Year 5/6	Computer Science – Programming	Mrs Slater
ICT Skills		
Variables in games	Sensing movement- Microbit	
Identify various variables. Design a project that changes the score. Explain why a variable is used. Enhance an existing game in Scratch. Design a game and create algorithms for the project. Implement code and test. Evaluate other learner's games and identify features that they like. Improve their own game. Share.	Create a program to run on a controllable device. Explore 'if, then, else' statements before using within a program. Develop their programs using the accelerometer to sense motion. Use conditional statements to compare a variable to a value. Design a project that uses inputs and outputs. (Step counter). Create a code. Test and debug, using the emulator and then the physical device.	
Knowledge and understanding		
Know that a variable are values that can be set and changed. Know that variable can only hold a single value at a time. Understand how to improve a game using variables. Choose a name for a variable that identifies it. Be able to identify bugs within the game and fix. Know that when sharing a remixed game, credits must be made to the owner.	Consolidates elements of programming from Year3 – Year 6. Understand that a micro:bit is an input, process, output device that can be programmed. Know how selection will determine the flow of a program. Use a conditional to change a variable. Decide what variables to include in a project. Design an algorithm for the project. Know the importance of testing using the emulator before committing the program to a physical device.	
Non-Negotiable Assessment		
Create variables. Begin to understand operators and Booleans. Be able to program pre-formatted algorithms. Know how to detect and fix errors. Modify game to certain specifications.	Use variables to select the flow of a program. Demonstrate the flow. Experiment with different inputs. Know the importance of order in else, if statements. Modify a program to achieve a different outcome. Create an algorithm to match a given task. Design a program flow. Test, debug, and improve.	
National Curriculum Links		
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs, work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.		
Key Vocabulary		
Variable, change, name, value, set, change, design, event, algorithm, code, test, debug, improve, evaluate, share.	Micro:bit, MakeCode, input, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, task, algorithm, step counter, plan, create, code, test, debug.	
Suggested Resources		
Scratch Create, Scratch Explore		

Year 5/6	Using ICT – Creating Media	
ICT Skills		
Web page creation	3D modelling	
Explore and discuss existing websites. Recognise the common features of a website. Find copyright free images. Plan and create their own web page and preview on different devices. Create multiple pages with hyperlinks. Link content owned by others to the website.	Draw 3D shapes, select and move them. Use views to examine them. Resize, lift and lower 3D objects. Combine two objects to make a new shape. Use grouping and ungrouping to manipulate many objects at once. Use placeholders to create holes in objects. Duplicate and resize multiple objects. Explode a 3D model of a building and examine the shapes. Plan their own 3D building design. Create a model based on the design. Evaluate and improve.	
Knowledge and understanding		
Identify what makes a good web page. Pay attention to copyright and fair use of media. Preview web page on several devices to ensure good user experience. Explain what a navigation path is and why they are useful. Recognise the implications of linking other people's content.	Know how to use a computer to work in three dimensions. To know that 3D objects can be modified. To know that 3D objects can be combined. To produce a model for a given purpose. To recognise the shapes that objects are made from and use the knowledge to create their own. Be able to compare their model to another learner's and discuss modifications.	
Non-Negotiable Assessment		
Understand HTML Understand the features of a web page. Know what fair use and copyright means. Find copyright free images. Create a web page. Preview on a range of devices and change if necessary. Record navigation paths and create subpages and working hyperlinks. Awareness of linking to external sites.	Create a range of 3D shapes. Manipulate a 3D object to create a new shape. Rotate and group. Create a 3D name badge. Plan a 3D building design. Create a computer model. Evaluate and improve.	
National Curriculum Links		
Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.	Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information. Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	
Key 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, implication, external link, embed.	2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, placeholder, hollow, combine, construct, evaluate, modify.	
Suggested Resources		
Google sites	Tinkercad 3D	

Year 5/6	Digital Literacy – Computer systems and networks; Data and information	Mrs Slater

ICT Skills	
Communication and collaboration	Introduction to spreadsheets
Explore effective communication. Explain that data is transferred over networks in packets. Work collaboratively with a group of people. Remix a Scratch project which belongs to someone else. Give credit before sharing. Identify other ways of communicating online.	Collect data and suggest how to structure it. Input data into columns and rows in a spreadsheet. Use formulas to produce calculated data. Calculate using different operations. Plan an event. Produce a chart or a table.
Knowledge and understanding	
Understand how data in transferred over the internet. Know that internet devices have addresses. Know that protocol is a set of rules. Understand that data is broken down into smaller parts, called packets. Use the chat facility on a shared document to communicate with group members. Understand that using someone else's work can save time but needs to be within the bounds of copyright and relevant permissions. Know the rules of good etiquette when communicating online.	To understand the purpose of collecting data. Know that data is entered into cells. Be able to select the correct formula for a given task. Understand the layout of a spreadsheet when entering data. Present data in the most suitable way to answer a question.
Non-Negotiable Assessment	
Know the role of data packets. Find online content and collaborate online. Understand what remixing is and acknowledge copyright rules. Understand different ways of communicating online. Know what to share and what not to share. Understand that communication may not be private.	Identify cells, cell reference, columns and rows. Use simple formulas to total columns and rows. Calculate data using multiplication, division, subtraction, and addition. Create formulas that include a range of cells. Use a spreadsheet to answer the questions. Produce a chart to show the answer to a question. Begin to know tools available to present data.
National Curriculum Links	
Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration. Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.
Key Vocabulary	
Communication, protocol, data, address, Internet Protocol (IP) address, Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, public, private, sharing.	Data, collecting, table, structure, spreadsheet, cell, reference, data item, format, formula, calculation, input, output, operation, range, duplicate, question, data set, organised, chart, evaluate,, results, comparison.
Suggested Resources	
Google slides, power point, outlook.	Purple Mash, Excel, Google sheets.