Computing Long Term Plan

2020-2021

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year Group						
Year 1	*We are treasure hunters.* • Understand that a programmable toy can be controlled by inputting a sequence of instructions. • Develop and record sequences of instructions as an algorithm. • Program the toy to follow their algorithm. • Debug their programs. • Predict how their programs will work.	*We are TV Chefs – (filming the steps of a recipe)* • Break down a process into simple, clear steps, as in an algorithm. • Use different features of a video camera. • Use a video camera to capture moving images. • Develop collaboration skills. • Discuss their work and think about how it could be improved.	*We are painters (illustrating an e-book)* • Use the web safely to find ideas for an illustration. • Select and use appropriate painting tools to create and change images on the computer. • Understand how this use of ICT differs from using paint and paper. • Create an illustration for a particular purpose. • Know how to save, retrieve and change their work. • Reflect on their work and act on feedback received.	*We are collectors (finding images using the web)* • Find and use pictures on the web. • Know what to do if they encounter pictures that cause concern. • Group images on the basis of a binary (yes/no) question. • Organise images into more than two groups according to clear rules. • Sort (order) images according to some criteria. • Ask and answer binary (yes/no) questions about their images.	*We are storytellers (producing a talking book)* • Use sound recording equipment to record sounds. • Develop skills in saving and storing sounds on the computer. • Develop collaboration skills as they work together in a group. • Understand how a talking book differs from a paper-based book. • Talk about and reflect on their use of ICT. • Share recordings with an audience.	*We are celebrating (creating a card digitally)* • Develop basic keyboard skills, through typing and formatting text. • Develop basic mouse skills. • Use the web to find and select images. • Develop skills in storing and retrieving files. • Develop skills in combining text and images. • Discuss their work and think about whether it could be improved.

Year 2	We are astronauts (programming on screen)	We are games testers (Exploring how computer games work)	We are photographers (Taking better photos)	We are researchers (researching a topic)	We are detectives (collecting clues)	We are Zoologists (collecting data about bugs)
	• Have a clear understanding of algorithms as sequences of instructions. • Convert simple algorithms to programs. • Predict what a simple program will do. • Spot and fix (debug) errors in their programs.	• Describe carefully what happens in computer games. • Use logical reasoning to make predictions of what a program will do. • Test these predictions. • Think critically about computer games and their use. • Be aware of how to use games safely and in balance with other activities.	•Consider the technical and artistic merits of photographs. • Use a digital camera or camera app. • Take digital photographs. • Review and reject or rate the images they take. • Edit and enhance their photographs. • Select their best images to include in a shared portfolio.	• Develop collaboration skills through working as part of a group. • Develop research skills through searching for information on the internet. • Improve note-taking skills through the use of mind mapping. • Develop presentation skills through creating and delivering a short multimedia presentation.	• Understand that email can be used to communicate. • Develop skills in opening, composing and sending emails. • Gain skills in opening and listening to audio files on the computer. • Use appropriate language in emails. • Develop skills in editing and formatting text in emails. • Be aware of online safety issues when using email.	• Sort and classify a group of items by answering questions. • Collect data using tick charts or tally charts. • Use simple charting software to produce pictograms and other basic charts. • Take, edit and enhance photographs. • Record information on a digital map.

Year 3	*We are programmers (Programming an Animation)*	*We are bug fixers (Finding and correcting bugs in programs)*	*We are presenters (Videoing performance)*	*We are vloggers (Making and sharing a short screencast presentation)*	*We are communicators (Communicating safely on the internet)*	*We are opinion pollsters (Collecting and analysing data)*
	• Create an algorithm for an animated scene in the form of a storyboard. • Write a program in Scratch to create the animation. • Correct mistakes in their animation programs.	• Develop a number of strategies for finding errors in programs. • Build up resilience and strategies for problem solving. • Increase their knowledge and understanding of Scratch. • Recognise a number of common types of bug in software.	• Gain skills in shooting live video, such as framing shots, holding the camera steady, and reviewing. • Edit video, including adding narration and editing clips by setting in/out points. • Understand the qualities of effective video, such as the importance of narrative, consistency, perspective and scene length.	• Use a search engine to learn about a new topic. • Plan, design and deliver an interesting and engaging presentation. • Search for and evaluate online images. • Create their own original images. • Create a video slidecast of a Narrated presentation. • Develop understanding of how the internet, the web and search engines work.	• Develop a basic understanding of how email works. • Gain skills in using email. • Be aware of broader issues surrounding email, including 'netiquette' and online safety. • Work collaboratively with a remote partner. • Experience video conferencing.	• Understand some elements of survey design. • Understand some ethical and legal aspects of online data collection. • Use the web to facilitate data collection. • Gain skills in using charts to analyse data. • Gain skills in interpreting results.

Year 4	*We are software developers (Developing a simple software game)*	*We are toy designers (Prototyping an interactive toy)*	*We are musicians (Producing digital music)*	*We are HTML editors (Editing and writing HTML)*	*We are co-authors (Producing a wiki)*	*We are meteorologists (Presenting the weather)*
	• Develop an educational computer game using selection and repetition. • Understand and use variables. • Start to debug computer programs. • Recognise the importance of user interface design, including consideration of input and output.	• Design and make an on-screen prototype of a computer-controlled toy. • Understand different forms of input and output (such as sensors, switches, motors, lights and speakers) • Design, write and debug the control and monitoring program for their toy.	• Use one or more programs to edit music. • Create and develop a musical composition, refining their ideas through reflection and discussion. • Develop collaboration skills. • Develop an awareness of how their composition can enhance work in other media.	• Understand some technical aspects of how the internet makes the web possible. • Use HTML tags for elementary mark up. • Use hyperlinks to connect ideas and sources. • Code up a simple web page with useful content. • Understand some of the risks in using the web.	• Understand the conventions for collaborative online work, particularly in wikis. • Be aware of their responsibilities when editing other people's work. • Become familiar with Wikipedia, including potential problems associated with its use. • Practise research skills. • Write for a target audience using a wiki tool. • Develop collaboration skills. • Develop proofreading skills.	• Understand different measurement techniques for weather, both analogue and digital. • Use computer-based data logging to automate the recording of some weather data. • Use spreadsheets to create charts • Analyse data, explore inconsistencies in data and make predictions • Practise using presentation software and, optionally, video.

Year 5	We are game developers (Developing an interactive game)	We are cryptographers (Cracking codes)	We are artists (Fuming geometry and art)	We are web developers (Creating a website about cyber safety)	We are bloggers (Sharing experiences and opinions)	We are architects (Creating a virtual space)
	• Create original artwork and sound for a game. • Design and create a computer program for a computer game, which uses sequence, selection, repetition and variables. • Detect and correct errors in their computer game. • Use iterative development techniques (making and testing a series of small changes) to improve their game.	• Be familiar with semaphore and Morse code. • Understand the need for private information to be encrypted. • Encrypt and decrypt messages in simple ciphers. • Appreciate the need to use complex passwords and to keep them secure. • Have some understanding of how encryption works on the web.	• Develop an appreciation of the links between geometry and art. • Become familiar with the tools and techniques of a vector graphics package. • Develop an understanding of turtle graphics. • Experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers. • Develop some awareness of computer generated art, in particular fractal-based landscapes.	• Develop their research skills to decide what information is appropriate. • Understand some elements of how search engines select and rank results. • Question the plausibility and quality of information. • Develop and refine their ideas and text collaboratively. • Develop their understanding of online safety and responsible use of technology.	• Become familiar with blogs as a medium and a genre of writing. • Create a sequence of blog posts on a theme. • Incorporate additional media. • Comment on the posts of others. • Develop a critical, reflective view of a range of media, including text.	• Understand the work of architects, designers and engineers working in 3D. • Develop familiarity with a simple CAD (computer aided design) tool. • Develop spatial awareness by exploring and experimenting with a 3D virtual environment. • Develop greater aesthetic awareness.

Year 6	*We are app planners (Planning the creation of a mobile app)*	*We are project managers (Developing project management skills)*	*We are market researchers (Researching the app market)*	*We are interface designers (Designing an interface for an app)*	*We are app developers (Developing a simple mobile app)*	*We are marketers (Creating video and web copy for a mobile phone app)*
	• Develop an awareness of the capabilities of smartphones and tablets. • Understand geolocation, including GPS. • Identify interesting, solvable problems. • Evaluate competing products. • Pitch a proposal for a smartphone or tablet app.	• Scope a project to identify different components that must be successfully combined. • Identify their existing talents and plan how they can develop further knowledge and skills. • Identify the component tasks of a project and develop a timeline to track progress. • Identify the resources they'll need to accomplish a project. • Use web-based research skills to source tools, content and other resources. • Consider strategies to ensure	• Create a set of good survey questions. • Analyse the data obtained from a survey. • Work collaboratively to plan questions. • Conduct an interview or focus group. • Analyse and interpret the information obtained from interviews or a focus group. • Present their research findings.	• Work collaboratively to design the app's interface. • Use wireframing tools to create a design prototype of their app. • Develop or source the individual interface components (media assets) they will use. • Address accessibility and inclusion issues. • Document their design decisions and the process they've followed.	• Become familiar with another programming toolkit or development platform. • Import existing media assets to their project. • Write down the algorithms for their app. • Program, debug and refine the code for their app. • Thoroughly test and evaluate their app.	• Consider key marketing messages, including identifying a unique selling point. • Develop a printed flyer or brochure incorporating text and images. • Further develop knowledge, skills and understanding in relation to creating a website. • Further develop skills relating to shooting and editing video.

		the quality of a collaborative project.				