APPENDIX A

PROGRESSION ACROSS STRANDS - COMPUTING

Computer networks and systems				
KS1: recognise common uses of information technology beyond school; use technology safely and respectfully keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies				
KS2 NC	Year 3	Year 4	Year 5	Year 6
understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Identify that digital devices have inputs, processes, and outputs.	Learn and explore the World Wide Web and who owns content.	Explain the input, output, and process aspects of a variety of different real-world systems.	Recognise how the WWW can be used to communicate and be searched to find information. Learn about the World Wide Web as a communication tool through search engines, what influences searching, and comparing different search engines. Investigate different methods of communication.
	Devices can be connected to make networks, i.e. routers and switches.	Recognise the internet as a network of networks, needing to be kept secure.	Understand how information is transferred between systems and devices.	
		Evaluate online content and understand consequences of false information.	Develop skills of working collaboratively online.	Evaluate which methods of internet communication to use for particular purposes
Vocabulary	**Process, input, output, device, digital, network switch, wireless, program**	**As previous** **World Wide Web, router, internet, web page, web browser, download, credit, search**	**As previous** **System, sensing, process, packet, IP address**	**As previous** **Search engine, result, index, web crawler, selection, ranking, searcher, public, private, communicating,**

Programming

KS1: use logical reasoning to predict the behaviour of simple programs; create and debug simple programs; understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions;

KS2 NC	Year 3	Year 4	Year 5	Year 6
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Design and write simple algorithms to control a physical system (Beebots) Solve simple problems	Use Scratch to create simple systems, including using costumes, sound and creating and importing existing Sprites	Use Scratch to create more complex programs, considering success criteria and target audience Build up on year 4 and introduce backgrounds	Design and write more complex algorithms using a different physical system (micro:bit)
Use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Explore various forms of input and output using a physical system and during an introduction to Scratch Use sequence to create simple algorithms and introduce	Introduce repetition and selection (if, then, else) Build upon sequencing Introduce variables at a basic level	Reinforce variables more securely	Revise variables and use this to drive the main focus of the learning. Revisit sequence, selection and repetition.
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs				
Vocabulary **All years:** decomposition, pattern recognition, abstraction and algorithms	**Physical system/ device, input, output, sequence, algorithm, debug, problem solving**	**As previous** **Variable**	**As previous**	**As previous** **Sensing**

Creating media

KS1- use technology purposefully to create, organise, store, manipulate and retrieve digital content; use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

KS2	Year 3	Year 4	Year 5	Year 6
select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	Consider how font, size and colour can be used and changed Add images and text to preset layouts Using Google Docs as main platform	As year 3 and format text with underlining, italics and bold. Aligning text in different ways depending on intent. Adding text boxes. Add images, manipulating their size and orientation Using Google Docs as main platform	Build on year 3 and 4, including the use of Google Slides; adding slides, considering slide transitions, changing the background of slides. Introduce shortcuts for more efficiency: Ctrl+b- bold Ctrl+i- italics Ctrl+u- underline	Build on previous year groups using Google Docs, Google Slides and Google Sites- add hyperlinks to Slides and Sites. Consolidate shortcuts from year 5 and introduce: Ctrl+c- copy Ctrl+v- paste Ctrl+x- cut Ctrl+a- select all Use all skills learnt to create web pages, also being introduced to HTML
	Combine music, text and pictures to create animations.	Edit, save, reuse image and photographs using cropping, filtering and retouching tools	Create videos, capturing, manipulating and editing content; combine pictures and text and adding transitions and sound effects/ voice overs. Store, retrieve and export content.	
			Produce 3D models by selecting, moving and deleting shapes; modifying, resizing and grouping. Use learnt skills to create real-world objects	
Vocabulary	**Formatting, images, layout** **Pictures, text, combine, music,**	**As previous** **Manipulate, platform**	**As previous** **Shortcuts, transitions, slide**	**As previous** **Hyperlinks, HTML, web pages, web design, navigation paths,**

	frame, sequence, animate, storyboard	Crop, reuse, edit, resave, filter, retouch, fake, real, publication	Capture, manipulate, edit, combinem, transition, store, retrieve, export Model, shape, digital, 3D, 2D, modify, duplicate, real-world, construct	copyright, media

Data and information				
KS1: use technology purposefully to create, organise, store, manipulate and retrieve digital content; recognise common uses of information technology beyond school				
KS2:	Year 3	Year 4	Year 5	Year 6
use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information	Use branching databases to collect, organise and present data.	Consider in more depth about how and why data is collected over time. Use physical devices (data loggers) to collect, review, analyse and question the data.	Use tools within a database to order and answer questions about data. Move onto creating charts and graphs and use real-life databases to answer, present and question.	Using spreadsheets, organise data into columns and row, format data to support calculations, apply formulas. Create graphs and charts; evaluate and compare results.
Vocabulary	Branching database, groups, binary tree, attribute property, data, collect, analyse, organise, sort	Automatically gather data, data points, data intervals, physical device, sensors, capture, data	Flat-file database, field, records, column, search, graph, table, chart	Spreadsheet, formula, cell, calculation, operator, column, row, function, graph

APPENDIX B

PROGRESSION ACROSS STRANDS – ONLINE SAFETY

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Online safety				
KS1: use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.				
KS2 NC	Year 3	Year 4	Year 5	Year 6
use technology safely, respectfully and responsibly	Take ownership of creating online safety rules for home and school, based on their personal experiences. Learn about digital footprints- a digital trail that can be found, copied, shared and broadcast- and that it lasts forever. How to stay safe online.	Take ownership of creating online safety rules for home and school, based on their personal experiences- reflect on previous year and edit/ add to this. Develop awareness about viruses, spam, hacking and opening suspicious links on websites/ in emails.	Take ownership of creating online safety rules for home and school, based on their personal experiences- reflect on previous year and edit/ add to this. Learn about copyright laws. Know how to manage their online reputation. To know the impact of the need for peer approval in different situations, including online. To know about the benefits of rationing time spent online, the risks of excessive time spent on electronic devices and the impact of positive and negative content online on their own and others' mental and physical wellbeing.	Take ownership of creating online safety rules for home and school, based on their personal experiences- reflect on previous year and edit/ add to this. Revisit previous years and the concepts of digital citizenship. Know how to use social media safely, including looking at the settings. Know that every has a right to privacy and can refuse permission for images or videos of themselves being uploaded to the internet and that this needs to be respected.

recognise acceptable/unacceptable behaviour	Understand that not all information shared can be controlled. Understand the consequences for online bullying and the role of the bystander.	Understand the positive and negative impact of peer pressure. Understand consequences for knowingly ignoring rights. To know how people's online actions can impact on other people. To know how to keep safe online, including managing requests for personal information and recognising what is appropriate to share or not share online. To know how to report concerns, including about inappropriate online content and contact.	Understand the link between online behaviours and real life effects. Critically assess and understand what constitutes online bullying. Encouraged to take responsibility for their own online actions. To understand unacceptable behaviour when gaming or on profiles.	Understand the negative consequences of sharing nude selfies and learn that sending, sharing and storing inappropriate images of Under 18s is a crime. Develop confidence in saying no when they are posed with a request for inappropriate and/or indecent images of themselves. Understand that once an image is online, it stays online forever. To recognise the effect online actions have on others.
identify a range of ways to report concerns about content and contact.	Introduced to Childline and discuss who their trusted adults are.	As year 3.	Introduced to the CEOP 'Report abuse' button.	As year 5. Know where to get advice and report concerns if worried about their own or someone else's personal safety (including online). To know how to respond safely and appropriately to adults they may encounter (in all contexts including online) whom they do not know.

| be discerning in evaluating digital content | Use clues to make choices about whether or not web pages and/or links are trustworthy and safe.

Recognise that internet identities can be misleading or not representative of the creator

Recall that personal information should not be shared by anyone online who we don't know in real life | As year 3- also that information on the internet lasts forever, whether or not it is true and accurate.

Understand that virtual friends are still strangers that they do not know.

Apply their knowledge of online safety to decide what information they, as virtual friends, can safely share online. | Be introduced to the concept of online endorsements and use this to develop discerning attitudes, coming to their own conclusions and decisions.

Understand that accounts for devices are linked to real-life bank accounts and cost real money.

Understand that research, parental controls and device settings are tools we can use to help us game confidently and safely.

To understand how the media can influence how we feel about our bodies.

Know about how text and images in the media and on social media can be manipulated or invented; strategies to evaluate the reliability of sources and identify misinformation. | Know which apps and online sites have age restrictions and understand why these are in place.

Understand the risks involved with online gaming, including exposure to inappropriate content, grooming, bullying, trolling and the use of bribery tactics.

Recap device settings and parental control from year 5.

To know reasons for following and complying with regulations and restrictions (including age restrictions); how they promote personal safety and wellbeing with reference to social media, television programmes, films, games and online gaming. |
| **Vocabulary** | **Consequences, online bullying, cyberbullying, bystander, trustworthy, safe, report, digital footprint/ trail, broadcast, shared, upload, internet, email, digital communication, identity, creator, misleading, avatar** | **Peer pressure, negative, positive, accurate, hacking, hacker, virus, spam, risk, links, illegal, digital citizen, rights and responsibility, virtual** | **Endorse, online reputation, copyright, laws, parental controls, settings and tools** | **Selfies, indecent, crime, age restrictions, social networking, respect, privacy, permission, grooming, trolling, bribery** |