, interpret, store, and present information – realising the need for accuracy and checking plausibility. • Select appropriate data tool. • Identify and present results. • Interrogate a database, refining searches to provide answers to questions. • Plan investigations using the outcomes from a data logger to show findings

Please ask for resources needed to teach the units of work as detailed above.