Computing Progression of Skills – 2023/2024

Nursery and Reception (EYFS)	**<u>What is taught linking to:</u>** Early Learning Goals (ELG) Links: Understanding of the World, Maths and Literacy Computer Science – • Investigate programming through the use of hands-on hardware (i.e. BeeBots) • Learning to create sequences and use key vocabulary such as repeat and order Information Technology – • Using computers to research information on topics during group learning • Exploring the use of iPad to record their learning with increasing independence Digital Literacy – • Begin to understand the basics of how to be safe with technology • Encouraging children to extend their knowledge and ways of thinking Use of online resources to refer to book, wall displays and online resources.					
	Computer Science			**Information Technology**	**Digital Literacy**	
KEY STAGE 1: National Curriculum Objectives	**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.**
Year 1	• Can explain that an algorithm is a set of instructions • Knows that a computer program turns an algorithm into code that the computer can understand • Can identify what is wrong when the steps are out of order (debugging) and suggest solutions/fixes • Can make logical guesses as to what is going to happen in a programme or from a set of code.			• Can group and sort different media, including sound, pictures and text and add these to program • Can manipulate different medias to include them in files • Can successfully name, save and find work in the correct location.	• Can identify different types of technology and share examples from both home and school • Can discuss whether inventions/technology is old or modern, include unplugged examples (i.e. chairs) • Can understand the importance of keeping login information safe and private.	
Year 2	• Can explain an algorithm must be a complete set of instructions in order to finish a task • Knows the importance of carefully planning algorithms to ensure their code flows • Can design a simple code within a program to achieve a specific I purpose • Can identify errors with increasing confidence and begin to show independence in fixing by debugging • Can confidently explain steps involved in the algorithm to predict what may happen next • Can identify the key codes (i.e. block) which will create a desire actioned or effect (i.e. make something move).			• Can organise data on a database, as well as being able to retrieve information from examples • Can use more than one type of program to organise information (i.e. tree maps and spreadsheets) • Can use digital programs to manipulate data (i.e. creating a sequence of music) • Can identify different media, including sound, pictures and text and add these to program to influence the user • Can successfully name, save and find work in the correct location, including making their own folders.	• Can search the internet to locate required information safely • Can discuss the consequences of not searching safely online, as well as how to report things that upset them online by informing trusted adults • Can share work and communicate effectively electronically (i.e. using 2email or putting work onto a class display board) • Can identify where technology is used in school, including in the office and kitchen • Can understand that coding links to the real world and teaches important skills needed for adulthood.	

KEY STAGE 2: National Curriculum Objectives	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 concern about content and contact.
Year 3	• Can make a real-life situation into an algorithm (i.e. air traffic control) by identifying the steps required to complete an objective using scaffolded ideas to support n • Can identify errors in their program and fix it by debugging • Can begin to use timers within a program and experiment with these • Can appropriately select between the use of a timer or use of the repeat command • Can predict what will happen in a program that has several steps • Can begin to use 'if' statements for functions • Can identify ways in which the internet can be used for communication • Can use 2email to respond appropriately to others, including with attached files.				• Can effectively carry out searches to find digital content using Purple Mash and online search engines • Can collect data and input this into software • Can analyse data using features (i.e. formulas in spreadsheets/2Calculate) • Can present data using and information using different software, including branching database (2Question) and graphing tools (2Graph) • Can consider options for the most appropriate software for a given task		• Can understand the importance of privacy and use this to create secure passwords • Can explain the potential negative consequences of not keeping passwords safe and secure • Can understand the importance of keeping safe online and behaving respectfully • Can use communicate tools with good etiquette • Can report unacceptable content and know to tell a trusted adult.
Year 4	• Can turn a real-life situation into an algorithm, using a design that flows with increased independence • Can use a repetition in my code (i.e. a loop code that meets certain condition) • Can use timers within a program for a repetition effect (i.e. creating a counting machine) • Can use an 'if' statement for creating a differing pathway for a program to take • Can use variables within a program and know how to change the values of these • Can identify errors in their code and begin to debug with these with increasing accuracy • Can identify the main components of hardware which allow computers to join and form a network.				• Can understand the purpose of a search engine and the main features within it • Can look at information on a webpage and make predictions about the accuracy and reliability of it • Can create and improve my solutions to a problem based upon feedback • Can review solutions others have created and provide feedback against a checklist of criteria • Can work collaboratively with others • Can share digital content using a range of applications, including adding to display boards, attaching to emails and class blogs.		• Can understand the need for online safety rules at school, home and in the wider community (i.e. law) • Can demonstrate how to identify features of using the internet safely (i.e. padlock in the weblink box) • Can explain the need for privacy online and how this can link to our mental well-being • Can identify strategies to keep safe online - including knowing how to block and report content with confidence.
Year 5	• Can create more complex real-life problems into algorithms using familiar and new softwares • Can independently identify when to test programs for effective debugging • Can begin to convert (translate) algorithms that contain sequence, selection and repetition into a condensed code it enhances effectiveness of the program • Can organise their code carefully – beginning to name variables and split groups of codes to support with debugging • Can begin to apply logic to discuss and identify bugs with a specific line of code, similar to the way in which they would identify a Maths or grammatical error, even if they cannot complete the steps to fix the error • Can identify and explain the key components of computer networks and explain the role their play in communication on a worldwide scale • Can independently identify the best software choices for a given task.				• Can independently identify the best software choices for a given task and share in the best way, including adding to display boards, attaching to emails and class blogs • Can use search engines with greater complexity by understanding ways to make their searches more specific (i.e. adding or removing words for better results) • Can identify whether a website is credible and its level of reliability from a source, as well as its level of safety • Can take onboard feedback from others to improve upon their work – whilst also beginning to justify their design choices to others • Can work collaboratively with others on tasks to vocalise their understanding, both verbally and digitally (i. e using 2colloborate)		• Can explain what personal information is and the risks of oversharing online, linking to thinking about their digital footprint • Can recognise the dangers faced through technology – including hackers and scams • Can share a range of online safety rules and can apply these when using technology • Can explain the need for 'respect' online and the potential implications of being 'disrespectful' online • Can understand theirs rights online and the steps to take if these are not being met • Can identify the impacts (both positive and negative) technology can have on their mental wellbeing as well as others.
Year 6	• Can take complex real-life problems and turn these into an algorithm using familiar and new softwares • Can decompose the algorithm creating process in a logical way to identify structures that would work • Can frequently test and debug the program by using logical to identify the cause of a bug • Can make use of a range of statements (i.e. if/can and repeat) to condense their code into a simpler algorithm which effectively runs as required • Can use inputs and outputs to add different media including sound, movement, buttons – making clear the state of the object (i.e. variable) • Can explain how the internet retrieves information and identify how it is different to the world wide web.				• Can use filters when searching for digital content to help speed up my searches • Can explain in detail how to identify fake news and how to identify the reliability of a source, including websites • Can consider the needs of a target audience and design and create according to their needs • Can take onboard feedback from others but conscientiously object to elements they disagree with. They can also share feedback with others • Can self-reflect upon a project and give themselves feedback to improve next time.		• Can demonstrate and discuss safe and respectful use of different technologies, including across a range of softwares • Can identify more discrete online behaviours – identifying warning signs that can be misinterpreted (i.e. being groomed = receiving gifts) • Can use critical thinking to help them stay safe online, including the need to understand their gut feelings • Can understand the value of protecting their privacy (as well as others) online – including the longer-term implication of their digital footprint.

MORE ABLE

If a child is secure with all skills within their year group band, they can be assessed by the following more able strands:

- Demonstrate a capability (skillset) which is above that of their expected age across all 3 Computing strands
- Articulate their answers with full justification as to how they have reached an idea/conclusion, showing an awareness of key ideas. Also able to support peers with achieving outcomes through clear explanations and demonstrations
- Explore independently during their learning to test and challenge ideas, regardless of success rate
- Accessing extension/challenge activities which test higher levelled/more complex skills. Also includes, combining elements they have learnt across units (i.e. adding images) even when it is not specified
- Secure knowledge of target audiences and how this will influence the outcome they wish to achieve
- Transfer and apply their skillsets with ease into new contexts, showing confidence to use a 'trial and error' approach even when faced with challenges
- Confidently use a range of devices (iPads, Chromebooks, Laptops) with ease, including touch-typing and appropriate use of the touch screen
- Demonstrate a systematic approach to problem-solving, combing what they have been taught with their own ideas and knowledge
- Reveals an interest in computers outside of school and can share their achievement outside of explicit lessons
- Confidently use a range of familiar and new softwares with ease – investigating different features independently to apply to their own work
- Demonstrate high levels of computational thinking, logic and reasoning skills. Able to use transferable knowledge and skills with ease (i.e. Maths – degrees in a turn).