

Overview:

Computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and 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 for the National Curriculum computing curriculum:

- Pupils can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- Pupils can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- Pupils can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- Pupils are responsible, competent, confident and creative users of information and communication technology

Pupils will be taught the following knowledge and skills:

	EYFS	Key Stage One		Lower Key Stage Two		Upper Key Stage Two	
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
DIGITAL LITERACY AND ONLINE SAFETY	Know and talk about the different factors that support overall health and wellbeing, <i>e.g. sensible amounts of ‘screen time’</i> Know that there are rules for using technology safely. Know that personal information should not be shared when using technology. Know to ask a trusted adult for help if something on a device worries or upsets them.	Understand that usernames and passwords help to keep information secure. Know that personal information such as passwords should be kept private. Use technology safely and respectfully. Know to tell a trusted adult if something encountered when using technology causes concern.	Know how to log in and out safely. Understand that passwords help to protect access to digital information. Use technology safely and responsibly when creating and saving digital content.	Use shared digital systems and networks responsibly. Understand that information can be accessed and shared through connected devices.	Use digital tools responsibly when creating and editing content. Understand that digital images can be altered and may not always represent an original image accurately. Consider the purpose and impact of changes made to digital content.	Use digital systems responsibly when accessing, storing and sharing information. Make appropriate choices when searching for and using digital information.	Understand the importance of protecting digital information and computer systems. Use technology responsibly and make appropriate choices when storing, accessing and sharing digital information. Recognise that different security measures can be used to protect devices, systems and information.
CREATING MEDIA	Know how to use a keyboard to type letters Know where the space bar is on a keyboard Know how to use a touchpad and a mouse		<u>Digital Designers:</u> Create digital content for a specific purpose and audience. Combine text and images to communicate information effectively. Understand that choices about layout, size and colour affect how information is communicated. Organise digital content appropriately on a page. Edit digital content using appropriate tools. Review and improve digital work.		<u>Photo editing:</u> Capture digital images for a purpose. Understand that digital images can be edited and modified. Use a range of digital tools to enhance and modify photographs. Make purposeful choices when editing digital images. Understand that automated tools, including simple AI features, can support image editing. Evaluate whether changes improve an image for its intended purpose.		<u>Multi-media Project:</u> Understand that different forms of media can be combined to communicate information effectively. Select and combine text, images, audio and video to create digital content. Design digital content for a specific purpose and audience. Make purposeful choices about which forms of media are most appropriate. Use digital tools to edit and improve multimedia content. Evaluate and refine a multimedia project to improve its effectiveness for the intended audience.

Stoborough Primary School

Computing Progression

COMPUTING SYSTEMS AND NETWORKS	Know how to switch on an iPad Know how to access an app	Know the main parts of a computer, including the screen, keyboard and mouse. Recognise different types of computers and some of their uses in everyday life. Know how to log in and out and understand that usernames and passwords help to keep information secure. Know how to open and use simple software. Know how to create, save and retrieve digital work. Begin to understand that digital devices can connect and share information through the internet.	Know that a computer is made up of different components. Understand that computers use inputs, programs and outputs to make things happen. Identify common input and output devices. Recognise how computers are used in everyday life. Know how to log in and out safely. Know how to save and organise files so that they can be found again.	Know that computers are made up of different components that work together. Identify common computer components and peripherals and understand their purposes. Understand that digital devices can be connected to form a network. Know that networks allow devices to share information. Understand that computer networks and the internet provide opportunities to communicate and collaborate with others. Identify suitable technology for different tasks. Know how to use a school network to access and share information.	Understand that computer networks can be connected to other networks. Understand that the internet is a network of connected computer networks. Identify some of the components that enable networks to connect. Understand that connected networks allow information to be shared.	Understand that the internet and digital systems enable information to be accessed, stored and shared. Understand that websites provide access to information through the internet. Understand that digital information can be stored and retrieved. Understand that information can be shared using digital systems. Use search technologies effectively Understand that search engines select and rank results.	Understand that computer systems contain different hardware components with different functions. Understand that digital information can be stored in different ways. Understand that storage is an important part of a computer system. Understand that computer systems and stored information need to be kept secure. Recognise some ways that digital systems and information can be protected.
CODING AND PROGRAMMING	Know how to give instructions to a program, <i>e.g. bee bot</i>	Know that an algorithm is a set of instructions to carry out a task. Know that a program is a set of instructions that a computer or device follows. Know that instructions need to be clear, precise and in the correct order. Use commands to control the movement of a programmable device, including forwards, backwards and turns. Create and follow simple sequences of commands. Use logical reasoning to predict what a simple program will do. Test a program and identify and correct simple errors (debugging).	Understand that programs are made from instructions that control an outcome. Explore programming blocks and understand that different blocks perform different functions. Use programming blocks to create a simple program. Plan a program for a specific outcome. Build and test a program to check that it works as intended. Identify and correct errors in a program. Know that debugging involves four steps: 1. Identify there is a problem 2. Work out which part of the program is causing it 3. Find a solution and fix it 4. Check it has worked	Understand that programs are made from sequences of instructions written in code. Use Scratch to create a simple programmed animation. Use sequences of commands to achieve a specific outcome. Use logical reasoning to predict what a program will do. Test programs and identify and correct errors through debugging. Evaluate and refine program to improve its outcome	Design and create a program for a specific purpose. Break a problem down into smaller parts to help design and create a program. Understand that variables can be used to store and change information within a program. Use variables within a program to affect outcomes. Understand that sensors can provide inputs that affect how a program behaves. Use 'if' statements to control outcomes and interactions. Test and debug programs systematically to identify and correct errors. Evaluate and refine a program to improve its functionality and effectiveness.	Understand that a programmable device can respond to inputs and produce outputs. Use sensors to provide inputs to a program. Use variables to store and change information within a program. Use conditional statements to control what happens within a program. Design and create an interactive program for a specific purpose. Evaluate and refine a program to improve its functionality and effectiveness.	Understand that text-based programming languages use specific syntax. Write simple programs using Python. Use repetition within a text-based program. Use nested loops to create repeated patterns or outcomes. Predict and explain the outcome of sections of code. Recognise the difference between syntax and logic errors. Identify and correct errors through systematic debugging. Test and refine code so that a program works as intended.

DATA and INFORMATION		Know that data is information that can be collected and organised. Group data according to given attributes. Collect and organise simple data using digital tools. Represent data using simple digital charts and pictograms. Answer simple questions using presented data. Begin to consider how effectively information has been represented and communicated.		Understand that data can be organised and classified according to its attributes. Know that branching databases use questions to classify information. Use yes/no questions to identify and classify data. Plan and create a simple digital branching database. Test a branching database to check that it works effectively. Evaluate how effectively a branching database identifies and classifies information.		Understand that a spreadsheet can be used to organise, analyse and present data. Enter and format data appropriately within a spreadsheet. Use simple formulas to perform calculations. Represent data using appropriate charts. Use a spreadsheet to answer questions and solve simple real-world problems. Evaluate how effectively data has been organised and presented.	
VOCABULARY	online safety, technology, device, computer, iPad, bee bot, internet, photo	computer, screen, keyboard, mouse, username, password, log in, log out, software, file, save, internet, data, group, chart, pictogram, command, instruction, algorithm, program, sequence, predict, test, error, debug	computer, component, input, output, program, device, file, folder, save, organise, log in, log out, password, software, programming block, instruction, outcome, plan, test, digital content, purpose, audience, text, image, layout, size, colour, edit, review	computer, component, peripheral, device, network, connect, information, share, programming, code, command, sequence, animation, predict, test, debug, evaluate, refine, data, attribute, classify, question, yes/no question, branching database	network, internet, connect, information, program, code, Scratch, variable, sensor, input, condition, selection, if statement, outcome, interaction, test, debug, evaluate, refine, digital image, photograph, edit, enhance, modify, automated tool, artificial intelligence (AI), purpose, World Wide Web	internet, website, search, search engine, information, access, storage, share, micro:bit, physical computing, program, input, output, sensor, variable, condition, conditional, selection, data, spreadsheet, cell, row, column, formula, calculation, chart, analyse, format, evaluate	hardware, component, storage, data, security, protect, Python, text-based programming, code, syntax, loop, nested loop, repetition, logic, syntax error, logic error, debug, test, refine, multimedia, text, image, audio, video, purpose, audience, edit, evaluate