**Computing Whole School Progression of Knowledge**

**Digital Literacy, Online Safety and ICT**

**Computational Thinking**

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| **YEAR ONE** | | | | | |
| **Context** | **Communicating:**  **Text and Images**  How do I use the school computer  independently? | **Communicating:**  **Multimedia**  How do I record sounds and pictures? | **Understanding and**  **Sharing Data**  How do I present data using pictures? | **Programming A**  What is an algorithm? | **Programming B**  What is a program? |
| **Vocabulary/Significant Knowledge** | Computer, Technology, Hardware  Software, Avatar, Password  Save, Open, Document, File  Folder, Font, Edit, Apps, Personal, information. | Sound, Text, Image, Video, File, Record, Play  Stop, Pause, Media, Photograph, Digital, camera, Focus, Close up. | Information / data  Pictogram, Chart (bar / pie / line), Personal information, Private/public  More/less/fewer/least/  Most. | Program, to program  Algorithm, computer,  Sequence, instructions  Commands, Plus directional language:  Forwards, backwards, left turn, right turn. | Program, to program  Algorithm, computer  Sequence, instructions  Commands, to debug  Sprite, Plus directional language if using Bee-Bot: forwards, backwards  left turn, right turn. |
| **Enquiry Question** | What is a computer?  What are the different ways we can use computers?  What are the basics of using a computer?  How can we be safe on the computer and what are the rules?  What is meant by personal information? | What technology do you use at home and in school?  Can you identify different sounds made by computers?  How can you record your own sounds?  Can you use a camera or tablet to take photographs?  Can you take the photographs from different angles?  What do you do if you see an upsetting photograph on line? | What is a chart and why do we use them?  Can you create a pictogram?  What do pictograms tell us? Can you answer questions about the data?  Can you plan out a pictogram on a topic? Can you gather data from your peers?  What software could we use to create our pictogram?  Can you enter the data into the software to create pictograms and save your work? | What different kinds of technology is there, what do we use it for and how do we control it?  Look at different digital activities – how do we control what happens?  What is the algorithm for how it works?  Can you investigate algorithms?  Can you complete some programming  Activities? | What is an algorithm?  Can you complete some unplugged  activities around algorithms?  How are digital devices controlled?  What computer games do the pupils play at home? Who created these?  Would you like to code your own games? What  kind of games would you create? |
| **YEAR TWO** | | | | | |
| **Context** | **Communicating**  **Text and Images**  How do I use a  computer as a writer? | **Communicating**  **Multimedia**  How do I create a multimedia story | **Understanding and**  **Sharing Data**  What is a branching database? | **Programming A**  How do I improve my algorithms? | **Programming B**  How do I improve my programs? |
| **Vocabulary/Significant Knowledge** | Computer Technology Hardware Software Password Input / Output Save / Open Document File Folder Font Edit Apps Personal Information Acceptable use Screen / mouse / microphone / keyboard / printer / speakers | Sound Text Image Video File Record Play Stop Pause Media Frame Animation Effect Soundtrack | Data Information Branching database Identify Chart Personal information Debug Private / public | program algorithm computer sequence instructions commands sprite to debug Plus directional language: forwards backwards left turn right turn | program to program algorithm computer sequence instructions commands to debug sprite Decompose/decomposition Plus directional language if using Bee-Bot: forwards backwards left turn right turn |
| **Enquiry Questions** | Can you open and edit a document?  How do these changes make a document more or less effective?  The computer gives us information via the screen, printer and speakers (output devices). How this is similar or different to devices pupils use at home?  How can we be safe and responsibly use technology?  Can we create an acceptable use policy? | What does stop-motion animation mean?  Can you create a short animation to make an object move?  Can you export the animation as a video and play back?  How could the animation be improved? | How can you find out information?  Where can information be stored?  Can you create a human branching database?  Can you search a given branching database to identify different objects?  Can you create a paper-based branching database?  Can you plan, create and test a branching database using a sequence of yes/no questions?  Can you peer test and review other pupils’ databases. | What is de bugging?  Can you complete unplugged activities to explore the importance of clear and instructions in algorithms? | What is important in an algorithm?  Why is debugging important in programming?  How can we debug? |
| **YEAR THREE** | | | | | |
| **Context** | **Communicating: Text and Images**  What makes a good poster? | **Communicating: Multimedia**  How do I use a computer as a musician? | **Understanding and Sharing Data**  How do we use databases to find out information? | **Programming A**  How do I use repetition in programs? | **Programming B**  How do I use forever loops in programs? |
| **Vocabulary/Significant Knowledge** | Font Image Graphic Copyright Design Save Open Document File Folder Apps | Copyright Audio Tempo Pitch Record Play Stop Pause Media Loop Export Track Edit | Data Information Database Record Field Search Chart Personal information | program repetition algorithm repeat sequence loop sprite count-controlled loop to debug code | program algorithm sequence sprite to debug repetition events input forever loops code test |
| **Enquiry Questions** | Can you see the different formats of data used, e.g. sound, video, text and image.  Why do we use different formats?  Can you create a list of key features of successful posters?  Can you draft a poster?  Can you create a poster in a given package?  Where can we copyright-free images to use?  What different kind of software we might use to create a poster? | What types of computers and devices do we use to listen to music, watch videos and view photos.?  Can you explore music composition software?  Can you experiment to create a variety of musical compositions?  Can you change the tempo of a composition to change the mood? Can you review and refine work?  Who owns a piece of music? | What programs have we used already?  What has been used to present information in different ways?  Why do we use different formats?  What are the key features?  Can you navigate a simple database using sort and search tools to find information and to answer questions?  Why do we use computers for this kind of task?  Why are personal information resources valuable to companies?  Can you create a class database in the form of Top Trumps Cards? | When using algorithms why is it important to use the correct sequence of instructions?  How do repeat commands change the algorithm?  Why do we need to plan out our programs away from the computer by writing algorithms? | What is an input device?  How did we use repeat commands before?  Can you complete the Everyday Repetition activity? |
| **YEAR FOUR** | | | | | |
| **Context** | **Communicating: Text and Images**  How do I use a computer as an artist? | **Communicating: Multimedia**  What makes an excellent multimedia story? | **Understanding and Sharing Data**  How is data shared online? | **Programming A**  How do I write efficient programs? | **Programming B**  How do I use selection in a program? |
| **Vocabulary/Significant Knowledge** | Computer Technology Hardware Software Copyright Crop Resize Edit Filter Layer | Sound Text Image Video File Transition Onion skinning Duplicate Frame Animation Effect Soundtrack Narration | Data Information Network Server Web browser Internet Satellite Chart Infographic Database Personal information | program algorithm sequence sprite decomposition event to debug repetition loops code co-ordinates random | program algorithm sequence sprite decomposition event selection to debug repetition loops code broadcast |
| **Enquiry Questions** | Why do we use computers to create art?  What do the different tools do in your art package?  How do you create different effects?  Can you create a photo montage on a theme?  Can you use search engines to find different sizes of image, save and compare?  Can you take photos on a theme, transfer the best to the computer and edit in a simple editing package or website?  Can you use an internet service to share and display artwork? | What makes an animation good or bad? Can you create a success criteria checklist as a class?  Can you create a simple flip book type animation?  Can you create a simple animation using a toy or paper cut outs to introduce/revise how to use the software?  Can you add titles and audio?  How does sound effects can enhance a story, and the difficulty of animating lots of dialogue?  Can you storyboard an animation on a given theme, and make the set and character(s)?  Can you slide shows and photostories adding titles, motion effects, transitions and audio? | How are computers connected in school?  How are computers connect together on the Internet?  How does information travel around the Internet?  What data shouldn’t we share online? Who can put information on the internet?  How do we know that it is true?  What do we do if we see content that upsets us?  Can you investigate a website that shares data in a range of ways?  Collect data on a topic related to another curriculum area?  Can you investigate/revise ways of storing and presenting the data covered in this strand? | What is decomposition?  Can you draw with the etcha sketch programme? Can you decompose what happens in the program? | What is selection?  Can you complete the everyday selection activity?  Explain that you need to use a loop in a program to tell the computer to keep looking out for events. What kind of loop will you need?  Can you investigate flowcharts with every day activities, where something happens depending on the answer to a question? |
| **YEAR FIVE** | | | | | |
| **Context** | **Communicating: Text and Images**  How do we collaborate online? | **Communicating: Multimedia**  How do I create a radio advert or podcast? | **Understanding and Sharing Data**  How do I find and share data safely and responsibly? | **Programming A**  How do I program physical systems? | **Programming B**  How do I use variables in programs? |
| **Vocabulary/Significant Knowledge** | Blog URL Wiki World wide web Webpage Digital footprint Hyperlink Web browser | Sound Text Image Video File Record Play Stop Pause Media Trim Podcast Narration Clip Soundtrack Sound | Data Information Network Server Web browser Internet World Wide Web Search engine Algorithm Personal information Terms & Conditions | program algorithm sequence repetition loops selection procedure event to debug code sensor physical system input output decomposition LED | program algorithm sequence repetition decomposition selection variable input output sprite to debug loops code operators |
| **Enquiry Questions** | What is the difference between the Internet and the World Wide Web?  How can we be safe and responsibly use images and other content online?  What are the advantages/disadvantages of online collaboration? What information should we share online and what should we keep private?  What are the features of a good page/blog/wiki?  Can you create a webpage, blog post or wiki page? | Listen to existing radio adverts or podcasts and identify key features – what makes a good one?  Can you explore audio editing software?  Can you record and add audio into the software, and move and delete clips?  Can you review the quality of the audio – how could it be improved?  Can you plan, script and rehearse a radio advert or podcast?  Can you record and peer review with reference to success criteria. Edit to improve according to feedback? | What is the difference between mobile, physical and wireless networks?  What is the difference between a web browser and a search engine?  Can you use several different search engines to search for the same thing?  Can you investigate Help, Search Tips, Advanced Search link, Search Operators to learn about the special features of each search engine?  Can you ) investigate how websites are ranked by search engines?  Is content found on the World Wide Web always reliable?  how do we share and control our own data? | What are the the main components of a computer, and input/output devices?  What is a sensor?  Can you identify key features and computer science concepts?  Can you investigate a physical system with an input and output?  Can you decompose the system and write an algorithm (flowchart) to describe it?  Can you review and improve it? | Can you create a human function machine and produce an output?  Can you write simple algorithms for a function machine that use more than one operator?  What kind of problems can’t be solved easily by a computer?  What is a variable? |
| **YEAR SIX** | | | | | |
| **Context** | **Communicating: Text and Images** | **Communicating: Multimedia** | **Understanding and Sharing Data** | **Programming A**  What is an algorithm? | **Programming B**  What is a program? |
| How do I use a computer to present information effectively? | What makes an excellent film? | Why do we use spreadsheets? | How do I build complex physical systems? | How do I design complex programs? |
| **Vocabulary/Significant Knowledge** | Design Raster Bitmap Vector File format | Sound Media Video File Edit Clip Script Record Play Stop Pause Media Trim Narration Sound effect Credits Wide shot Close up Mid shot Pan Zoom | Data Information Spreadsheet Chart Infographic Database Personal information Formula Cell Row Column Mode Median Mean Range | program algorithm variables repetition loops selection procedure subroutine to debug code sensor physical system input output decomposition, LED. | program algorithm sequence repetition decomposition selection variable procedure input output sprite to debug loops code operators |
| **Enquiry Questions** | Can you combine media to present information on a topic using a suitable tool?  Can you define the purpose of your digital artefact and the audience?  Can you define the success criteria for your chosen design and plan it out in detail?  On completion, can you evaluate your artefact, test it out and refine accordingly? | What makes a good film? (Focus on different camera angles, camera work, content and storytelling)  What kind of content affects the rating of a film?  Can you practice using cameras and tripods to film steady footage of static and moving subjects?  Can you practise editing video clips using trim and split clip tools?  Can you plan out a film and create a storyboard?  Can you write the script, assign roles, plan props and rehearse?  Can you review film clips and reject any which are unsuitable? | How is media combined to present information effectively?  How do we store raw data?  What is a spreadsheet and why do we use them?  What is the effect if we change the data in a spreadsheet?  How are simple operations used in a formula?  Can you find the mode and range, median and mean of a set of data? | What is a variable?  Can you identify variables in a range of programmes?  What other elements of the code do you recognise?  What is a procedure?  Can you create your own algorithm? | Can use sequence, repetition, selection, variables to create an algorithm?  What makes a good computer game?  What sort of content will affect the rating? |