Computing Curriculum

Purpose

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, design and technology, and provides insights into both natural and artificial systems. The core of computing is **computer science**, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use **information technology** to create programs, systems and a range of content. Computing also ensures that pupils become **digitally literate** – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Aims

The curriculum for computing aims to ensure that all pupils:

* can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation;

* can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems;

* can evaluate and apply information technology, including new technologies, analytically to solve problems;

* are responsible, competent, confident and creative users of information and communication technology.

Attainment

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

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<u>Year 1</u>

Focus	Subject Content in Bold Covered	Activities
Computer Science *Programming*	**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**	Bee-Bots Lily Hop 2Go *Daisy the Dinosaur, Bee-Bot App, Kodable*
Information Technology *Multimedia, Data & Online Technologies*	**Use technology purposefully to create,** organise, **store,** manipulate **and retrieve digital content**	Photography Labels & Captions Filming 2D Animation 2Create a Story Pictograms Sorting Objects & Data Exploring Websites & Finding Information Blogging
Digital Literacy *E-Safety*	**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**	'How a Supermarket Works' Role Play Junk Model Machines KS1 Safety Rules Circle Time Password Security Lee & Kim

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Year 2

Focus	Subject Content in Bold Covered	Activities
Computer Science *Programming*	**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**	Human Crane Algorithms Pro-Bots 2Go Lego Factory / 2Code *Daisy the Dinosaur, Bee-Bot App, Kodable*
Information Technology *Multimedia, Data & Online Technologies*	**Use technology purposefully to create, organise, store, manipulate and retrieve digital content**	Word Processing Photo Stories Composing Music Graphs Branch Diagrams & Databases Internet Research Class Email
Digital Literacy *E-Safety*	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**	KS1 Safety Rules Circle Time Hector's World Being Kind Online (Digiduck)

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Year 3

Focus	Subject Content in Bold Covered	Activities
Computer Science *Programming*	**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 **Appreciate how [search] results are selected** and ranked	Scratch: Dress Up Game Crazy Cars Music Machine Own Project Sandwich-Bot Algorithm Logo Letters and Shapes How Search Engines Work
Information Technology *Searching, Multimedia & Data*	**Use search technologies effectively** 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**	Internet Research (Text and Images) eBooks / Presentations with narration Capturing and Editing Films Collecting and Presenting Data Branch Diagrams and Databases
Digital Literacy *E-Safety & Online Communication*	**Understand the opportunities [networks] offer for communication** and collaboration Be discerning in evaluating digital content **Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact**	Blogging Surfing and Searching Safely Private Passwords KS2 Safety Rules Circle Time

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Year 4

Focus	Subject Content in Bold Covered	Activities
Computer Science *Programming*	**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 Appreciate how [search] results are selected and ranked	Scratch: Knock, Knock Slug Trail Math's Quiz Own Project Playground Games and Getting Up Flowchart Algorithms Kodu 'Saving Water' Modelling
Information Technology *Searching, Multimedia & Data*	**Use search technologies effectively** **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**	Internet Research Desktop Publishing Capturing and Editing Films Data Logging Spreadsheets and Graphs
Digital Literacy *E-Safety & Online Communication*	**Understand the opportunities [networks] offer for communication** and collaboration **Be discerning in evaluating digital content** **Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact**	Email and Video Conferencing What is real on the Internet? Preventing Plagiarism Cyber People and Digital Messages KS2 Safety Rules Circle Time

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Year 5

Focus	Subject Content in Bold Covered	Activities
Computer Science *Programming*	**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** **Appreciate how [search] results are selected and ranked**	Scratch: Knock, Knock Math's Quiz Crab Maze Games Maker (Own Game) Exchange Sort Investigation How does a Web Search Work? How does a Network Work?
Information Technology *Searching, Multimedia & Data*	**Use search technologies effectively** **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**	Internet Research Sound Recording and Podcasting eBooks / Presentations Databases Spreadsheets and Formulae
Digital Literacy *E-Safety & Online Communication*	**Understand the opportunities [networks] offer for communication and collaboration** **Be discerning in evaluating digital content** **Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact**	Wikipedia Information Detectives Digital Values Digital Images Copyright Uncovered KS2 Safety Rules Circle Time

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Year 6

Focus	Subject Content in Bold Covered	Activities
Computer Science *Programming*	**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** **Appreciate how [search] results are selected** and ranked	Scratch: Knock, Knock Crab Maze Counting Machine Clock Scratch and Lego Wedo DT Projects: Toilet Fan Car Park Barrier How the Internet Works and HTML Coding
Information Technology *Searching, Multimedia & Data*	**Use search technologies effectively** **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**	Internet Research Stop Motion Animation Creating Web Pages Data Logging Online Surveys and Presenting Data
Digital Literacy *E-Safety & Online Communication*	**Understand the opportunities [networks] offer for communication** and collaboration **Be discerning in evaluating digital content** **Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact**	Blogging Cyberbullying Social Networking KS2 Safety Rules Circle Time