Year 5: Autumn

5.1 Coding

Enquiry Question	What are some of the more complex functions in coding?	
	Required Prior Knowledge	**Knowledge to be taught**
Declarative Knowledge	• An event is something that makes a block of code run such as a user pressing a key or clicking a screen. Event, object and action code blocks can be used together. • When code is run this is known as being executed. • Debugging is when we fix code that isn't working how it was designed to. • A set of instructions is known as an algorithm. • Flowcharts are a type of diagram that use specifically shaped labelled boxes and arrows to represent an algorithm as a diagram. • Timers are used in coding to help control when a block of commands are run. • Repeat is a control block and blocks of commands can be set to repeat a specified number of times using the repeat control block. • **If** statements are used to create selection in 2Code • **If/else** statements are a conditional command that tests a statement. •	• Simplified code runs faster and uses less processing memory, it is said to be more efficient. • Computer generated variables in 2Code are tags given to objects and these can be used to control object types meaning less lines of code are needed. • A simulation is a model that represents a real or imaginary situation. • The timer every command can be used to make code repeat forever. • Abstraction is a way of decluttering and removing unnecessary details to get a program functioning. • A function is a block or sequence of code that can be accessed when it is needed. • Strings are text or a combination of text characters and numbers within programs.
Procedural Knowledge	• Recognise **When Clicked** code block as an event block. Arrange a **When Clicked** code block in front of an object. Give an object code block an action when it is clicked. • Execute the program and test if it is doing what is intended in the plan. • Debug the program if the program isn't working how it was planned.	• Plan an algorithm and convert it to a program within 2Code. • When planning a program, use abstraction to remove any unnecessary complications. • Insert a **create function** and **call function** commands into a program and name it. • Create a **string variable** and give it a value (initialise it). • Use the **print to screen** command to show how the string variable value is changing every 1 second.

	• Recognise the **timer block** and drag it into a program. • Recognise the **event command blocks.** • Insert a button into a design mode scene that contains other object types. • Identify the point the flowchart starts. • Insert a **timer after** command in code view and use a **timer every** command to make an event happen. • Insert a **repeat** command into the coding area and set it a specified number of times to repeat. • Recognise how an **if** Statement in 2Code is being used to create selection within a simple program. Create selection within 2Code using **if** statement blocks within their own program. • Look at code with **repeat until** and know how to change code within it to meet an expected outcome. Insert **repeat until** into their own programs. • Insert the if/else command within a program. Create an if/else statement using blocks of code. •	

Vocabulary	**abstraction, action , algorithm, command, concatenation, co-ordinates, debug, decomposition, efficient, event, flowchart, friction, function, input, nest, object, output, physical system, predict, print to screen, properties, random, repeat, selection, sequence, simplify, simulation, string, tabs, timer, variable**					
Learning Questions	**What do we know about coding already?**	**How do you program a simulation?**	**What are decomposition and abstraction?**	**How do you use friction and functions in code?**	**What are strings?**	**Can I use strings to produce a range of outputs in my program (2Code) ?**
Mastery Key	➢ Can include sequence, selection and repetition into code as well as use functions to make their programming more efficient.					

Year 5: Autumn

5.2 Online Safety

Enquiry Question	What are the advantages and disadvantages of different types of communication?	
	Required Prior Knowledge	**Knowledge to be taught**
Declarative Knowledge	• It is important to log in to a site safely and to keep passwords safe. • The term digital footprint relates to information that a user puts online, and that this footprint may remain even when we think we have removed the information. • Passwords are private and should never be shared. • Blogs can help us to communicate our thoughts and ideas. • Everything put online leaves a trail known as a digital footprint.	• The SMART rules are designed to keep children safe online. • Passwords need to be kept secure. • Care needs to be given when sharing content online. • Sources should be referenced in work. • Different forms of communication are best used for specific purposes.
Procedural Knowledge	• Save their work in their work folder using an appropriate file name. • Know what is meant as a safe search. • Keep personal information private and stop posting information that may lead others to identify them. • Set a password featuring a mix of letters, numbers and special characters. • Use a blog or vlog to communicate ideas and thoughts. • Identifying emails that may be phishing emails and another name for these emails is spam emails. Ignore these emails and not reply to them. • Be aware that a digital footprint can be positive or negative depending upon what they posted. • Define the word malware as a type of software designed to cause viruses on your device or leave it unusable. Define a computer virus. • Identify plagiarism in text and talk about what it means.	• Know the 5 different SMART rules and how these can keep users safe when online. Recover forgotten emails normally using email. • Keep passwords safe and secure and never share them. • Create a good password involving letters, numbers and characters. • Consider what information should be shared online. • Use an avatar as a virtual representation of themselves rather than a photograph. • Define what is meant by plagiarism. • Reference sources that they may have used in their work.
Vocabulary	Appropriate, avatar, bibliography, citation, collaborate, communication, copyright, critical thinking, digital footprint, encrypt, identity theft, image	

	manipulation, malware, ownership, PEGI ratings, phishing, plagiarism, reliability, screenshot, SMART rules, spoof, validity			
Learning Questions	**What are our online responsibilities?**	**How do you protect your privacy online?**	**How do you check the reliability of information on the Internet?**	**What are the advantages and disadvantages of different forms of communication?**
Mastery Key	➢ Can identify reliable online content.			

Year 5: Autumn

5.3 Spreadsheets

Enquiry Question	What are the more advanced ways that spreadsheets can help us?				
	Required Prior Knowledge			**Knowledge to be taught**	
Declarative Knowledge	• Pictograms created through software or physically are of limited use beyond answering simple questions. • A binary tree is a simple way of sorting information into two categories. • Graphs can be generated from data within a sheet.			• A formula can be written in a sheet to convert units of length and distance. • A spreadsheet tool can be used to investigate if a hypothesis is true. • A spreadsheet can be used to model a real-life problem. • A spreadsheet can be used to convert days into weeks or years.	
Procedural Knowledge	• Open a 2Investigate database and identify the records which make up a database. • Enter data into a table format in a spreadsheet. • Select all the data in the table. • Create a simple multiplication formula.			• Know the shortcuts for copy, paste and cut. • Write a simple formula. • Copy and paste a formula from one cell to another using appropriate shortcuts. • Drag a formula from one cell to adjoining cells. • Define what is meant by a variable. • Make the sheet bigger by adding in more cells. • Open up the formula toolbar. • Input information into a table. • Create a simple table layout. • Use the totalling tool. • Explain what is meant by the terms budget and profit.	
Vocabulary	**advance mode, area, budget, computational model, data, format cell, formula, formula bar, formula wizard, profit, columns, rows, totalling tool, variable**				
Learning Questions	**How do you create a formula in a spreadsheet?**	**How do you use the count tool?**	**How do you use a spreadsheet to model a real-life problem?**	**How do you create formulae that use different variables?**	**Can I use a spreadsheet to model a real-life situation?**
Mastery Key	➢ Can create a functional spreadsheet using text variables to perform calculations.				

Year 5: Spring

5.4 Databases

Enquiry Question	**How do you use more advanced features in a database?**		
	Required Prior Knowledge	**Knowledge to be taught**	
Declarative Knowledge	• Items can be sorted using a range of criteria. Data is a collection of information, used to help answer questions. • A pictogram is a visual way of representing data. • Databases are a computerised system that make it easy to search, select and store information. • Graphs can be generated from data within a sheet.	• A database can be used to search for information. • Users can contribute to a collaborative database. • Databases can be created to cover a range of topics or themes.	
Procedural Knowledge	• Collect data on a common theme such as how children travel to school. • When collecting data, recognise that there are efficient ways of collecting data such as writing it down or entering it into a computer program. • Represent data collected as a class using physically created pictograms. • Use a pre-populated binary tree program such as 2Investigate to find answers. • Open a 2Investigate database and identify the records which make up a database. • Collect and enter data on 2Calculate	• Click on a record and see how the information is entered. • Enter data using words and numbers as well as drop down menus. • Use drop down menus to make the data entry more efficient. • Sort, group and arrange information in a database. • Search for information in a database. • Display information in tabular format and chart form. • Answer questions involving the interrogation of a database. • Create an avatar for use in the database and pick out key information they could record in it. • Look at the collaborative and completed database. • Ask questions to encourage their peers to interrogate the database. • Choose a suitable topic for a database. • Set up the database with appropriate fields. • Add at least 8 records to the database. • Use databases created by their peers to answer questions.	
Vocabulary	**arrange, avatar, chart, collaborative, data, database, database report, field, group, record, search, sort, statistics**		
Learning Questions	**How do you search for information in a database?**	**How do you contribute to a database?**	**Can I create a database around a chosen topic (2Investigate)?**
Mastery Key	➢ Can create own database showing understanding of how to word questions so that they can be effectively answered using a search.		

Year 5: Spring

5.5 Game Creator

Enquiry Question	How are games created?				
	Required Prior Knowledge		**Knowledge to be taught**		
Declarative Knowledge	• Computer drawing programs contain palettes - the range of colours or shapes available. • Computer drawing programs may have a choice of painting effects. Painting effects can be combined to help a user make pictures. • Sound can be added to animation to enhance the finished product.		• It is important to plan out a game before commencing on making it. • A game design program has specific functions for the designer to use. • The design of characters and quest items is a key aspect of game creation. • A finished game must be playable and possible for the player to complete. • Evaluation is important so a game can be improved and made more playable and exciting.		
Procedural Knowledge	• Create animating stories using built in effects in 2Create a story. • Create a background for a page using the pen tools. Apply text changes. • Use the eCollage template and combine drawing by using the clipart library. • Open 2Animate on Purple Mash and discuss why animation using technology may be easier than using hand drawn images. • Create a simple moving object animation on Purple Mash using 2Animate.outcomes as repeated typing of commands.		• Use a design document to set the scene of the game. • Research what would make appropriate textures for aspects of the game and save these to the design document. • Design and add appropriate graphical elements to their game including floor, walls and ceiling. • Consider the appropriate places to locate game hazards which make the game more interesting and add to playability. • Design the quest item and add in movement, sound effects and actions. • Consider where to place the quest items so it is possible to finish the game, and everything is collectible. • Place the enemies in the game in such a way as to provide challenge but not make it impossible to play. Use their knowledge to create at least three levels. • Write clear instructions that set a scene and provide gameplay instructions for the user.		
Vocabulary	**evaluation, feedback, image, instructions, promotion, quest, scene, screenshot, texture, theme**				
Learning Questions	**What is the 2DIY 3D tool?**	**How do you design a game environment?**	**How do you design a playable game?**	**How do you maximise the playability of a game?**	**Can I evaluate my own game to help improve the design for the future? (2DIY 3D)?**
Mastery Key	➢ Can evaluate own game for content, design and playability to make improvements.				

Year 5: Summer

5.8 Word processing with Google

Enquiry Question	What is word processing?	
	Required Prior Knowledge	**Knowledge to be taught**
Declarative Knowledge	• Search engines use millions of people's digital footprints to help provide more accurate results. • To find results that we want on a search engine, we need to search effectively. • There are different methods of communication and they each have strengths and weaknesses. • There are different skills needed to research effectively.	• A word processing tool can be used to create a range of documents and know how to navigate around them. • Images can be added to a document. • Images can be edited in. . • Google Docs can easily be shared with other people. • Tables can be used to present information within a document.
Procedural Knowledge	• Open a 2Connect file with information on it. Open a 2Publish file. • Use the 2Connect file to support creating content in the 2Publish file. • Use font tools, clipart, page settings and images to enhance digital content in the digital publishing file. • Use the address book within 2Email to find contacts. • Send an email to multiple contacts using the address book. • Answer a quiz using effective search. • Appreciate that the search engine will give results tailored to the interests of the searcher.	• Crop, resize, recolour an image and add a border. • Wrap text around an image. • Use the style options to change the appearance of an image or a document. • Add in headings and subheadings to a document. • Use a range of bullet points including numbered list Insert text boxes and shapes to a document. • Add in hyperlinks to a document to link to an external website Use the SHARE button. • Insert a table and merge and unmerge table cells. • Add in and distribute columns and rows to a table. • Change the background colour of a cell in a table.
Vocabulary	**Attributing, bulleted lists, breaks, caps lock, captions, column (table), column (newspaper), copy and paste, copyright, cropping, cursor, distributing columns, document, drop capitals, font, grammar check, hyperlink, merge, page orientation, readability, row, selecting/highlighting,**	

Learning Questions	What is a word processing tool for?	How do you add and edit images to a document?	How do you use word wrap with images and text?	How do you enhance the look and usability of a document?	How do you share documents with other users?	How do you present information in a table?	Can I write a letter using a template? (Google Docs)
Mastery Key	➢ Can create a word processing document with images and tables, altering the look of the text to enhance its functionality.						