Computing – Year 6

Autumn 1

In this unit learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet and how to report concerns about inappropriate content online.

	CK/ Vocabulary	Skills
Computer Systems and Networks – Internet Communication	• The World Wide Web is part of the internet where we can visit webpages and websites (WWW.) • Web browsers (Google Chrome, Safari, Firefox, Internet Explorer) You need these to access the World Wide Web. • Packets are used to transfer data across networks • data is transferred in packets • connections between computers allow access to shared stored files • computers connected to the internet allow people in different places to work together • We can communicate over the internet and World Wide Web, but we must do so responsibly. • communicating and collaboration using the internet can be public or private **Vocabulary**: communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many.	• To outline methods of communicating and collaborating using the internet • To choose methods of internet communication and collaboration for given purposes • To evaluate different methods of online communication and collaboration • To decide what you should and should not share online

Autumn 2

Learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright, fair use of media and creative commons, the aesthetics of the site, and navigation paths. This will enable the learners to understand how to be a respectful and responsible user of technology online.

	CK/ Vocabulary	Skills
Creating Media – Web page creation	• The World Wide Web is part of the internet where we can visit webpages and websites (WWW.) • A website is a set of hyperlinked web pages, the content is written by people. • Most websites are created using HTML code. • When creating new content, you must do so safely, respectfully and responsibly. **Vocabulary**: website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.	• Review an existing website and consider its structure • Plan the features of a webpage • consider the ownership and use of images • Create a new webpage, adding content and previewing what it looks like • Embed media in a webpage • Outline the need for a navigation path, Insert hyperlinks • recognise the implications of linking to content owned by other people •

Spring 1

This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.

Data – Introduction to Spreadsheets	CK/ Vocabulary	Skills
	• Technology can be used to sort data	• To create a data set in a spreadsheet • To build a data set in a spreadsheet

• Data can be words, numbers, dates, images and sounds • Spreadsheets organise data into columns and rows under headings • In Spreadsheets, formulas can be used to produce calculated data • **Vocabulary**: data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools.	• To explain that formulas can be used to produce calculated data • To apply formulas to data • To create a spreadsheet to plan an event • To choose suitable ways to present data

Spring 2

This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, learners experiment with variables in an existing project, then modify them, before they create their own project. In Lesson 4, learners focus on design. Finally, in Lesson 6, learners apply their knowledge of variables and design to improve their games in Scratch.

	CK/ Vocabulary	Skills

Programming –
Variables 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.
	• **Variable**: something that can be changed.
	• **Bug**: A mistake in the code.
	• **Debugging** is when you check for mistakes in your code.
	• Different programs act in different ways, some code is in a:
	    Sequence - An order of events.
	    Selection - making a decision.
	    Repetition - A repeat in code
	
	Vocabulary: variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare
		• To define a 'variable' as something that is changeable
		• To explain why a variable is used in a program
		• To choose how to improve a game by using variables
		• To design a project that builds on a given example
		• To use my design to create a project
		• To evaluate my project

Summer 1

Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.

	CK/ Vocabulary	Skills
Creating Media – 3D Modelling	• Information Technology can help us to design, create programs, collect information, analyse data and present information. • **Hardware** is the physical components of a computer. • **Software** is the programme or operating system that a computer uses. • Different **Software** on digital devices helps people and industries to do different things. • You can use **software** on digital devices to design and create • 3D models can be created on a computer, they can be used to design buildings, furniture and even pen pots. • **Vocabulary**: TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid,	• Recognise that you can work in three dimensions on a computer • Resize an object in three dimensions • I can rotate, duplicate and group 3D objects • To plan and create my own 3D model for a given purpose • Evaluate the effectiveness of my own 3D model

	sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify.	
	Summer 2	
	This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'. It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro:bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth	
	• **CK/ Vocabulary**	Skills

Programming B – Sensing Movement	• 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.
	• Different programs act in different ways.
	   o **Sequence** - An order of events.
	   o **Selection** - the process of making a decision.
	   o **Repetition** - A repeat in code, repeating a sequence of instructions a certain number of times.
	   o <u>Variable</u>: something that can be changed.
	
	• **Vocabulary**: Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.
		• Create a program to run on a controllable device
		• Explain that selection can control the flow of a program
		• update a variable with a user input
		• Use a conditional statement to compare a variable to a value
		• Design a project that uses inputs and outputs on a controllable device
		• Develop a program to use inputs and outputs on a controllable device