Hartington C of E Primary School
Skill Progression in ICT

		Yr 1 & 2	Yr 3 & 4	Yr 5 & 6
Programming	Understanding algorithms	• Give precise instructions to, and respond to instructions from, other children involving movement around the room. • Describe what actions are needed for a particular task (not necessarily an IT one) and begin to use the word algorithm. • Understand that a number of different algorithms will often all solve the same problem. • Begin to understand that sequence (order) is important when devising algorithms and programming devices • Be able to predict what will happen in an algorithm or program which they may not have written themselves. • Understand why algorithms are useful for solving a wide range of problems and that we use algorithms every day	• 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 in programs (LKS2) • Use repetition in programs; • Work with variables • Work with 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	Same as phase 2 but with increasing complexity: • Use selection in programs (UKS2)

	Programmable Robots	- Describe clearly what they expect to happen while programming a robot. - Begin to understand that sequence (order) is important when devising algorithms and programming devices - Be able to predict what will happen in an algorithm or program which they may not have written themselves. - Be able to execute a program, observe the results carefully spot errors and be able to debug them. - Understand that programs respond to inputs to carry out actions.		
	On-screen programming	- Understand that a number of different algorithms will often all solve the same problem. • Describe clearly what they expect to happen while programming a robot. - Begin to understand that sequence (order) is important when devising algorithms and programming devices - Be able to predict what will happen in an algorithm or program which they may not have written themselves. - Write programs successfully to create movement on-screen. - Be able to execute a program, observe the results carefully spot errors and be able to debug them. - Understand that programs respond to inputs to carry out actions.		

| Computer Science | Information technology beyond school | • Be aware of obvious uses of IT in and beyond school (i.e. things that clearly look like computer devices)
• Understand some of the things that people do with computers at work and at home.
• Have a growing awareness of things in and beyond the home that have some kind of computer in them (microwave, washing machine…)
• Understand that most computers, tablets and phones are connected to the internet.
• Recognises that any one of a range of digital devices can be considered a computer. | • Understand that the Internet is a collection on computers (servers) joined together across the world
• Understand the differences between the internet and the world wide web
• Understand the basic structure of your school network, how it is connected (physical wiring, wireless …) and the services that are a part of it (printing, scanning, internet via server …)
• Be able to save (and successfully retrieve!) their work to a variety of locations on the school network, online and locally to a device. Understand the reasons for saving in different places.
• Understand the function of different externally visible parts of a computer (and peripherals) and classify as input or output devices. | • Know that the internet provides different services and be able to describe some (email, www file transfer protocol, video conferencing …)
• Know how information is passed around the internet.
• Understand how search results are selected and ranked by search engines
• Understand the functions of and terminology around web browsers and search engines
• Identify key components within a PC and explain their function
• Understand the function of an operating system and be able to name some.
• Know the difference between physical, wireless and mobile networks.
• Understand the basics of how data is stored (binary code,) |
| | File management and the school network | • Be able to logon to a computer network, understand the reasons for this.
• Be able to save (and successfully retrieve) their own work on a variety of devices
• Understand how to save and open work to and from a shared drive or web space (e.g. OneDrive or Drop Box).Understand the reasons for this. | | |

Multimedia	Text & Design			
		• Develop familiarity and correct use of the keyboard – spacebar, backspace, shift (for capital letters – not caps lock), return etc. • Select or create appropriate images / sound to add to work • Add captions to photographs, graphics and sound • Use templates to create simple presentations for a purpose • Word process text (use word lists to select text if necessary) • Navigate around text in a variety of ways (mouse, arrow keys • Edit work in the light of their own discussions and observations • Know that multimedia includes sound, text and graphics. • Know that ICT can be used to communicate ideas in different ways (e.g. text, images, tables, sound). • Recognise that changes can be made to documents to improve appearance and add new ideas. • Talk about their use of text, graphics and sound including how the mood of a piece is changed. • Author their own pages in an e-portfolio adding text and images • With support, write and send a short email from a class account • Understand the different ways that messages can be sent, email, text letter, phone … and begin to consider the advantages of each	• Use different font effects, layout, format, graphics and illustrations to communicate for a given audience. • Insert and edit simple tables etc. Use page setup to select different page sizes and orientations • Use Cut, copy and paste to refine and reorder content • Use appropriate editing tools to ensure their work is clear and error free (using tools such as spell checker, thesaurus, find and replace). Recognise the importance of good design. • Log on to an email account or forum, open emails, create and send appropriate replies, use attachments. • Create and send an email to a prearranged partner, selecting the recipient from a class address book. • Contribute to and create own discussion forums, blogs, wikis… • Select and import graphics from cameras, graphics packages and other sources and prepare for use (cropping, resizing, editing) • Create a range of hyperlinks and produce a non-linear, interactive presentations • Recognise key features of different layouts and consider how to meet the needs of the audience (e.g. poster, newspaper, menu)	• Format and edit work to improve clarity and mood, use a range of tools e.g. cut and paste, justify, tabs, insert and replace. • Make use of reviewing tools in word processors to collaborate in evaluating each other's work. • Independently create, send and respond to email, blogs and forums. (With appropriate supervision and due regard for safety) • Produce formal or informal e-messages appropriate to a task or to solve problems (requesting information, sharing data, etc.) • Talk about different forms of electronic communication, their appropriateness to tasks, advantages and disadvantages. • Develop and use criteria to evaluate the design and layout when evaluating a range of web sites, online resources etc. • Understand how pages are linked together and recognise the need for clarity. Produce a diagram to show page links. • Develop their use of hyperlinks to produce more effective interactive, nonlinear presentations. • Make effective use of transitions and animations. Consider the effect on the audience and appropriateness. • Select and import sounds from their own recording, create their own effects and music and import from other sources.

Digital Image, Film & animation		
• Use a painting app to create a picture to communicate ideas • Use brush and pen tools, create lines and textures and use the flood fill spray and stamp tools. • Use ICT to source, generate and amend ideas for their art work • Use a camera or camcorder to take a picture or record their work • Demonstrate good control when using still and video cameras understanding the need to frame an image or scene and keep the camera still • Begin to edit digital photographs • Create a sequence of images which together form a short animation to illustrate a story • Understand the differences between a graphics apps and traditional art activities • Understand that some apps will enable images to be animated. • Understand that animation is a sequence of still images • Talk about their use of a painting app and their choice of tools • Begin to discuss the quality of their image and make decisions (e.g delete a blurred image)	• Acquire, store and retrieve images from cameras, scanners and the internet and begin to use paint packages or photo-manipulation software to change an image (e.g. apply different effects) • Select areas of a painting, copy and paste to make repeating patterns. Resize elements. Investigate reflection tools etc • Develop greater control over the digital stills video camera and use the enhanced tools (Macro, Landscape, Zoom) • Discuss and evaluate the quality of their own and others' captured images and make decisions (e.g. keep, delete, change) • Create a short animated sequence from captured images in simple storyboarding software, to communicate a specific idea. • Capture "footage" from different devices into simple movie editing software. Arrange, trim and cut clips to create a short film that conveys meaning to a given audience. • Import music and stills into video editing software and add to film projects. • Add simple titles and credits, music and narration.	• Create images using a range of techniques in art programs / apps / websites in a particular artistic style • Independently make decisions to capture, store, retrieve and edit digital images (their own and other people's) for a particular purpose. • Understand the difference between object based graphic packages and paint packages and which is right for their task • Independently plan and create a short animated sequence to communicate a specific idea, using a storyboard and timeline. • Combine stills, video and sound using a video editing package • Make use of transitions and special effects when editing films and understand the effect they will have on the audience. • Export images and movies in a variety of formats, understanding some of the differences, and share on the internet (with due regard for safety).

	Music	• Use sound recorders / players to listen to pre-recorded sound • Use sound recorders / tablets to record and playback sounds (eg voices, instruments, sounds around them …) • Experiment with a range of devices that create and record sound • Explore a range of electronic music and sound devices including keyboards, software, tablets and different peripherals • Use software to explore sound and musical phrases for a purpose • Compose music using icons to represent musical phrases • Understand that devices have record and playback functions • Begin to understand that music and sound can affect mood and atmosphere • Recognise that an electronic keyboard can be used to select and control sounds	• Use IT to select and record voice and sounds – (e.g. tablet, phone, Dictaphone, digital voice recorder) • Use recorded sound files in other applications • Locate, transfer and use sound files from a range of devices and the internet, • Select, import and edit existing sound files in sound editing software / app. • Use music software or app to experiment with capturing, repeating and reordering sound patterns. • Use music software / app to create a simple multipart percussion composition • Use ICT to create and perform sounds or music that would otherwise not be possible live – e.g. playing a multi-part piece or a very fast piece • Talk about software which allows easy manipulation and creation of sound and music • Understand that copyright exists on most recorded music • Understand that all types of sounds can be combined in editing software.	• Independently select, edit and combine sound files from internet sources to create a podcast file. • Develop skills in manipulating sounds (such as reversing sounds, adding echo, altering speed …) and use them appropriately considering audience and purpose • Independently select and use a variety of appropriate devices to record musical and non-musical sounds. • Upload and download projects to the VLE / MP3 players / mobile phones / computers etc. • Create their own sounds and compositions to add to their presentations / films / images / photos. • Use IT to perform sounds or music that would otherwise not be possible live (e.g. playing a multi-track or a very fast piece) • Use IT to produce music for a specific purpose, considering the impact on the audience (e.g. length, style, genre etc.) • Understand copyright when selecting music samples

Data Handling	Internet			
		• Use appropriate buttons, menus and hyperlinks to navigate web sites for stored information • Access different information using a range of equipment (apps, website, TV, DVD etc) • Enter text into a search engine to find specific given web sites • Locate specific sites by typing a website address (URL) into the address bar in a web browser. • Understand that IT (the internet) gives rapid access to a wide variety of information and resources • Talk about their use of IT and compare with other ways of finding information • Understand that different forms of information (text, images, sound, multimodal) exist and that some are more useful than others for specific purposes • Understand and talk about how their information can be used to answer specific questions • Begin to develop key questions to help find information • Be aware of responsible internet use and the school's acceptable use policy (see digital literacy strand)	• Develop key questions and key words to search for specific information to answer a problem • Save and retrieve accessed information through the use of Favourites, History, and Save As… • Use found information purposefully to complete specific tasks e.g. copy, paste and edit relevant information • Understand the dynamics of search engines and know that there are different search engines - some within sites, and some for the whole of the Internet (e.g. Google). Use them appropriately • Use search engines for different media (e.g. Google Image Search, video, www.findsounds.com) • Skim read and sift information to check its relevance and modify search strategies if necessary • Understand a website has a unique address and the need for precision when typing it Evaluate different search engines and explain their choices in using these for different purposes • Understand that some information found through searching is more relevant than others • Talk about and describe the process of finding specific information noting frustrations and how they overcame them	• Develop strategies for finding information (different keywords, cross checking with other sites, referring to other sources such as books, people, etc). • Consider the effectiveness of search results and refine where necessary. • Skim and select information checking for bias and different viewpoints • Copy, paste, save and use pictures, text and sound and be able to import into a document for a specific audience or task • Talk about validity and plausibility and appropriateness of information, especially on the internet. Recognise the impact of using incorrect information in their work. • Understand the possible impact of using incorrect data.

Surveys, databases & spreadsheets		
• Develop simple classification skills by carrying out simple sorting activities (probably away from the computer) • Use simple graphing programs to produce pictograms and other simple graphs • Use graphing software to change the way a graph type (eg pictogram to bar chart) • Interpret graphs, discuss information contained and answer simple questions • Sort and classify a group of items by asking simple yes / no questions • Talk about the different ways technology can be used to collect information, (e.g. camera, microscope or sound recorder). • Understand that IT can be used to sort items and information • Understand that IT can be used to create, display and change graphs quite easily • Begin to understand that if data has not been entered accurately it cannot be used to provide correct answers to questions	• Collect appropriate information, enter it into a database or spreadsheet and use this to answer simple questions • Raise questions of data and translate them into search criteria • Generate and compare different charts and graphs (using graphing software / app, spreadsheet etc) and understand that different graphs are used for different purposes • Organise, present, analyse and interpret the data in tables, tally charts, charts / graphs, using IT where appropriate • Begin to develop skills to identify what data needs to be collected and design a questionnaire or survey to aid its collection • Change the contents of cells in a spreadsheet to explore "What if …" questions • Use a spreadsheet to record data and produce graphs • Use a spreadsheet to explore simple patterns (e.g. in a number square) • Understand the need to structure information properly in a database or spreadsheet • Know, understand and use the vocabulary: file, record, field, data and information.	• Use complex searches (and/or, is greater/less than) to search data when looking for relationships and patterns in data. • Modify a search pattern in order to find specific information. • Check for accuracy by checking data, using different views, search tools, and graphing. Identify and correct inaccuracies. • Solve complex enquiries involving selecting, processing, and presenting data; drawing conclusions from the process (e.g. is there a relationship between minibeast habitat and diet?) • Construct, refine and interpret frequency tables; bar charts with grouped discrete data; line graphs; interpret pie charts. • Recognise the consequences of data not being accurate, relate to the wider world (e.g. police, doctors, bank, school databases). • Discuss how ICT enables the user to search and filter large amounts of data to find information. Describe the advantages. • Enter formulae into a spreadsheet and modify the data, (simple calculations + - × ÷) • Make predictions and changes and check results

E-safety	Content	• Know what to do if they view content they think is inappropriate or upsetting e.g. know how to minimise a screen if they see something inappropriate then tell a trusted adult. • Begin to evaluate online content by giving opinions about preferred sites. • Know that you can be diverted from a website through a link, advertisement or pop-up. • Understand some online materials are unsuitable and many sites are aimed at selling or phishing for personal details. • Know that anyone can create a web site and it is sometimes difficult to know if information is true.	• Know what to do if content is inappropriate or upsetting (school policy) e.g. know who to report to and talk to. • Understand the Internet contains fact, fiction and opinion and begin to distinguish between these. • Be aware of online marketing and begin to develop strategies to deal with it • Know that the aim of many sites is to sell something or gain personal information.	• Use a range of sources to check the validity of websites and evaluate information found online, consider plausibility and develop strategies to make judgements on the sources used e.g. cross-referencing websites, checking up on author etc • Understand that some internet material is age related (especially games) and the implications for ignoring such guidance. • Know that many commercial providers have sophisticated ways of trying to sell on the internet (e.g. Hoax 'You have a virus' message to sell antivirus software). • Understand that online content often reflects stereotypical views and develop strategies to deal with it.

Contact			
	• Know that some information is personal and should not be shared when communicating online (This could be discussed when sending a class email). • Understand that people online may not be who they say they are and may not be true friends • Identify some risks presented by new technologies inside and outside school (e.g. online games, texting and cyber bullying).	• Know to keep personal information and passwords private when communicating online. • 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. • Know what to include a personal profile and that it is better to use an alias and avatar rather than real name and photograph • Know when an email should not be opened or messages ignored. • Know how to deal with unpleasant communications via mobile, text, chat rooms … (Save the message and show to a trusted adult). • Understand why you should only befriend people you know and trust never to meet up with "friends" you know only online. Know how to report unwanted approaches to CEOP.	• Demonstrate safe practice when selecting images or content for uploading to a personal profile or online space. • Understand the need to adjust privacy settings on social networking sites and appreciate that "friends" (who can download and share their content) may not have done the same. • Understand some malicious adults use the internet to make contact and groom young children. Know how to report any suspicions (CEOP report abuse page). • Be clear about the differences between public social networking sites and closed learning environments, understanding the risks with the former. • Understand the purpose of passwords, that passwords should never be shared, what makes a secure password.

	Conduct	• Learn to be respectful to other people online and their online work. • Begin to understand that their work says something about themself and to take proper ownership of it. • Learn the importance of turning off power to save energy.	• Know there are writing conventions for electronic communication (language, tone, accuracy). • Start to be aware of copyright issues and plagiarism; that taking text or images from some sites may be stealing other people's work. • Know it is important to respect others' feelings and electronic work	• Understand the importance of appropriate online behaviour and that online bullying is unacceptable. Know to whom to report any incident. • Understand the importance of creating a positive "digital footprint" and the need to help others to preserve theirs (by uploading only content that creates a positive image of yourself and others). • Have an awareness of the need to check for copyright when downloading content from the internet, whether it can be legally re-used and how to credit other people's work