

	<p>Computing: Progression in Knowledge and Skills</p> <p>Strands of Computing:</p> <p>Computer Science</p> <p>Information Technology</p> <p>Digital Literacy</p>
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EYFS Framework Objectives:

Development Matters (3-4 Year Olds)

- Remember rules without needing an adult to remind them.
- Match their developing physical skills to tasks and activities in the setting.
- Explore how things work.

Reception

- Show resilience and perseverance in the face of a challenge.
- Know and talk about the different factors that support their overall health and wellbeing (sensible amounts of ‘screen time’).
- Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
- Explore, use and refine a variety of artistic effects to express their ideas and feelings.

Early Learning Goals

- Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.
- Explain the reasons for rules, know right from wrong and try to behave accordingly.
- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Year Group	Key Knowledge	Key Skills
EYFS	<ul style="list-style-type: none"> Know different types of technology. Know who to speak to in order to keep safe when using the internet. 	<ul style="list-style-type: none"> Code using simple instructions Take a good photo. Paint with an app.

Key Stage 1 National Curriculum Objectives

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.

<p>Year 1</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • Identify a set of instructions (pre-cursor to an algorithm). • Describe what a computer program is. <p>Information Technology</p> <ul style="list-style-type: none"> • Identify the difference between left and right click. • Describe what different formatting tools are (font, colour, bold etc...) • Explain why computers are useful in presenting information. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Understand the importance of being safe, responsible and respectful online. • Know what to do when they don't have a good feeling when using technology. • Understand that being safe online is similar to staying safe in real life. 	<p>Computer Science</p> <ul style="list-style-type: none"> • Write a simple set of instructions (an algorithm). • Edit their instructions for mistakes (de-bug). • Use different blocks to program physical and virtual characters. <p>Information Technology</p> <ul style="list-style-type: none"> • Type with two hands. • Save work to a folder. • Use keys such as space, shift and enter effectively. • Record a sound. • Format a piece of work with colours and fonts. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Learn the "Pause & Think Online" song to remember basic digital citizenship concepts. • Recognize the different kinds of feelings they can have when using technology.
<p>Year 2</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • Explain what an algorithm is. • Describe what de-bugging is. <p>Information Technology</p> <ul style="list-style-type: none"> • Describe the uses of different programs on the computer (e.g. Word, PPT etc...) • Explain what key terms are such as: text box; font; cursor <p>Digital Literacy</p> <ul style="list-style-type: none"> • Understand that being a good digital citizen means being safe and responsible online. • Recognise the ways in which digital devices can be distracting. • Understand that they should never give out private information online. • Learn that the information they share online leaves a digital footprint or "trail" 	<p>Computer Science</p> <ul style="list-style-type: none"> • Write more complex algorithms including repeat functions. • Predict what an algorithm will result in for a virtual character. • Combine blocks together from different parts of Scratch Jr. • Begin to apply skills to new situations. <p>Information Technology</p> <ul style="list-style-type: none"> • Adding photos, text and sound. • Insert objects, text boxes and images. • Refine skills into a 'finished product'. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Take a pledge to be a good digital citizen. • Identify ideal device-free moments for themselves and others. • Recognise the kind of information that is private. • Evaluate what information is OK to be shared online • Compare and contrast how they are connected to different people and places.

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 concerns about content and contact.

<p>Year 3</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • Define key terms within coding such as: algorithm; de-bug; variable. • Identify what key blocks in Scratch do. • Describe what a character would do if a specific program was run. <p>Information Technology</p> <ul style="list-style-type: none"> • Describe what a hyperlink is. • Identify key applications for specific tasks. • Explain key formatting tools and their functions. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Describe the Rings of Responsibility as a way to think about how our behaviour affects ourselves and others. 	<p>Computer Science</p> <ul style="list-style-type: none"> • Write algorithms on more complex coding applications. • Use repeat functions to create more efficient algorithms. • Begin to de-bug incorrect code in block based algorithms. • Begin to create and use variables within algorithms. <p>Information Technology</p> <ul style="list-style-type: none"> • Add hyperlinks to documents, websites and pictures. • Complete basic keyboard shortcuts such as copy, paste, save etc... • Insert videos to presentations. • Alter the size and looks of characters. • Record and add sound recordings. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Examine both in-person and online responsibilities.
<p>Year 4</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • Begin to understand the term decomposition. • Explain what an algorithm does and some uses for an algorithm. <p>Information Technology</p> <ul style="list-style-type: none"> • Describe what SmartArt is. • Explain what certain keyboard shortcuts do. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Learn the "What? When? How Much?" framework for describing their media choices. • Begin to develop their own definition of a healthy media balance. • Explain the difference between private and personal information. • Explain why it is risky to share private information online. • Define the term "digital footprint" and identify the online activities that contribute to it. • Understand what responsibilities they have for the digital 	<p>Computer Science</p> <ul style="list-style-type: none"> • Write more complex algorithms which complete tasks. • Begin to use 'if... then' blocks to introduce selection to algorithms. • Refine and use variables within algorithms. • Begin to combine more large sections of code into a longer algorithm. <p>Information Technology</p> <ul style="list-style-type: none"> • Perform more complex keyboard shortcuts such as: changing text size; formatting shortcuts; undo/redo. • Record and add sounds to a project. • Choose appropriate formatting tools to purpose and audience. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Use this framework and their emotional responses to evaluate how healthy different types of media choices are. • Identify the reasons why people share information about themselves online.

<p>Year 5</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • Define and explain the term decomposition. • Explain what a variable is and give examples of variables that would be useful in programs. • Begin to describe the real-life uses of algorithms and uses across the curriculum. <p>Information Technology</p> <ul style="list-style-type: none"> • Explain why certain formatting features are used. • Identify applications that could be more useful for certain tasks. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Reflect on how balanced they are in their daily lives. • Consider what "media balance" means, and how it applies to them. • Define "the curiosity gap." • Explain how clickbait uses the curiosity gap to get your attention. 	<p>Computer Science</p> <ul style="list-style-type: none"> • Use 'if... then' blocks more efficiently. • Combine variables, sequencing and selection in more complex algorithms. • Develop algorithms that respond to variables. • Begin to use operators in conjunctions with variables to construct programs that respond to inputs. <p>Information Technology</p> <ul style="list-style-type: none"> • Combine audio and video skills together. • Add charts and tables. • Apply skills to alternative programs (e.g. Prezi) • Add transitions, animations and effects to presentations. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Create a personalized plan for healthy and balanced media use. • Use strategies for avoiding clickbait. • Show how gender stereotypes impact who they are. • Compare and contrast different kinds of online-only friendships.
<p>Year 6</p>	<p>Computer Science</p> <ul style="list-style-type: none"> • Confidently explain the difference between an algorithm, program as well as debugging and decomposition. • Define sequencing, selection, variables and repetition and explain why they are needed in algorithms. <p>Information Technology</p> <ul style="list-style-type: none"> • Explain the pros and cons of applications to complete specific tasks. • Identify what a spreadsheet is and the key components of it. • Describe some uses for spreadsheets in a real life context. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Reflect on their common online and offline activities. • Use the Digital Habits Checkup routine to create a personal challenge to achieve more media balance. • Describe different ways that identity theft can occur online. • Identify the possible results of posting from a fake social media account. 	<p>Computer Science</p> <ul style="list-style-type: none"> • Combine the use of repetition, sequencing, variables and selection to create complex programs by writing more complex algorithms. • Use a variety of inputs and outputs that interact together including some external outputs. • Use logical reasoning to de-bug a range of both pre-created and self-created algorithms including to more efficient algorithms (e.g. better use of repetition etc...) <p>Information Technology</p> <ul style="list-style-type: none"> • Begin to use some formatting tools in Excel. • Confidently use some formulas to analyse basic data. • Apply and refine the variety of skills used in KS2 to create a finished presentation. <p>Digital Literacy</p> <ul style="list-style-type: none"> • Identify ways to "unplug" to maintain balance between online and offline activities. • Use message clues to identify examples of phishing.

KS3	<ul style="list-style-type: none">design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systemsunderstand several key algorithms that reflect computational thinking [for example, ones for sorting and searching]; use logical reasoning to compare the utility of alternative algorithms for the same problemuse 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functionsunderstand simple Boolean logic [for example, AND, OR and NOT] and some of its uses in circuits and programming; understand how numbers can be represented in binary, and be able to carry out simple operations on binary numbers [for example, binary addition, and conversion between binary and decimal]understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systemsunderstand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digitsundertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known userscreate, reuse, revise and repurpose digital artefacts for a given audience, with attention to trustworthiness, design and usabilityunderstand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns
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