Computing – Year 5

Autumn 1

Learners develop their understanding of computer systems and how information is transferred between systems and devices. Learners consider small-scale systems as well as large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines.

	CK/ Vocabulary	Skills
Computer Systems and Networks – Computing and Networks	• Digital Device is something that has a computer inside to make it work like a washing machine or mobile phone. • **Input**: Data provided to a computer system. • **Outputs** The information produced by a computer system for its user. • **Selection**: A search engine creates an index of the World Wide Web using web crawlers. When a search takes place, results are selected from the search engine's index and delivered to the user • **Ranking**- Page rank: Some factors, including the name of the site, the presence of the search term on the site, and the number of links to a site can influence the order in which results are delivered. Vocabulary system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking.	• To describe the input and output of a search engine • To demonstrate that different search terms produce different results • To evaluate the results of search terms • To explain how search results are selected

Autumn 2

Learners will learn how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Learners are guided with step-by-step support to take their idea from conception to completion. At the conclusion of the unit, learners have the opportunity to reflect on and assess their progress in creating a video.

	CK/ Vocabulary	Skills
Creating Media – Video Production	• Digital Devices process other things, other than switching on and off. Digital devices have inputs, processes, and outputs. • Input: Data provided to a computer system, such as via a keyboard, mouse, microphone, camera or physical sensors. • Software is the programme or operating system that a computer uses. • A video is the recording, reproducing, or broadcasting of moving visual images. • Videos can be improved by editing. You can edit by using the tools in video editing software: split, trim and crop. Vocabulary video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share.	• To explain what makes a video effective • know what to do if I see any content online that makes me feel uncomfortable • use a digital device to record video • capture video using a range of techniques • create a storyboard • identify that video can be improved through reshooting and editing • To consider the impact of the choices made when making and sharing a video

Spring 1

This unit looks at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.

	CK/ Vocabulary	Skills
Data – -Fact File Data bases	• Technology can be used to sort data • A database is a collection of data that is stored in a computer and that can easily be used and added to.	• Create a database using cards • Compare paper and computer-based databases • Explain how you can answer questions

	• Grouping and then sorting data allows us to answer questions • Analysing data means to examine it in detail in order to explain and interpret it. • Evaluating is to judge or calculate the quality, importance, amount, or value of something. Vocabulary database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.	by grouping and then sorting data • Use real-world database to answer questions

Spring 2

In this unit, learners will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors). Learners will be introduced to conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the 'if...then...' structure) and write algorithms and programs that utilise this concept. Throughout this unit, learners will apply the stages of programming design.

	CK/ Vocabulary	Skills
Programming - Selection in Physical Computing	• Programming is when you give an algorithm to a digital device so it can complete its action. • 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. • Bug: A mistake in the code. • **Selection**: A decision or a question • **Repetition** – A repeat in code, repeating a sequence of instructions a certain number of times. • **Input**: Data provided to a computer system, such as via a keyboard, mouse, or physical sensors. • **Outputs** The information produced by a computer system for its user: speakers, lights. • Vocabulary microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer	• To control a simple circuit connected to a computer • To write a program that includes count-controlled loops • To explain that a loop can stop when a condition is met • To explain that a loop can be used to repeatedly check whether a condition has been met • To design a physical project that includes selection • To create a program that controls a physical computing project

Summer 1

In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.

	CK/ Vocabulary	Skills
Creating Media - Vector Drawing	• Information Technology helps us to do a job, communicate or for entertainment. • **Vector drawings** are made using shapes that are layered on top of each other. • Each element of a vector drawing is called an object • **Resizing**; making your shape bigger and smaller • **Rotating**; Turing your shapes around **Duplicate**; making the same image again. • Vocabulary vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection	• Can move, resize, and rotate objects • Can use the zoom tool to help me add detail to my drawings • Modifies objects to create a new image • Changes the order of layers in a vector drawing using layering to create a new drawing • Groups objects to make them easier to work with • Creates a vector drawing for a specific purpose

Summer 2

Learners will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if... then... else...' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'. They represent this understanding in algorithms, and then by constructing programs in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program. To conclude the unit, learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.

	CK/ Vocabulary	Skills
Programming B - Selection in Quizzes	- 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. **Sequence**: steps carried out in order, a series of instructions is a 'sequence'. **Conditions** are statements that need to be met for a set of actions to be carried out. - When a condition is met, it is referred to as 'true' and when it is not met it is referred to as 'false'. **Selection**: A decision or a question **Selection** is used to control the flow of actions in algorithms and programs by checking whether a condition has been met. **Debugging** is checking the code in a computer program to ensure it works and changing it if it doesn't. **Vocabulary** Selection, condition, true, false, count controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator	- Explain how selection is used in computer programs - Create a program that uses selection to Produce different outcomes - Explain how selection directs the flow of a program - Design a program that uses selection - Create a program that uses selection - Evaluate a program that uses selection