Knowledge and Skills Progression

Subject area: Computing *updated Nov 2020

Knowledge and Skills	Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
E Safety ***Please also refer to the Education for a Connected World Document for differentiated learning outcomes.**	Most children will: • Ask an adult when they want to use the internet • Be careful with technology devices • Know that they can say 'no', 'stop' to somebody who makes them feel sad, embarrassed or upset. • Explain some ways which the internet can be used to communicate	Most children will: • Talk about what personal information is • Tell an adult when they see something unexpected or worrying online • Recognise that there may be people online who can make me feel sad, embarrassed or upset • Explain why it is important to be kind and considerate online	Most children will: • Talk about what sort of things they need to tell an adult about • Know that people may not tell the truth online and may not be who they say they are • Explain how people's identity online can be different to their identify in real life • Explain steps to communicate safely with people they don't know well • Talk about digital footprint • Give examples of what online bullying might look like	Most children will: • Talk about what makes a secure password and why they are important • Know basic methods to stay safe online such as not sharing personal information • Talk about age appropriateness of games and websites • Explain how online identity can be copied or altered • Talk about the differences between online and real life relationships • Identify some online locations where bullying might take place • Talk about in-app purchases	Most children will: • Choose a secure password • Talk about ways to protect themselves online • Talk about the safety features of games, apps and websites • Talk about the need to talk to an adult about downloading files and games • Comment positively and respectfully online • Explain how to block and report abusive users of technology • Talk about how apps may share personal information	Most children will: • Protect passwords and other personal information • Explain the best ways to protect themselves online, including reporting concerns to an adult • Know that anything posted online can be seen, used and may affect others • Talk about the dangers of spending too much time online • Talk about the importance of choosing age appropriate content and how to do this • Talk about why they need to protect their devices • Talk about the dangers of online relationships and how we avoid those dangers • Describe how to capture evidence of online bullying e.g. screenshots • Describe how criminals use techniques such as phishing to obtain money or information	Most children will: • Protect passwords and other personal information • Explain the consequences of sharing personal information online • Support friends to protect themselves and make good choices online • Explain the consequences of spending too much time online • Explain the consequences of not communicating kindly and respectfully • Know how to protect their devices from harm on the internet • Describe ways in which media can shape ideas about gender • Describe how they can support others who may be having difficulties online • Explain what app permissions are • Demonstrate how to make reference to and acknowledge sources I have used from the internet
Generic skills	Most children will: • be aware that pressing buttons will make a device respond eg remote control toy • use the mouse	Most children will: • be able to print work using the Print icon • use both hands on the keyboard • load programs with support	Most children will: • use appropriate ICT vocabulary • load programs independently • save work independently	Most children will: • be aware that work can be saved in different places eg network, cloud, PenDrive • be aware of folders and, with support,	Most children will: • with support, be able to choose an appropriate program to perform a task • plan what they are going to do and evaluate the results	Most children will: • be able to choose an appropriate program to perform a task • be able to combine and refine information from various sources.	Most children will: • be able to choose and combine the use of appropriate ICT tools to complete a task • be able to critical evaluate the fitness for purpose of

	and the keyboard to explore programs • be aware that moving the mouse moves the pointer on the screen • be aware of the effect of pressing the mouse buttons • have experience of a range of ICT equipment and software • talk about what they are doing with ICT use appropriate ICT vocabulary	• know that work can be saved and retrieved • save work with support • retrieve work with support • have experience of a range of ICT equipment and software • talk about what they are doing with ICT	• retrieve work independently • plan what they are going to do • make simple modifications to their work (edit) • practise keyboard skills using both hands, try to use more than two fingers, and try to use the thumb on the spacebar. • have experience of a range of ICT equipment and software describe their work and how they have used ICT	create and name new folders • print work using the drop down menu • use Print Preview • make changes to their work (edit) • select items and use cut, copy and paste as necessary • have experience of a range of ICT equipment and software • describe their work and how they have used ICT • annotate their work samples using prompts • use appropriate ICT vocabulary	• understand that work can be saved in different places eg network, cloud, PenDrive • understand the use of folders and be able to create and name new folders • understand and use the hierarchical file system • consolidate keyboard skills -possibly using typing tutor software • have experience of a range of ICT equipment and software • describe their work and explain how and why they have used ICT • annotate their work samples using prompts • use appropriate ICT vocabulary	• interpret and question the plausibility of information. • have experience of a range of ICT equipment and software • describe and discuss their work and explain how and why they have used ICT • annotate their work samples using prompt questions • use appropriate ICT vocabulary	work as it progresses • have experience of a range of ICT equipment and software • describe and discuss their work and explain how and why they have used ICT • annotate their work samples using prompt questions • use appropriate ICT vocabulary
Paint/ Draw / Animation / Photo editing/ Video	Most children will: • use a paint package to create a picture • with support, use a digital camera ipad or digital video camera to take pictures • be aware that digital pictures and video can be displayed on a computer screen	Most children will: • use simple tools in a painting program • use a range of tools purposefully to create and alter the appearance of an image. • use a ipad, digital camera or recording device with support to take pictures • be aware that digital pictures and video can be saved on a computer • use simple software to record a puppetstyle animation, with support.	Most children will: • use different effects such as symmetry and filters to manipulate images or make changes. • select appropriate paint tools within a paint package to create pictures that communicate their ideas. • transfer images between devices or apps, with help. • use still and video cameras independently to capture still images and video footage. • sequence and arrange pictures or video clips for a purpose. • create simple animations with support using suitable	Most children will: • be able to use a wider range of tools within an art package as necessary • use a digital camera or digital video camera to take appropriate pictures or video for a specific purpose • use editing tools in a paint package for a specific purpose. • do simple manipulation of images using an art package or other software eg the digital camera's software • build up images by selecting, copying and pasting within the image. • sequence still images and video and use simple editing	Most children will: • use a wider range of tools within an art package as necessary • be able to import a photograph, explore the effects, which can be created and use a range of visual effects such as filters, hues and painting over photographs to give different effects. • sequence & edit video footage and still images once transferred from a digital camera to computer. • add text, sound effects and other graphic effects to video. • be able to create a stopframe animation using a camera with built-in stop motion software or an onscreen stop animation package. • evaluate and improve	Most children will: • use a wider range of tools within an art package as necessary • continue to manipulate images using an art package or other software • begin to evaluate when it is appropriate to use an art package and when another medium would be more suitable • continue to use a digital camera , ipad or digital video camera to take appropriate pictures or video for a specific purpose • be able to select, copy and paste within and between photographs. • be able to explore "airbrush" techniques to improve photographs, such as used in magazines with celebrities.	Most children will: • use a wider range of tools within an art package as necessary • continue to manipulate images using an art package or other software • know when it is appropriate to use an art package and when another medium would be more suitable • continue to use a digital camera ipad, or digital video camera to take appropriate pictures or video for a specific purpose • be able to use different filming techniques and camera angles e.g. zoom, panning, wide shot etc. to create different mood/perspective. • be able to plan a video or animation by drawing a storyboard.

			software.	techniques to create a presentation.	digital work with a view to audience and purpose.		• film, create, edit and refine to ensure quality; present to an audience.
Sound/ podcast/ composition	Most children will: • use computing to listen to and talk about sounds; create simple sounds.	Most children will: • use a sound recorder or on screen recorder to collect and store information as sound. know that sound can be recorded and played back • with support, use music software to experiment, create and play their own compositions	Most children will: • create short musical phrases to suit a purpose, focusing on types of sound and/or rhythm using digital technology. • select and record musical phrases, sound-effects or voice-overs to enhance multimedia work.be aware that sound can be recorded on the computer as a sound file • use music software to experiment, create and play their own compositions with support, evaluate and modify (edit) their own compositions	Most children will: • use music software to organise and reorganise sounds. • locate, record, save and retrieve sounds in multimedia software. • begin to layer sounds using music composition software. • with support, be able to record sound on the computer and be able to use the sound files in other applications • use music software to plan, create and play their own compositions • evaluate and modify (edit) their own compositions • use a range of musical instruments in their compositions	Most children will: • be able to layer sounds using music composition software. • evaluate and re-record sound recordings where appropriate. • be able to use the sound files in other applications use more sophisticate music software to plan, create, edit and play their own compositions	Most children will: • be able to select and edit sounds, text, movie clips and other effects to suit purpose and audience. • be able to collect sounds from a variety of sources (sound editing software, online, digital sound recorder). • use more sophisticate music software to plan, create, evaluate, edit and play their own compositions	Most children will: • be able to import sounds (recorded vocals, samples (digital sound files) and recordings from real instruments) into sound editing software. • be able to layer and edit sounds. • be able to save multimedia work as a web compatible format for uploading and podcasting; share online. • continue to use more sophisticate music software to plan, create, evaluate, edit and play their own compositions
Communication	Most children will: • know how computers help us outside school • with help, log on to, personalise and use the tools within an online space	Most children will: • be able to say what information is personal and should not be shared online, with support • be able to tell an adult if they feel something they see online is inappropriate or hurtful	Most children will: • be able to make digital comments as an individual or as a class on other people's work. • be involved in the process of sharing work online as a small group. • be able to follow and understand school rules for staying safe online. • be able to say what information is personal and should not be shared online. • be able to save, print and retrieve work with support.	Most children will: • experience of other forms of online discussion, such as blogs, quizzes, surveys & video conferencing. • begin to upload some work independently to the VLE. • work within the internet safety rules, understand why they are in place and abide by them. • explain how to keep safe and the importance of being polite online. • be able to save work in a way that means it is easy to remember • compose and send email eg to a pre-	Most children will: • know that mail can be sent all over the world electronically via computers (email) • be able to upload work to a learning platform and know that it is important to consider the quality of work before posting to be seen by others. • use at least two online communication methods (e.g. online discussion, surveys, quizzes, blogs, shared online folders, web quests) through the Learning Platform in topic work. • use the shared platform to give useful and polite feedback to others on their work.	Most children will: • be able to upload informative and interesting content to a VLE including various media. • be able to initiate and take part in collaborative learning using a variety of methods e.g. email, discussions, quizzes, surveys, blogs, wikis, webquests, video conferencing • send a picture or document • understand what email is and why it is used • know that files can be sent via email as attachments • know that email can be sent or copied to more than one person • know that an email can be forwarded to another person	Most children will: • be aware that computer viruses can be sent via email be aware of email safety rules • be able to talk about how to use the social media and internet search engines safely. • be able to develop and understand rules for personal internet safety. • be able to develop and understand code of conduct for online collaboration and explain what to do in cases of cyberbullying. • be able to present findings to a specific audience.

				arranged partner in another class in the school or in another school • begin to be aware of email safety rules	• understand and be able to talk about how to use the Internet safely. • understand that it is important to keep passwords and other personal information secure. • Know that the internet has potential dangers & be able to explain how to keep yourself safe online. • be able to save work to both personal and shared areas and know the benefits of each. with support, send a picture or document as an attachment • be aware of email safety rules	• begin to be aware that computer viruses can be sent via email • be aware of email safety rules	
Word Process/ DTP/ Multimedia	Most children will: • combine text, images and possibly other features to create either a printable document or a simple multimedia presentation • use the keyboard to enter letters strings (play writing) • begin to use the space bar to break letter strings into groups of letters use the Back Space key to delete use a wordbank or word list to enter text eg to match with pictures	Most children will: • with support, add captions or sound to digital pictures or video • put text on screen • use upper and lower case • use the space bar • use the Return key • use the Shift key to make a capital letter • use word lists to enter text • with support, print their work using the Print icon • use a mouse to move and place items accurately on a screen. • produce text on screen and make changes to make it clear to know that work can be saved and stored on a computer.	Most children will: • with support, use a storyboard to do simple editing of a sequence of digital pictures or video eg change sequence, add transitions • know that text can be saved and retrieved • change the font style • change the font size • change the font colour • print their work using the Print icon • use the cursor (arrow) keys for simple on screen editing • with support, import graphics and add text with support, write and send a short email eg to Santa make use of basic editing skills e.g. shift key and caps lock for uppercase, question marks and spaces after punctuation.	Most children will: • use a storyboard to edit a sequence of digital pictures or video eg change sequence, add transitions, effects, and sound • with support, be able to create a simple presentation or digital film eg to show year 2 pupils what KS2 is like • 1ndependently select & import graphics and sounds from digital cameras & tablet devices, graphics packages, shared areas and the Internet and combine with text • select text and change the font style, size and colour • select text and use Bold and Underline icons • use the cursor (arrow) keys for simple on screen editing • use the scroll bars to view different parts of the document justify /	Most children will: • be able to design and create a presentation or digital film eg to show other pupils what they did on a school trip • begin to evaluate the suitability of the presentation for the given audience • with support, make changes to the presentation to make it more suitable for the audience • import graphics and use the Picture Toolbar to choose the text wrapping • Be able to evaluate a range of electronic multimedia appropriate to task e.g. website, photostory, leaflet and recognise key features of layout, design and presentation. • when typing, begin to hold two hands over different halves of the keyboard and use more than two fingers to enter text • use the spell checker	Most children will: • design and create a presentation or digital film eg to show other pupils what they did on a school trip • evaluate the suitability of the presentation for the given audience • make changes to the presentation to make it more suitable for the audience • use and practise their word processing skills in a range of contexts use software as a communication tool to collaborate with other pupils e.g. to work together on a project	Most children will: • select and use a range of software and hardware tools to produce a presentation or digital film for a specific audience eg present an account of their residential trip to their peers • create hyperlinks for resources made or found. • modify the presentation to make it more suitable for a different audience eg parents • use and practise their word processing skills in a range of contexts use software as a communication tool to collaborate with other pupils

				align text • import graphics and add text • begin to use more than two fingers to enter text. • print using the menu use print preview	• use Find, search and replace if appropriate • use Page Setup to choose Portrait or Landscape page as appropriate • learn how to insert and use a simple table use the Zoom menu to view the whole page		
Control & Programming	• be aware that many everyday devices respond to commands • learn to switch on a programmable toy to activate movement • follow simple instructions eg playing robots and following simple commands from a peer. • play with remote control toys • play with programmable robots be aware that pressing buttons makes the toy or robot respond • guide a floor robot to visit specific locations on a floor map related to another subject, recording the instructions.	Most children will: • know that many everyday devices respond to commands • follow simple instructions eg playing at robots and following a sequence of commands from a peer. • begin to use the word algorithm • begin to predict what will happen for a short sequence of instructions • begin to use software and apps to create movement and patterns on screen • be able to program a 'bot by giving single commands with an immediate outcome. • be able to use the appropriate keys or commands to make a virtual or floor robot go forward, backward, left and right. • be able to use basic symbols to record directional instruction. • be able to use a developing range of language and styles of control e.g. tilt and turn / instructional to direct a robot.	Most children will: • Give instructions to a friend using forwards, backwards, turn etc and follow their instructions • explain the order in which a sequence needs to happen and use the word algorithm to describe this • be able to give control devices instructions that contain numerical data (e.g. move 2 steps) • be able to predict the behaviour of a virtual or floor robot from a sequence of instructions. • be able to predict a sequence of instructions, record it by sequencing cards or using an agreed set of symbols, and test the sequence, amending if necessary. • be able to program a 'bot to follow a preplanned sequence by giving single commands with an immediate outcome. • make a robot or program achieve a particular task	Most children will: • be able to plan and enter a sequence of instructions for a 'robot' to achieve specific outcomes. • be able to debug sequences where necessary. • be able to use 'repeat' to achieve specific solutions to tasks. • begin to use 'If', 'when' and 'else' to solve specific problems. • begin to use predefined variables to alter the outcomes from a program	Most children will: • be able to use the 'repeat' and 'repeat until' command/block to program a 'bot more efficiently. • know that groups of instructions can be named as a procedure. • use and change a prewritten procedure. • Know that procedures can call on other procedures. • begin to predict, program, test and amend longer sequences of linked instructions to achieve an intended objective. • understand that many real-world devices (i.e. traffic lights) are controlled using computer programs. • be able to make use of sensors as part of a linear program in a planned way	Most children will: • refine programs using repeat commands • use a variable to increase programming possibilities • change an input to change an output • talk about how a computer model can provide information about a physical system • use logical reasoning to detect and debug mistakes in a program • use logical thinking, imagination and creativity to extend a program • use "when" and "if" commands to create responses. • use "say" commands to give information. • test and debug regularly. • program and explain what happens when more than one variable changes. • use "and", "or" and "not" blocks to change responses and understand what they do. • program responses to inputs from sensors	Most children will: • recognize similarities to solutions used before when debugging programs • explain each step of my algorithm and what its effect will be • evaluate the effectiveness of my algorithms while continually testing my programming • recognise when a variable is need to achieve a required output • use a variable and operators to stop a program • know when to use "repeat", "repeat until" and "forever if" loops to make programs shorter and more efficient and be able to use them (understanding the differences between them). • understand what 'events' are, such as mouse clicks and broadcasts, and use them efficiently within programs to start and stop scripts.

			• begin to use the word debug my programming				
Simulations & Data logging	Most children will: • explore options in simple simulations and in a paint package, making choices to achieve an outcome.	Most children will: • be able to change variables in simulations that represent real or fantasy situations and scenarios to create different outcomes and effects. • use apps and programs to explore and experiment with different tools and make choices that create different effects.	Most children will: • be able to enter data into a computer simulation/game. • be able to change the variables in a simulation and use them to make and test predictions e.g. increase the size of a ball in a game and observe what happens.	Most children will: • be aware that digital devices eg thermometers can be used to measure external changes eg temperature • with support, use a temperature sensor to record changes in temperature eg as part of a science experiment • collect information with a data logger/ recorder in real time. • interpret graphs created by a data logger or information from a datalogger and make predictions	Most children will: • understanding sensing devices can be used to monitor changes in environmental conditions and are present in a variety of real-life situations. • be able to collect data from internet research, digital surveys and digital devices including data loggers and tablet devices. • understand when, and be able to take both snapshot and continuous data. • be able to read and interpret bar and line graphs created through data logging to draw conclusions to experiments. • understand that computing can create graphs for different purposes; some are more appropriate and easier to read than others. • Be able to enter data into a graphing package and use it to create a range of graphs and to interpret data across all subjects.	Most children will: • be aware of other sensors that can be used eg light sensor, sound sensor, pulse monitor • be able to interpret the data from the sensing device • use sensing devices eg in their science experiments • Understand what variables and procedures are in real life and be able to create them within a computer program to store and retrieve data.	Most children will: • know when it would be appropriate to use a sensing device eg in a science experiment • be able to use a range of sensors as appropriate • think logically that when 'x' happens 'y' is the result and show this using code, flowcharts, diagrams or explanations
Research	Most children will: • know that the internet can be used to find information • explore a variety of digital resources to access a range of information for a topic.	Most children will: • be able to control a resource to access the information they require e.g. web site, tablet. • be involved in the process of sharing work online.	Most children will: • be able to navigate a website using links. • be able to find a website by following links set up by the teacher, by using Favourites or by typing into the address bar. • be able to use a search engine to search for given	Most children will: • use a range of techniques to navigate a given site. • develop key questions to search for specific information to answer a problem • use a range of sources to find information on the Internet • begin to be aware of Internet safety rules	Most children will: • understand that content on the internet can be located efficiently but is not always relevant. • use keywords for effective Internet searches. • select relevant information (pictures, text, sound and video) to use in other software.	Most children will: • be able to search the internet for specific information using tools such as Google Advanced Search (Boolean searches). • be able to skim read and sift information found online. • To be able to check information for accuracy. • be able to identify irrelevant, biased, implausible and inappropriate	Most children will: • be able to use a range of search engines and select the most appropriate based on the tools they provide (e.g. Google or Bing). • use information from internet to make notes and present in a form of their choosing, without using copied/pasted text. • be able to save media from the internet to be uploaded to

			information to answer questions, sorting by text, pictures, sound and video.			information. • use hyperlinks to trail an idea. begin to be aware of privacy and other issues related to using the Internet	an online platform. • be aware that some media is copyrighted and cannot be used without permission • check the accuracy of information • be aware of privacy and other issues related to using the Internet
Data handling/ database & graphing	Most children will: • do practical sorting activities and discuss sorting criteria begin to develop simple classification skills • either as a class or individually, collect information. • use a pictogram to represent the information and answer simple questions about it	Most children will: • develop simple classification skills based on practical sorting activities • be able to use a suitable on-screen program to represent information with pictures. • be able to use a graph presented on screen to answer questions.	Most children will: • be able to use different types of graphs to represent data collected. • be able to enter data into graphing software and choose the type of graph that is most appropriate to present data. • be able to enter data accurately to provide the answers to questions. • be able to search a pre-prepared database as part of a group, constructing questions and suggesting plausible answers. • be able to perform sorting and grouping activities to find answers to questions.	Most children will: • collect and enter data into a prepared database structure • use a database to generate bar charts and graphs to answer questions. • answer questions by searching and sorting a database. • create record cards (analogue or digital) to store collected information. • transfer records to a pre-prepared digital database. • sort the data • learn to amend errors	Most children will: • understand that 'yes/no' questions can be used to divide a set of objects into subsets and that a sequence of 'yes/no' questions can identify an object. • be able to create and use a branching database to organise, reorganise and analyse information. • know some reallife examples of branching databases, such as NHS direct diagnostic site, or cinema telephone booking system.use the database to carry out an investigation • present data in different forms – graphs, tables • amend errors	Most children will: • be able to identify a problem which can be solved by collecting data and to identify which data to collect. • be able to make predictions for this investigation and understand how to make it a fair test. • be able to carry out the investigation, ensuring efficiency and accuracy. • organise data by designing fields and records in a database. • be able to Interpret results, using a range of searches and graphs, draw conclusions and analyse the effectiveness of the technology. • draw conclusions from data and present findings to a specific audience • carry out more complex searches on more complex prepared databases eg be able to answer complex questions such as – Did all the minibeasts in a particular habitat have the same diet? • use AND and OR in their searches • identify datahandling opportunities, set up a datafile and enter data • check for validity and amend errors • use the datafile to answer complex questions	Most children will: • use a more complex database to explore patterns and relationships in data eg In a minibeasts database - Is there a relationship between habitat and diet? • independently set up and use a datafile to carry out an investigation • amend and delete data from records • use editing tools to alter the design of a graph • organise, refine and present information appropriate to the audience • justify reasons for their choices and explain why other methods were not appropriate. • be able to design questions using keywords, to search a large preprepared database. • be able to search using 'greater' and 'less' than. • be able to use graphs to provide supporting evidence for their conclusions. • be able to check for accuracy by checking data and looking at graphs. • be able to present results of database research.
Spreadsheets				Most children will:	Most children will:	Most children will:	Most children will:

				• with support, use a spreadsheet to record data and produce graphs • with support, enter data in a prepared spreadsheet • with support, select data to produce a graph	• use a spreadsheet to record data and produce graphs • enter data in a prepared spreadsheet • select data to produce a graph • use a spreadsheet to explore number patterns eg in a hundred square, multiplication table • understand that spreadsheets perform calculations. • be able change data and observe changes in results.	• be able to set up a spreadsheet with appropriate headings • be able to use a simple formula eg SUM • use a spreadsheet to investigate eg cost of foods / drinks Which is the best value drink?	• be able to use formulae and functions in a spreadsheet • alter the format of a spreadsheet • change data to satisfy 'What if' queries • use a spreadsheet to solve simple problems eg the relationship between the perimeter and area of a quadrilateral