Curriculum Knowledge Overview: Computing

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
R	**'Settling in'** **'All about me'** **Megaboy** **Once there were Giants**	**'Toys'** **A Chair for Baby Bear** **Nobot Robot** **Each Peach pear Plum**	**Traditional Stories** **Gingerbread Man** **Jack and the Beanstalk**	**Contemporary stories** **The Man on the Moon; a Day in the life of Bon**	**Mini-beasts** **The Very Hungry Caterpillar**	**The World** **Handa's Surprise** **Bringing the rain to Kapiti plain** **Mama Panya's Pancake**
	Understand some different ways that we use technology in everyday life.					
	Continuous Provision: • Operating iPads, the CD Player and interacting with talking pegs and talking boards. • Using a digital camera to photograph work.					
	Predicted Learning: Begin to learn that we can use technology to find out information. Taking a photograph with a tablet or digital camera Start to learn to use a bee-bot Playing games on the IWB Playing games on an iPad.	**Predicted Learning:** Learning that we can use technology to find out information. Taking a photograph with a tablet or digital camera Learning to use a bee-bot Playing games on the IWB Playing games on an iPad.	**Predicted Learning:** Learning that we can use technology to find out information. Taking a photograph with a tablet or digital camera Learning to use a bee-bot Playing games on the IWB Playing games on an iPad.	**Predicted Learning:** Learning that we can use technology to find out information. Taking a photograph with a tablet or digital camera Learning to use a bee-bot Playing games on the IWB Playing games on an iPad.	**Predicted Learning:** Learning that we can use technology to find out information. Taking a photograph with a tablet or digital camera Use a bee-bot to follow more complex pathways. Playing games on the IWB Playing games on an iPad.	**Predicted Learning:** Learning that we can use technology to find out information. Taking a photograph with a tablet or digital camera Use a bee-bot to follow more complex pathways. Playing games on the IWB Playing games on an iPad.
1	**Grouping and Sorting** • To sort items using a range of criteria. • To sort items on the computer using the 'Grouping' activities in Purple Mash. **2quiz** *Vocabulary: Sort, Criteria*	**Pictograms** • To understand that data can be represented in picture format • To contribute to a class pictogram • To use a pictogram to record the results of an experiment. **2Count, 2Connect** *Vocabulary: Pictogram, Data, Collate*	**Animated Stories** • To be introduced to e-books and to 2Create a Story • To continue a previously saved story. To add animation to a story. • To add sound to a story including voice recording and music the children have created. • To work on a more complex story 4 including adding backgrounds and copying and pasting pages. • To use additional features to enhance their stories. • To share their e-books on a class display board. **2Create A Story** *Vocabulary: Animation, E-Book, Font, File, Sound Effect, Display Board*	**Maze explorers** • To understand the functionality of the basic direction keys in Challenges 1 and 2. • To be able to use the direction keys to complete the challenges successfully. • To understand the functionality of the basic direction keys in Challenges 3 and 4. • To understand how to create and debug a set of instructions (algorithm). • To use the additional direction keys as part of their algorithm. • • To understand how to change and extend the algorithm list. • To create a longer algorithm for an activity. • To provide an opportunity for the children to set challenges for each other. • To provide an opportunity for the teacher to set these new	**Coding** • To understand what coding means in computing. • To create unambiguous instructions like those required by a computer. • To build one- and two-step instructions using the printable code cards. • To introduce 2Code. • To use the 2Code program to create a simple program. • To use Design Mode to add and change backgrounds and characters. They will use the Properties table to change the look of the objects. • To use the Properties table to change the look of the objects. • To design a scene for a program. • To use code blocks to make the characters move automatically when the green Play button is clicked.	**Spreadsheets** • Introduction to spreadsheets • Adding images to a spreadsheet and using the image toolbox • Using the 'speak' and 'count' tools in 2Calculate to count items **2Calculate** *Vocabulary: Arrow Keys, Backspace Key, Cursor, Columns, Cells, Clipart, Count Tool, Delete Key, Image Toolbox, Move Cell Tool, Lock Tool, Speak Tool, Spreadsheet, Rows.*

					challenges as 2Dos for all the class to try. **2Go** *Vocabulary: Direction, Challenge, Arrow, Undo, Rewind, Forward, Backwards, Right Turn, Left Turn, Debug, Instruction, Algorithm*	• To add an additional character who moves when clicked. • To explore the When Key and When Swiped commands (on tablets if available). • To use the Stop button to make characters stop when the background is clicked. • To explore a method to code interactivity between objects. • To use Collision Detection to make objects perform actions. • To use the sound property. **2Code** *Vocabulary: Action, Background, Button, Character, Code Block, Code Design, Coder, Coding, Collision Detection, Command, Design Mode, Input, Object, Program, Properties, Scale, Stop Command, Sound, When Clicked, When Key*	
2	**Coding** • To understand what an algorithm is. • To create a computer program using simple algorithms. • To compare the Turtle and Character objects. • To use the button object. • To understand how use the Repeat command. • To understand how to use the Timer command. • To know what debugging means. • To understand the need to test and debug a program repeatedly. • To debug simple programs. • To create programs using different kinds of objects whose behaviours are limited to specific actions. • To predict what the objects will do in other programs, based on their knowledge of what the object is capable of. • To discuss how logic helped them understand that they could only predict specific actions, as that is what the objects were limited to. • To use all the coding knowledge, they have learned throughout their programming lessons to create a more complex program that tells a story. **2Code**	**Online Safety** • To know how to refine searches using the Search tool. • To know how to share work electronically using the display boards. • To use digital technology to share work on Purple Mash to communicate and connect with others locally. • To have some knowledge and understanding about sharing more globally on the Internet. • To introduce Email as a communication tool using 2Respond simulations. • To understand how we talk to others when they aren't there in front of us. • To open and send simple online communications in the form of email. • To understand that information put online leaves a digital footprint or trail. • To begin to think critically about the information they leave online. • To identify the steps that can be taken to keep personal data and hardware secure. **2Respond** **2Email**	**Spreadsheets** • Reviewing prior use of spreadsheets • Copying and Pasting Totalling tools • Using a spreadsheet to add amounts • Creating a table and block graph **2Calculate** *Vocabulary: Backspace Key, Copy and Paste, Columns, Cells, Count Tool, Delete key, Equals Tool, Image Toolbox, Lock Tool, Move Cell Tool, Rows, Speak Tool, Spreadsheet*	**Effective Searching** • To understand the terminology associated with searching. • To gain a better understanding about searching on the Internet. • To create a leaflet to help someone search for information on the internet **2Quiz** *Vocabulary: Internet, Search, Search Engine*	**Creating pictures** • To be introduced to 2Paint A Picture. • To look at the impressionist style of art (Monet, Degas, Renoir). • To recreate pointillist art and look at the work of pointillist artists such as Seurat. • To look at the work of Piet Mondrian and recreate it using the Lines template. • To look at the work of William Morris and recreate it using the Patterns template. • To explore surrealism and eCollage **2Paint A Picture** *Vocabulary: Impressionism, Palette, Pointillism, Share, Surrealism, Template*	**Presenting Ideas** • To explore how a story can be presented in different ways. • To make a quiz about a story or class topic. • To make a fact file on a non-fiction topic. • To make a presentation to the class. **2Connect** **2Create A Story** **2Quiz** *Vocabulary: Concept Map, Quiz, Presentation, Node, Animated, Non-Fiction, Narrative, Audience*

	Vocabulary: Action, Algorithm, Bug, Character, Code Block, Code Design, , Command, Debug/Debugging, Design Mode, Input, Object, Properties, Repeat, Scale, Timer, When Clicked, When Key	*Vocabulary: Search, Display Board, Internet, Sharing, Email, Attachment, Digital Footprint*				
3	**Coding**	**Online safety**	**Spreadsheets**	**Typing**	**Branching Database**	**Simulations**
	- To review coding vocabulary that relates to Object, Action, Output, Control and Event. - To use 2Chart to represent a sequential program design. - To use the design to write the code for the program - To design and write a program that simulates a physical system. - To look at the grid that underlies the design and relate this to X and Y properties. - To introduce selection in their programming by using the if command. - To combine a timer in a program with selection. - To create a program with an object that repeats actions indefinitely. - To use a timer to make characters repeat actions. - To explore the use of the repeat command and how this differs from the timer. - To know what debugging means. - To understand the need to test and debug a program repeatedly. To debug simple programs. - To understand the importance of saving periodically as part of the code development process. **2Code** *Vocabulary: Action, Algorithm, Bug, Code Block, Code Design, Command, Debug/Debugging, Design Mode, Event, If, Input, Object, Output, Properties, Repeat, Timer, Computer Simulation, Selection, Variable*	- To know what makes a safe password, how to keep passwords safe and the consequences of giving your passwords away. - To understand how the Internet can be used to help us to communicate effectively. - To understand how a blog can be used to help us communicate with a wider audience. - For children to consider if that they read on websites is true? To look at some 'spoof' websites. To create a 'spoof' webpage. - To think about why these sites might exist and how to check that the information is accurate. - To learn about the meaning of age restrictions symbols on digital media and devices. - To discuss why PEGI restrictions exist. - To know where to turn for help if they see inappropriate content or have inappropriate contact from others. **2Connect** **2Blog** *Vocabulary: Password, Internet, Blog, Concept Map, Username, Website, Webpage, Spoof Website, PEGI Rating*	- To create pie charts and bar graphs. - To use the 'more than', 'less than' and 'equals' tools. - To introduce the Advanced Mode of 2Calculate and use coordinates. **2Calculate** *Vocabulary: < > = , Advance Mode, Copy and Paste, Columns, Cells, Delete Key, Equals Tool, Spin Tool, Move Cell Tool, Rows, Spreadsheet*	- To introduce typing terminology. Understand the correct way to sit at the keyboard. - To learn how to use the home, top and bottom row keys. - To practise and improve typing for home, bottom and top rows. - To practise the keys typed with the left hand. - To practise the keys typed with the right hand. **2Type** *Vocabulary: Posture, Top Row Keys, Home Row Keys, Bottom Row Keys, Space Bar.*	- To sort objects using just YES/NO questions. - To complete a branching database using 2Question. - To create a branching database of the children's choice. **2Question** *Vocabulary: Branching Database, Data, database, Question*	- To look at what simulations are. - To explore a simulation. - To analyse and evaluate a simulation. **2Simulate** *Vocabulary: Simulation*

4	Online Safety	Coding	Spreadsheets	Logo	Animation Effective Searching	Hardware
	• To understand how children can protect themselves from online identity theft. • Understand that information put online leaves a digital footprint or trail and that this can aid identity theft. • To Identify the risks and benefits of installing software including apps. • To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. • To identify appropriate behaviour when participating or contributing to collaborative online projects for learning. • To identify the positive and negative influences of technology on health and the environment. • To understand the importance of balancing game and screen time with other parts of their lives. **2Connect** **2PublishPLus** *Vocabulary: Computer Virus, Cookies, Copyright, Digital Footprint, Email, Identity Theft, Malware, Phishing, Plagiarism, Spam.*	• To review coding vocabulary. • To use a sketch or storyboard to represent a program design and algorithm. • To use the design to create a program. • To introduce the If/else statement and use it in a program. • To create a variable. • To explore a flowchart design for a program with an if/else statement • To create a program which responds to the If/else command, using the value of the variable. • To create a program with a character that repeats actions. • To use the Repeat Until command to make characters repeat actions. • To program a character to respond to user keyboard input. • To make timers and counting machines using variables to print a new number to the screen every second. • To explore how 2Code can be used to investigate control by creating a simulation. • To know what decomposition and abstraction are in computer science. • To take a real-life situation, decompose it and think about the level of abstraction. • To design a decomposed feature of a real-life situation. **2Code** *Vocabulary: Action, Alert, Algorithm, Code Design, Control, Command, Debug/Debugging, Design Mode, Event, Flowchart Bug, If, If/Else, Get Input, Object, Repeat, Timer, Computer Simulation, Simulation, Selection, Variable*	• Using the formula wizard in the advanced mode to add formulae and explore formatting cells • Timer and spin button • Line graphs • Using a spreadsheet for budgeting • Exploring Place Value with a spreadsheet **2Calculate** *Vocabulary: Average, Advance Mode, Copy and paste, Columns, Cells, Charts, Equals Tool, Formula, Formula Wizard, Move Cell Tool, Random Tool, Rows, Spin Tool, Spreadsheet, Timer*	• To learn the language of Logo. To input simple instructions on Logo. • For the children to use Logo to create letters. • To use the Repeat function in Logo to create shapes. • To use the Build feature in Logo. **2Logo** *Vocabulary: LOGO, BK, FD, RT, LT, REPEAT, SETPC, SETPS, PU, PD*	• To discuss what makes a good, animated film or cartoon and what their favourites are. • To learn how animations are created by hand. • To find out how 2Animate can be created in a similar way using the computer. • To learn about onion skinning in animation. • To add backgrounds and sounds to animations. • To be introduced to stop motion animation. • To share animation on the class display board and by blogging. • To locate information on the search results page. • To use search effectively to find out information. **2Animate** **2Quiz** **2Connect** *Vocabulary: Animation, Background, Frame, Flipbook, Onion Skinning, Stop Motion, Play, Sound, Video Clip, Easter Egg, Internet, Internet Browser, Search, Search Engine, Spoof Website, Website*	• To understand the different parts that make up a computer. • To recall the different parts that 2 make up a computer. • To assess whether an information 3 source is true and reliable. **2Quiz** **2Connect** *Vocabulary: Motherboard, CPU, RAM, Graphics Card, Network. Card, Monitor, Speakers, Keyboard and Mouse*

5	Online Safety	Coding with variables	Spreadsheets		Games Creator	3D Modelling
	• To gain a greater understanding of the impact that sharing digital content can have. To review sources of support when using technology. • To review children's responsibility to one another in their online behaviour. • To know how to maintain secure passwords. To understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this. To be aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online. • To learn about how to reference sources in their work • To search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information. Ensuring reliability through using different methods of communication. **2Publish Plus** **2Connect** *Vocabulary: Online Safety, Smart Rules, Password, Reputable, Encryption, Identity Theft, Shared Image, Plagiarism, Citations, Reference, Bibliography*	• To review coding vocabulary. • To use a sketch or storyboard • to represent a program design and algorithm. • To use the design to create a program. • To design and write a program that simulates a physical system. • To review the use of number variables in 2Code. • To explore text variables. • To create a playable, competitive game. • To combine the use of variables, If/else statements and Repeats to achieve the desired effect in code. • To read code so that it can be adapted, personalised and improved. • To explore the launch command and use buttons within a program that launch other programs or open websites. • To create a program to inform others. **2Code** *Vocabulary: Action, Alert, Algorithm. Bug, Code Design, Command, Control, Debug/Debugging, Design Mode, Event, Get input, If, If/Else, Input, Object, Output, Repeat, Selection, Simulation, Sequence, Timer, Variable*	• Conversions of measurements • Novel use of the count tool. • Formulae including the advanced mode. • Using text variables to perform calculations. • Using a spreadsheet to plan an event. **2Calculate** *Vocabulary: Average, Advance Mode, Copy and Paste, Columns, Cells, Charts, Equals Tool, Formula, Formula Wizard, Move cell Tool, Random Tool, Rows, Spin Tool, Spreadsheet, Timer*		• To set the scene. • To create the game environment. • To create the game quest. • To finish and share the game • To evaluate their and peers' games **2DIY3D** **2Blog** *Vocabulary: Animation, Computer game, Customise, Evaluation, Image, Instructions, Interactive, Screenshot, texture, Perspective Playability*	• To be introduced to 2Design and Make. • To explore the effect of moving points when designing. • To understand designing for a • purpose. • To understand printing and making. **2Design and Make** *Vocabulary: CAD, Modelling, 3D, Viewpoint, Polygon, 2D, Net, 3D printing, Points, Template*
6	Online Safety	Blogging/Databases	Spreadsheets		Networks	Coding
	• Identify benefits and risks of mobile devices broadcasting the location of the user/device, e.g. apps accessing location. • Identify secure sites by looking for privacy seals of approval, e.g. https, padlock icon.	• To identify the purpose of writing a blog. • To identify the features of successful blog writing. • to plan the theme and content for a blog. • To understand how to write a blog.	• Exploring Probability • Use of spreadsheets in 'real life' Creating a computational model • Use a spreadsheet to plan pocket money spending • Planning a school event		• To discover what the children know about the internet. • To find out what a LAN and a WAN are. • To find out how we access the internet in school. • To research and find out about the age of the internet.	• To review good planning skills. • To design programs using their choice of objects, attributing specific actions to each using their new programming knowledge.

- Identify the benefits and risks of giving personal information and device access to different software.
- To review the meaning of a digital footprint and understand how and why people use their information and online presence to create a virtual image of themselves as a user.
- To have a clear idea of appropriate online behaviour and how this can protect themselves and others from possible online dangers, bullying and inappropriate behaviour.
- To begin to understand how information online can persist and give away details of those who share or modify it.
- To understand the importance of balancing game and screen time with other parts of their lives, e.g. explore the reasons why they may be tempted to spend more time playing games or find it difficult to stop playing and the effect this has on their health.
- To identify the positive and negative influences of technology on health and the environment.

2DIY 3D
2DIY
2Code
2Blog

Vocabulary: Digital Footprint, Password, PEGI rating, Phishing, Screen Time, Spoof Website

- To consider the effect upon the audience of changing the visual properties of the blog.
- To understand the importance of regularly updating the content of a blog.
- To understand how to contribute to an existing blog.
- To understand how and why blog posts are approved by the teacher.
- To understand the importance of commenting on blogs.
- To peer-assess blogs against the agreed success criteria.

2Blog

Vocabulary: Audience, Blog, Blog Page, Blog Post, Collaborative, Icon

2Calculate

Vocabulary: Average, Advance Mode, Copy and Paste, Columns, Cells, Charts, Count (how many) Tool, Dice, Equals Tool, Formula, Formula Wizard, Move Cell Tool, Random Tool, Rows, Spreadsheet, Timer, Spin Tool

- To think about what the future might hold.

2Connect

Vocabulary: Internet, World Wide Web, Network, Router, Local Area Network (LAN), Wide Area Network (WAN) Network Cables, Wireless

- To use variables within a game to keep track of the properties of objects.
- To use functions and understand why they are useful in 2Code.
- To debug a program and organise the code into tabs.
- To organise code into functions and Call functions to eliminate surplus code in the program.
- To explore the options for getting text input from the user in 2Code.
- How to include interactivity in programming.
- To use flowcharts to test and debug a program.
- To create a simulation of a room in which devices can be controlled.
- To explore how 2Code can be used to make a text-based adventure game.

2Code

Vocabulary: Action, Alert, Algorithm, Code Design, Command, Control, Debug/Debugging, Event, Flowchart Bug, Function, Get input, If, If/Else, Input, Object, Output, Repeat, Selection, Simulation, Sequence, Tabs, Timer, Variable