Computing – Year 4

Autumn 1

Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.

	CK/ Vocabulary	Skills
Computer Systems and Networks – The Internet	• The internet is a network of networks • The global interconnection of networks is the internet • The internet enables us to view the World Wide Web • The World Wide Web comprises of websites and web pages, for example (Google, Safari) • We can **communicate** over the internet and World Wide Web. • Online Safety is when we communicate responsibly over the internet. **Vocabulary:** internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts	• Talk about WWW being a network • Know how network devices connect. • Know how to access websites on the WWW (Skill would be to log into a web browser) <u>Online safety</u> • Know that people use internet services to create content online • Know that not everything on the WWW is true. • To describe the types of content/media that can be added, created, and shared on the World Wide Web

Autumn 2

Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have and evaluate the effectiveness of their choices.

	CK/ Vocabulary	Skills

Creating Media – Photo Editing	• Technology can be used to create and change digital content.
	• Digital images can be manipulated for different purposes.
	• Digital images can be edited using software by;
	  • Cropping
	  • Cloning
	  • Retouching
	  • Combining images
	  • Adjusting colour and light
	• Online safety is important so we can stay safe when learning and using the internet.
	
	Vocabulary: image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.
		*****When assessing this unit please use the learning graph to support your thoughts. *****
		
		• To use clone, copy, and paste to change the composition of a digital image
		• To choose the most appropriate tool to change digital images
		• Add text and other media to improve the image if appropriate
		• Evaluate their project
		
		• Know that images on the internet/ advertisements are not always real.

Spring 1

In this unit, learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions.

	CK/ Vocabulary	Skills
Data – Data Logging	• Technology can be used to sort data. • **Data** is a collection of information that can be stored on a computer. • **Input**: A device that gives data to a computer system, such as a keyboard, mouse, or physical sensors such as data loggers.	• To use a digital device to collect data over time • To use a computer to sort data • identify the data needed to answer questions

	• A data logger collects 'data points' from sensors over time • Data gathered over time can be used to answer questions Vocabulary: data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.	• Use data from sensors to answer questions

Spring 2

Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use a text-based programming language. This unit is the first of the two programming units in Year 4 and looks at repetition and loops within programming.

	CK/ Vocabulary	Skills
Programming – Repetition in Shapes	• An **algorithm** is a precise set of ordered instructions which can be turned into code • **Coding** is how we communicate with computers. Code tells a computer what actions to take. • A **process** is when a computer follows a set of instructions using the data that has been input. • **Sequence**: steps carried out in order. • **Selection**: A decision or a question • **Repetition** – A repeat in code, repeating a sequence of instructions a certain number of times. • Vocabulary: Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.	• To create a program in a text-based language • Identify patterns in a sequence • To modify a count-controlled loop to produce a given outcome • Make use of my design to write a program • Develop my program by debugging it

Summer 1

Learners will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.

	CK/ Vocabulary	Skills
Creating Media – Audio Production	• **Software** is the programme or operating system that a computer uses. • **Hardware** is the physical components of a computer. • **Input**: Data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors. • **Outputs** The information produced by a computer system for its user; items on a screen, speakers, lights. • You can create audio with computers such as a podcast Vocabulary audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate feedback	• Know how to record sound using a computer • Know how to play recorded audio • Know how to import audio into a project • Know how to delete a section of audio • Know how to change the volume of tracks in a project • Can choose appropriate edits to improve my podcast

Summer 2

Learners will explore the concept of repetition in programming using the Scratch environment. The unit begins with a Scratch activity similar to that carried out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.

	• CK/ Vocabulary	Skills
Programming B – Repetition in games	• An **algorithm** is a precise set of ordered instructions which can be turned into code • **Coding** is how we communicate with computers. Code tells a computer what actions to take.	• Develop the use of count-controlled loops in a different programming environment

	• **Command** is a specific instruction given to a computer application to perform a task. • **Repetition** is where actions or commands in programming are repeated. • The repeating commands can also be referred to as a 'loop'. • **Infinite loops:** Loops that can be repeated indefinitely • **Count-controlled loops**: loops that repeat for a set number of times • **Bug**: A mistake in the code. • **Debugging** is checking the code in a computer program to ensure it works and changing it if it doesn't. **Vocabulary** Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.	• Explain that in programming there are infinite loops and count-controlled loops • Develop a design that includes two or more loops which run at the same time • Modify an infinite loop in a given program • Design a project that includes repetition • Create a project that includes repetition