Computing Progression of Skills

Level expected at the end of EYFS

EYFS
Understanding the World – Technology *Children recognise that technology is used in places such as home and schools. They select and use technology for particular purposes.*

Progression of skills has been broken down into the following areas:

National Curriculum Expectations at KS1	***National Curriculum Expectations at KS2***
Pupils should be taught to: • *understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions* • *create and debug simple programs* • *use logical reasoning to predict the behaviour of simple programs* • *use technology purposefully to create, organise, store, manipulate and retrieve digital content* • *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.*	*Pupils should be taught to:* • *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, selection, and repetition in programs; work with variables and 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* • *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* • *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 technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.*

- *Online Safety*
- *Coding and Programming*
- *Data Handling*
- *Multimedia – Text and Images*
- *Multimedia – Sound and Motion*
- *Technology in our lives*

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	KS1	LKS2	UKS2
Online Safety	Children begin to consider their activity on the internet and learn about ways to keep themselves safe and why it is important to do so. They also compare appropriate and inappropriate activity on the internet and decide what to do next. **KS1 Computing National Curriculum** Children can use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Children can: ●identify what things count as personal information; ●identify what is appropriate and inappropriate behaviour on the internet; ●agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; ●seek help from an adult when they see something that is unexpected or worrying; ●demonstrate how to safely open and close applications and log on and log off from websites;	Children become more aware of their digital footprint by reflecting on their experience on the internet. They are able to understand more about age-appropriate websites and adverts and how adverts are used by companies. Children are also introduced to the concept of plagiarism and citation. **Lower KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: ●reflect on their own digital footprint and behaviour online; ●identify what is appropriate and inappropriate behaviour on the internet, recognising the term cyberbullying; ●agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; ●seek help from an adult when they see something that is unexpected or worrying; ●demonstrate understanding of age-appropriate websites and adverts;	Children are encouraged to identify online risks and share their knowledge of the risks and consequences for people online. They begin to think more critically about what they see online and look at the concept of fake news and false photographs. **Upper KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: ●protect their password and other personal information; ●be a good online citizen and friend; ●judge what sort of privacy settings might be relevant to reducing different risks; ●seek help from an adult when they see something that is unexpected or worrying; ●discuss scenarios involving online risk;
Online Safety Key Vocabulary	safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, key, question, tell, safe, share, stranger, danger, internet	safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, internet, world wide web, communicate, message, social media, email, password, cyberbullying/bullying, plagiarism, profiles, account, private, public.	spam, link, privacy, virus, scam, phishing, inbox, junk, sender, subject, secure, safe, account, online, private, social media, adverts, cyberbullying, reporting, anonymous, victim, fraud/fraudulent, policy, private/personal.

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	KS1	LKS2	UKS2
Coding and Programming	*Children begin to understand their influence on technology by developing their programming skills to determine output. They begin to understand that an algorithm is a series of steps for solving problems and a code is a series of steps that machines can execute. They begin to explore debugging, predicting when codes may not work and changing them.* ***KS1 Computing National Curriculum*** *Children understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. They create, debug and use logical reasoning to predict the behaviour of simple programs.* *Children can:* ●*give commands one at a time to control direction and movement, including straight, forwards, backwards, turn;* ●*control the nature of events: repeat, loops, single events and add and delete features;* ●*give a set of instructions to follow and predict what will happen;* ●*improve/change their sequence of commands by debugging;*	*Children build on their programming skills by solving problems and programming commands to achieve a specific outcome. They begin to write programs, explain algorithms and identify errors in their work.* ***Lower KS2 Computing National Curriculum*** *Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.* *Children can:* ●*use logical thinking to solve an open-ended problem by breaking it up into smaller parts;* ●*write a program, putting commands into a sequence to achieve a specific outcome;* ●*give a set of instructions to follow and predict what will happen;* ●*keep testing a program and recognise when it needs to be debugged;* ●*use variables to create an effect, e.g. repetition, if, when, loop;*	*Children build on their programming skills by using new systems such as a flowchart. They continue to break down problems and create algorithms to solve them. They are able to explain the outcome of an algorithm with confidence and accuracy.* ***Upper KS2 Computing National Curriculum*** *Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.* *Children can:* ●*use external triggers and infinite loops to demonstrate control;* ●*follow a sequence of instructions, e.g. in a flowchart and modify a flowchart using symbols;* ●*use conditional statements and edit variables;* ●*decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program;* ●*keep testing a program and recognise when it needs to be debugged;*

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Coding and Programming Key Vocabulary	*algorithm, instruction, order, debug, program, turn, left, right, clockwise, anticlockwise, blocks, sequence, project, repeat, repeat forever, invisible, grow, shrink.*	*decompose, decomposing, logical sequence, flowchart, sprite, block, command, algorithm, answer, correct, errors, program, algorithm, instructions, commands, forward (fd), left (lt), right (rt), move, turn, clear screen (cs), variable.*	*flowchart, algorithm, control, output, symbol, start, stop, delay, process, decision, loop, backdrop, script, block, repeat, commentary, sequence, consequence, debug, program, Kodu, world, object, tool palette, program environment, smooth, flatten, raise.*

	KS1	*LKS2*	*UKS2*
Handling Data		*Children begin to explore expressing information in tables, sorting and organising information for others to be able to understand.* ***Lower KS2 Computing National Curriculum*** *Children 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.* *Children can:* ●*talk about the different ways data can be organised;* ●*sort and organise information to use in other ways;*	*Data Handling in UKS2 focuses on selecting the correct method to display data and using software such as spreadsheets. Children also learn how to check the accuracy of data and compare data for a specific purpose.* ***Upper KS2 Computing National Curriculum*** *Children 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.* *Children can:* ●*construct data on the most appropriate application;*

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		●search a ready-made database to answer questions;	●know how to interpret data, including spotting inaccurate data and comparing data; ●use keyboard shortcuts and functions to input data on spreadsheets and create formulas for spreadsheets; ●add data to an existing database;
Handling Data Key Vocabulary		Google Docs, insert, table.	Google Docs, insert, table, spreadsheet, cell, row, column, formula/formulas, calculate, format, edit, insert, ascending, descending.

	KS1	LKS2	UKS2
Multimedia Text and Images	Children begin to understand the particular purposes technology can be used for and that by adding text and images you can communicate with technology. Children develop their skills in typing, selecting tools and organising information. **KS1 Computing National Curriculum** Children use technology purposefully to create, organise, store, manipulate and retrieve digital content. Children can: ●add text strings, text boxes and show and hide objects and images, manipulating the features; ●use various tools, such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape;	Children develop their skills of formatting using keyboard commands, organising their work to demonstrate effect. In LKS2, they will have the opportunity to express themselves more through digital technology, art, PowerPoint and posters. Children should continue to demonstrate control when operating tools as in KS1. **Lower KS2 Computing National Curriculum** Children 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. They 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	Children begin to look at new software, creating 3D models and learning how to orbit, zoom and develop their editing skills further. They become more confident in inserting links, images and formatting text to create effect. **Upper KS2 Computing National Curriculum** Children 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. Children can:

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	●use applications and devices in order to communicate ideas, work, messages and demonstrate control; ●save, retrieve and organise work;	accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children can: ●create different effects with different technological tools, demonstrating control; ●use appropriate keyboard commands to amend text on a device; ●use applications and devices in order to communicate ideas, work, and messages; ●save, retrieve and evaluate work, making amendments; ●insert a picture/text/graph/hyperlink from the internet or a personal file;	●use the skills already developed to create content using unfamiliar technology; ●select, use and combine the appropriate technology tools to create effect; ●review and improve their own work and support others to improve their work; ●save, retrieve and evaluate their work, making amendments; ●insert a picture/text/graph/hyperlink from the internet or personal file;
Multimedia-Text and Images Key Vocabulary	paint, colour, brush, tools, settings, undo, redo, text, image, size, poster, launch, application, software, window, minimise, restore, size, move, screen, close, click, drag, log on, log off, keyboards, keys, mouse, click, button, double click, drag, present.	draw, object, shape, line, line colour, fill colour, group, ungroup, font, size, text box, format, image, wrap text, plan, link, image, object, link, hyperlink, minimise, restore, size, move, screen, split, create, organise, file, folder, close, exit, search, print, password, screenshot, snipping tool, shift, undo, redo, menu, dictionary, highlight, cursor, toolbar, spellcheck.	window, layout, text, font, colour, format, heading, hyperlink, 2D shape, 3D shape, orbit, pan, zoom, eraser, dimension, measurement, guide

	KS1	LKS2	UKS2
Multimedia Sound and Motion	Children begin to develop their creativity using technology through recording sound. Children will also begin to develop their editing skills and control of the tools. **KS1 Computing National Curriculum** Children use technology purposefully to create, organise, store, manipulate and retrieve digital content. Children can: ●use software to record sounds; ●change sounds recorded; ●save, retrieve and organise work;	Children develop their editing skills further by cropping, organising and arranging film clips. They are able to share work and offer feedback and ideas for improvement with animation and film, giving their opinion on which software to use. In LKS2, children also look at the history of animation and reflect upon the changes over time. **Lower KS2 Computing National Curriculum** Children 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.	Children begin to look more into multimedia broadcasting, learning new skills including recording jingles, podcasts and narration. They become more confident in post-production with editing, trimming and refining their work based on plans they have made. **Upper KS2 Computing National Curriculum** Children 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. Children can:

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	use key vocabulary to demonstrate knowledge and understanding in this strand: commands, add sound.	*Children can:* ●*use software to record, create and edit sounds and capture still images;* ●*change recorded sounds, volume, duration and pauses;* ●*use software to capture video for a purpose;* ●*crop and arrange clips to create a short film;* ●*plan an animation and move items within each animation for playback;*	●*collect audio from a variety of resources including own recordings and internet clips;* ●*use a digital device to record sounds and present audio;* ●*trim, arrange and edit audio levels to improve quality;* ●*publish their animation and use a movie editing package to edit/refine and add titles;*
Multimedia – Sound and Motion Key Vocabulary		*audio, sound, video, movie, embed, link, file format, animate, animation, still image, thaumatrope, zoetrope, zoopraxiscope, stereoscope, flip book, frame, onion skinning, loop, frame rate, record, stop, play, stop motion, stop frame.*	*audio, record, edit, play stop, skip, waveform, input, output, record, edit, play podcast, digital content, downloadable, backing track, voiceover, mute, gain, production, post-production, documentary, project, evaluation, screening, ceremony, upload.*

	KS1	*LKS2*	*UKS2*
Technology in Our Lives	*Children begin to make links to how they use technology outside of the classroom. They begin to think about the benefits of using technology in their lives, making links to learning about online safety.* ***KS1 Computing National Curriculum*** *Children recognise common uses of technology beyond school. They use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.* *Children can:*	*Children refer to online safety rules when discussing technology in their lives. They are able to navigate between websites and use safe search terms on trusted search engines. They become more confident in using email for communication, including attaching and saving files from emails.* ***Lower KS2 Computing National Curriculum*** *Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content.*	*Children can use safe search terms on trusted search engines, and evaluate websites based on layout and information. They become more confident in understanding Google rankings, adverts and the reliability of websites.* ***Upper KS2 Computing National Curriculum*** *Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content.* *Children can:*

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	●recognise ways that technology is used in the home and community, e.g. taking photos, blogs, shopping; ●use links to websites to find information; ●recognise age-appropriate websites; ●use safe search filters;	Children can: ●explain ways to communicate with others online; ●describe the world wide web as the part of the internet that contains websites; ●add websites to a favourites list; ●use search tools to find and use an appropriate website and content; ●use strategies to improve results when searching online;	●search for information using appropriate websites and advanced search functions within Google; ●use strategies to check the reliability of information (cross-check with another source such as books); ●talk about the way search results are selected and ranked; ●check the reliability of a website, including the photos on site; ●tell you about copyright and acknowledge the sources of information;
Technology in Our Lives Key Vocabulary	filter, Google, search engine, image, keyboard, email, internet, subject, address, communicate, sender, safe, secure.	filter, Google, search engine, image, keyboard, email, subject, address, communicate, sender, safe, secure, internet, world wide web, social media	world wide web, search, search engine, advanced search, results, Google, browser, terms of use, bias, authority, citation, plagiarism, source, website, secure, https, site, domain, website, browser, address bar.