Computing

Computing at Camestone is taught as a discrete subject, linked to other subjects through a thematic approach.

Our 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 or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology

Computing: Key Stage 1			
	Algorithms	**Create programs**	**Reasoning**
	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	*Pupils should be taught to create and debug simple programs*	*Pupils should be taught to use logical reasoning to predict the behaviour of simple programs*
Year 1	• create a series of instructions and plan a journey for a programmable on-screen robot Espresso Coding	• create and debug digital content Espresso Coding	• predict what the outcome of a simple program will be (logical reasoning). Espresso Coding
Year 2	• understand that algorithms are used on digital devices Espresso Coding	• write a simple program and test it Espresso Coding	• predict what the outcome of a simple program will be (logical reasoning). Espresso Coding

	Using technology	Uses of IT beyond school	Safe use
	Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content	*Pupils should be taught to recognise common uses of information technology beyond school*	*Pupils should be taught to 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	• use a range of websites • use a camera • create pictures and use a simple word processor	• talk about some of the IT uses in their own home	• use technology safely • keep personal information private Hector's World
Year 2	• understand that programs require precise instructions Espresso Coding • organise, retrieve and manipulate digital content using Word • combine text and images using Word • create simple animations (ilearn)	• know how technology is used in school and outside of school e.g. survey of uses, how technology is used in communication (email etc.) music, medicine or transport	• use technology safely • keep personal information private • know where to go for help if concerned.

Computing: Key Stage 2

	Search engines	Using programs	Safe use
	Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	*Pupils should be taught to 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*	*Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact*
Year 3	• use a range of software for similar purposes • collect and present information Cross-curricular learning (Anglo-Saxons, Vikings; Volcano presentation)	• understand what computer networks do and how they provide multiple services ilearn2 - Digital art, spreadsheet programme	• use technology respectfully and responsibly • Know different ways they can get help if concerned ilearn2 – e-safety Internet safety day
Year 4	• select and use software to accomplish given goals Cross-Curricular (presentation slides, photographs)	• produce a piece of animation including sound ilearn2 – Animation – Pupil Activity 5	• recognise acceptable and unacceptable behaviour using technology ilearn2 – e-safety Internet safety day
Year 5	• understand how search results are selected and ranked Cross-Curricular learning (World War Two, Tudors, Explorers, Space) Ilearn2 – Computer Networks	• combine sequences of instructions and procedures to turn devices on and off Espresso Coding (Block, HTML and Python)	• understand that they have to make choices when using technology and that not everything is true and/or safe ilearn2 – e-safety Internet safety day
Year 6	• be aware that some search engines may provide misleading information ilearn2 – Fake News Cross-Curricular learning (Wikipedia, research, iFake Text Messaging)	• present the data collected in a way that makes it easy for others to understand ilearn2 – Data Handling (Link to Maths) Green Screen Animation	• Be increasingly aware of the potential dangers in using aspects of IT and know when to alert someone if feeling uncomfortable ilearn2 – e-safety CEOP Internet safety day

	Create programs	Develop programs	Reasoning	Networks
	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	*Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output*	*Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs*	*Pupils should be taught to 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*
Year 3	• write programs that accomplish specific goals Espresso Coding (Scratch as an extension)	• design a sequence of instructions, including directional instructions Espresso Coding (Scratch as an extension)	• discern when it is best to use technology and where it adds little or no value Cross-curricular learning (Anglo-Saxons, Vikings)	• navigate the web to complete simple searches Cross-curricular learning (Anglo-Saxons, Vikings)
Year 4	• give an 'on-screen' robot specific instructions that takes them from A to B Espresso Coding (Unit 4a&4b)	• experiment with variables to control models Espresso Coding (Unit 4a&4b)	• make an accurate prediction and explain why they believe something will happen (linked to programming) Espresso Coding (Unit 4a&4b)	• know how to search for specific information and know which information is useful and which is not Cross-curricular learning (Romans, Ancient Egyptians)
Year 5	• use technology to control an external device Espresso Coding, Printing, Camera	• develop a program that has specific variables identified Espresso Coding	• analyse and evaluate information reaching a conclusion that helps with future developments Spreadsheets, Internet Searches, Fake News	
Year 6	• write a program that combines more than one attribute Espresso Coding (Unit 6a&6b)	• develop a sequenced program that has repetition and variables identified Espresso Coding (Unit 6a&6b) Python,	• design algorithms that use repetition and 2-way selection Espresso Coding (Unit 6a&6b)	