Greenleas School

PROGRESSION IN KNOWLEDGE – Computing

The Big Ideas	Foundation	KS1	Lower KS2
Computer Systems and Networks	**Knowledge**		
	• What a keyboard is • What a mouse does • What technology is used in places such as home and school.	**Year 1 Autumn 1** • How to login and off a computer and the importance of keeping my login details safe • How to use a mouse to drag and click • To draw and manipulate shapes with a mouse • How to create digital art using an online paint tool. • How to access a website using the internet • To layer shapes to create an image **Year 2 Autumn 1** • Know and identify the parts of a laptop • What an input is (Keyboard. Mouse) • Recognise types of technology in the school and their uses • The difference between an input and an output (monitor, speaker, printer) • Recognise types of technology in the world and their uses **Year 2 Autumn 2** • How to touch type, identifying the home keys and how to use the spacebar and backspace correctly. • What is word processing, how to store information in a text document and some keyboard shortcuts. • How to edit and format images in a text document • To use shortcuts copy and paste and to know the importance of referencing copied work. • How information is put online, who to talk to if something has been put online without consent or if it is incorrect.	**Year 3 Autumn 1** • Learn about the uses of emails. • Learn how to make emails more interesting, using editing features and adding attachments. • Learn to use positive language within an email • Recognise when digital behaviour is unkind. • Look at spam, junk and phishing emails and how to avoid being tricked by fake emails **Year 3 Spring 1** • Know about the different forms of inputs and outputs and their functions, and that computers follows instructions • To understand the purpose of the various parts of a computer • What CPU and GPU stand for. • Know that the hard drive, CPU and RAM are the main components of a computer. • Know how to use QR codes • Know the difference between a desktop, laptop and tablet. **Year 3 Spring 2** • Know what a computer network is and how this connects to multiple devices to make a mapped network. • Know that files travel on a network, known as packets and that these provide instructions, commands and requests to other devices, machines or people. • Know how most households access the internet and that their devices request information from servers across the globe to access content, files and shared data. • Know how networks are helpful and what they use to send and receive information from routers and web URLs • Understand basic file sharing and how packets of information are shared across the globe. **Year 4 Summer 1** • Know how to work collaboratively with others when working on shared digital projects and ideas.

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			• Computer networks, including the internet; know they can provide multiple services such as the World Wide Web and the opportunities they offer for communication and collaborations. • Know how to use the internet to communicate (send an email), share files (save on google classroom), build a website, upload and download documents, stream media and create content online (scratch). • Know how to use knowledge to purposefully create, organise, store, manipulate and retrieve data. • Know how best to identify and read data bases, incorporating similar data into an own database.
	Related Skills & practical knowledge		
	• Locate numbers and letters on the keyboard • Know how to move a mouse and select by clicking.	• Locate functioning keys on a keyboard • Develop basic mouse skills including how to click and drag, drag and drop and left/right click. • Know how to login, open a file, save work onto their own account.	• Use the internet to communicate (send an email), share files (save on google classroom), build a website, upload and download documents, stream media and create content online (scratch).
Programming	**Knowledge**		
	• Follow instructions as part of a practical activity and game. • Debug when things go wrong. • Give simple instructions • Read simple instructions and predict an outcome. • How Bee Bots work	**Year 1 Autumn 2** • Explore and tinker with hardware • Find out and explain how a specific piece of hardware works • How a series of instructions is constructed • What is a simple program • How to create and debug a simple program **Year 1 Spring 1** • Explain what an algorithm is • What is a 'bug' in a program? • Identify an input and an output device • Know what decomposition is • Debug a simple program independently **Year 1 Summer 2** • What is code and how that can affect an object • What a click event is	**Year 3 Autumn 2** • Create 'sprites' and 'tinker' to explore the functionality of the different blocks available. • Use a loop, 'sound' blocks, real musical notes or select sounds from the library. • 'Remix' an animation by altering the program's code • Add speech in an animation • Represent code on paper and then adapt it or replicate it in Scratch **Year 4 Autumn 2** • Change the position and orientation of a sprite. • Use decomposition skills to decipher what has been included in an animation script. What the broadcasting block does. • When and how to use simple variables. • To use multiple variables to complete a specific action • What an operator is and how to join variables together

		• How to combine start events and click events to make a simple game. • How to combine start events and click events in code to programme an animated scene. • How to debug simple outputs **Year 2 Spring 1** • Explore and tinker with hardware to find out how it works • How to use a blue 'movement' block in ScratchJr • How to use a green 'sound' block in ScratchJr • Know that a character is controlled by programming blocks • What are the uses of Scratch Jnr for coding **Year 2 Summer 1** • How to predict algorithms by decomposing a game • How are algorithms implemented as programs on digital devices • To know how a loop works (Orange block in scratch) • The meaning of Abstraction and how it works • 'Computers' need the 'Programmers' to be correct in their algorithmic construction for the processes to work correctly.	• To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch. • To know what a conditional statement is in programming. • To understand that variables can help you to create a quiz on Scratch. **Year 4 Summer 2** • Know computational thinking is made up of four pillars (abstraction, algorithm design, decomposition and pattern recognition). • Know how to apply understanding of decomposition to a real world task before analysing Code from Scratch to figure out what it might do. • Know what abstraction and pattern recognition are and look at how they can help us to solve problems. • Know how to creatively reinforce their knowledge of programming using the remaining pillar of computational thinking - algorithm design • Know how to apply computational thinking skills to solve plugged and unplugged challenges, identifying which skills are used.
	Related Skills & practical knowledge		
	• Give a Bee Bot simple instructions in child-initiated play • With support, debug a Bee Bot, when things go wrong.	• Apply computing knowledge to a real-world situation in an unplugged activity • Predict the behaviour of simple programs • Zoom in and out on maps on Planet Earth • Write instructions for unplugged algorithms • Use all the Bee Bot button functions to make it move through a planned route. • Code using Scratch Jnr, select and move a sprite, change its speed, loop control blocks, select a start and a finish and change direction.	• Solve problems by decomposing them into smaller parts • UsE Scratch to build games and animations • Upload and create your own sprite • Use key colour coding blocks to add actions to a sprite. • In Scratch use motion blocks, sound, events, senses and variables.
Data Handling	**Knowledge**		
	• How to sort and categorise objects • Respond to yes and no questions to understand branching data bases • What is a pictogram	**Year 1 Summer 1** • What is data • Ways that data can be displayed • Ways data can be collected, interpreted and how to represent data digitally. • How branching databases work and how they sort data • Computerised devices can understand different types of 'input' **Year 2 Spring 2** • What is the international space station and the technology on board	**Year 3 Summer 2** • Use knowledge to purposefully create, organise, store, manipulate and retrieve data. • To know that a digital database is more advantageous than a physical database. • Know that data can be sorted based on its value. • Identifying and reading data bases • Know how data is used to more efficiently organise information and can be used to make accurately informed decisions. **Year 4 Autumn 1**

		• How technology is used to create digital images and make labels that can be identified and counted by sensor • Using a spreadsheet to record data • Using a line graph to record data • How to Interpret data	• How to log and sort data taken from online sources within a spreadsheet • Explain how a data sensor works • How sensor data can be used to make predictions and as a result a response. • How weather forecasts are made • Know how to use green screen technology in a process called 'chroma key'
	Related Skills & practical knowledge		
	• Sort objects • Sort themselves into groups • Create a physical pictogram	• Tally chart, bar graph, line graph and pictogram • Interpret data used on the space station	• Identifying and reading data bases • Understanding bar graphs and pie charts • Use a green screen to place a subject in a different background.
Creating Media	**Knowledge**		
	• What a camera is used for	**Year 1 Spring 2** • What can you use to take a picture • What technology has a camera • What does edit, crop, filter mean and how to do this • Why you would need to edit a photograph and how to do this • What to do if you see an image that upsets you when using a search engine **Year 2 Summer 2** • What is animation • What is stop motion • Create a stop motion animation • Elements needed to create an animation • How to use a tablet to create a stop motion animation	**Year 3 Summer 1** • Know how to create and edit a storyboard, bases on a favourite story book. • Know how to create effects through effective camera use, tools for editing and exploring the use of technology. • Know how to edit a video, remove unnecessary details and crop to suit the size of the trailer. • Know how to use voiceovers, text, sound effects or music within a video. • Know common transitions, including morph, cross zoom, peel off, dip to black, directional wipe digital media. **Year 4 Spring 1** • What a real website address looks like and what WWW stands for. • What tools can be used to edit text on the webpage and layout, editing tools, tabs and attachments. • Know which tools to use when editing a webpage. • Knowing how to draw web pages, adding annotations and rough placeholder boxes for text and images **Year 4 Spring 2** • What HTML means and what it is used for • Know how HTML and CSS can be used to change the look and style of a page • How to use the inspect elements tool to alter script and images.

			• Know what "fake news" is • What copyright means
	Related Skills & practical knowledge		
	•Know how to operate a camera /tablet to take photos	• Delete, resize, import, add visual effects to an image • Plan and create an animation	• Film and edit digital media including sound effects, time code and voice over. • Make a new website, build a new page, add text boxes, insert files, change themes and embed links
Online Safety	**Knowledge**		
	• How to stay safe unplugged • Time on electronic devices • Importance of checking with an adult when online	• Meaning of 'sharing' and 'posting' in an online context. • Top tips for staying safe online – 1) People you do not know are strangers 2) Be nice to people like you would be in the real world 3) Keep your personal information private 4) If you are unsure about anything tell an adult you trust. • What is a strong password • Difference between online and offline • Dangers of online chat • Keeping information safe	• Concerns about unexpected emails • Steps to take when faced with upsetting online content • Difference between fact, opinion, and belief • Age restrictions on popular platforms • Advertising – snippets, pop-ups and influencers • Difference between facts, opinions and beliefs online. • Phishing
	Related Skills & practical knowledge		
	• Tell an adult when the feel unsafe	• Log in and out safely • Set and use a password	• Send an email • Search technologies effectively