Computing long term plan

Riverside Academy

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	• E-safety • Recognise different types of technology and what they are used for • Open word processing documents and enter text	• Identify features of a robotic toy • Create simple programs • Understand what an algorithm is	• Adjust the colour and thickness of the pen or brush tool • Create shapes with different colours • Apply text to artwork • Use a range of Paint tools to create a digital piece of artwork	• Understand how to follow an algorithm • Follow and debug an algorithm • Evaluate the effectiveness of an algorithm	• Present an algorithm using pictures, words and symbols • Fix errors in own algorithm • Write accurate algorithms	• Know how to stay safe online • Know how to keep personal information safe • Identify what actions are kind and considerate when communicating online • Search for and find information using the internet • Use a range of tools to edit a word processing document
Year 2	• Esafety • Assess how well different algorithms achieve their intended purpose • Create and refine a detailed algorithm	• Recognise internet content that may be upsetting and how to report it • Select appropriate search engine information results • Select appropriate search engine image results	• Explore the features and tools of presentation software • Search the internet for appropriate images and insert and manipulate them in PowerPoint • Apply knowledge of PowerPoint tools to make a presentation more visually effective	• Understand what a spreadsheet is • Understand different ways of collecting data • Present data visually as a bar chart • Begin to edit a spreadsheet	• Understand that to control computers we need to speak their language • Use computer code to write a program • Apply knowledge of coding for a purpose • Embed the Sprite programming language and the concept of its endless possibilities	• Recognise that some sites on the website are less trustworthy than other sites • Recognise that media balance is important • Understand that passwords should be private and secure • Understand that it is important to be kind to other online • Understand that positive relationships can be support online • Recognise that we leave trails online
Year 3	• Esafety • Find and import files from a network in order to create Scratch backgrounds • Develop understanding of sequence in programming • Understand what inputs and outputs are and identify and use a range of them	• Make a plan for a program from the ideas they have generated • Experience tackling an open-ended challenge using the 'Try it-Test it-Fix' concept, called 'The Loop' in programming design terminology • Apply coding knowledge to create a Scratch program through trial and error	• Understand how digital devices work • Understand what a network is • Understand how computer networks work • Understand that the world wide web is a collection of webpages that are transported between digital devices across the internet • Understand how search engines work to be able to	• Recognise the different ways we communicate online and how online communication forms our 'digital footprint' • Know that age restrictions apply on platforms to protect children • Begin to communicate using email • Understand that the language of communication should be altered to fit the audience • Understand the different email	• Understand that a database is an online library where information is sorted and classified • Understand what a branching database is • Understand how to create a branching data base • Distinguish between a search engine and a database • Refine search engine searches using Boolean search terms • Incorporate images into branching data bases (using a 3-D modelling	• Explain what makes a presentation effective • Understand how to create effective word-strings when using a search engine • Create a simple presentation using Power Point • Insert sound recordings into a multimedia presentation • Effectively communicate

	• Develop debugging skills through testing and debugging code			navigate websites within the world wide web and access information	protocols	software)	information using a PowerPoint presentation
Year 4	• e-Safety • Learn about the features of educational games • Create the initial stages of a Scratch program and be introduced to blocks that include the variables if and then • Develop a Scratch program with the variables if and else • Create and evaluate a program with a repeat function and identify real world examples of repeat loops • Evaluate a program by finding, fixing and debugging algorithms • Apply all the learned elements of Scratch programming to create a new game	• Begin to understand the history of animation and learn how to create an animation in its simplest form • Know that animations are made up of many frames • Understand that modern software can record movement of inserted objects and interacting characters against a backdrop • Understand the importance of frame transition timing in an animation • Understand the principles of stop frame animation	• Collect and insert data into a data processing program • Use data to create graphs and charts • Collect and insert data into a data processing program • Insert hyperlinks to enhance a presentation • Insert data into a PowerPoint using hyperlinks	• Identify features of adverts • Storyboard a TV advert • Understand the principles of filming video footage and recording audio using appropriate devices • Save images found using a search engine • Create a video using editing software from a planned story board	• Use decomposition to breakdown a program into its component parts to better understand it • Apply knowledge of selection when writing a Scratch program • Apply understanding of variables to know when to use set score blocks and change score blocks • Apply knowledge of variables to create the code for a timer	• Understand the concept of desktop publishing and be able to identify the differences between Microsoft PowerPoint and Publisher • Manipulate image size and shape by cropping • Find and alter images with a transparent background • Layer images and text by moving them forwards and backwards • Use and apply our learned desktop publishing skills to create a printed product
Year 5	• e-safety • Understand that a flowchart algorithm can be used to plan a playground game • Program a sprite to move in response to a programmed input • Use variables to modify outputs within a maze game • Add complexity to a sequence by creating an end goal • Use debugging skills to identify and solve errors within a program	• Create a custom sprite with animation • Understand what a broadcast block does • Use a broadcast block to pass a conversation between multiple characters • Use debugging skills to identify and solve errors within a program • Use the accumulated knowledge of Scratch coding to create a dialogue between two animated sprites	• Collect and enter data into a software programme in Excel • Create visual representations of data and use formula to calculate averages using Excel • Analyse and interpret data and understand how data can be used to support a claim • Analyse and represent data as infographics using Publisher	• Understand what a montage is • Identify different types of camera shots and understand their different effects • Become familiar with different filming techniques • Select and save an audio to accompany a video • Understand the importance of the copyright law • Use and apply knowledge of filming techniques, audio downloads and software editing to assemble a video montage	• Know how identity online can be manipulated • Understand the terms, 'intellectual property', 'copyright', 'piracy' and 'fair use and distribution' • Understand why policies on the internet are important • Be alert to risks on the internet • Know why safety rules are in place • Understand how to report upsetting content • Understand how the internet works	• Understand how to use text-based programming to draw regular polygons • Understand that repeat loop commands in a text-based programming language are more efficient when drawing regular polygons • Understand what a 'procedure' is • Understand how to create procedures to draw regular polygons in text-based language • Understand how to combine procedure and loops to draw repeating patterns in text-based language • Apply knowledge of procedures and loops in a block programming

						language
Year 6	- e-Safety - Become familiar with the programming language of Python - Use Python to create simple programs - Compare programming languages and make links between them - Apply prior knowledge of variables and selection to create a quiz in Python	- Use the decomposition method to break down the design of a game into its component parts - Apply previously learned coding knowledge to refine the plan to create the game - Translate planning into the development process of creating a program - Evaluate whether a game meets a brief	- Create a flow chart to visually represent an algorithm that controls a single output for a device using Flowol software - Create a flow chart to visually represent an algorithm that controls multiple outputs for a device using Flowol software - Understand that search engines use algorithms to rank results to a search - Insert elements into a web page that satisfy search engine ranking algorithms in order to maximise its search engine optimisation - Understand the concept of bias and its debatable role in relation to how website search engine optimisation and search engine algorithms potentially effect website rankings - Understand the implications of fairness when a search engine's results present pages from opposing viewpoints	- Understand the meaning of the word code and learn how different codes have evolved through time - Understand that codes/passwords can be cracked/broken - Understand the importance of coding at Bletchley Park and the significance of Alan Turing - Learn about further significant individuals in the history of computing - Understand and convey the impact that significant individuals have made on the world of computing	- Use the SUM function in Excel to solve problems - Use a range of Excel formulae to carry out different calculations - Understand how barcodes work - Understand how QR codes work and be able to generate QR codes using QR generator software - Write encryption codes in Excel for RFID readers - Collect, organise and present data using Excel formulae, in order to analyse and evaluate it for a specific purpose	- Understand the implication of digital footprints, the importance of self-regulation when posting online and the issue of the conflict between regulation and control of content faced by social media providers - Examine unconscious bias in relation to the concept of gender imbalance in technological advancements - Recognise contributions to technology from a range of people - Understand the idea of 'Big Data' - Understand how personal data can be harvested and used to gather information about individuals - Research and clearly articulate the benefits and flaws of technological advances