Thomas Bullock Curriculum Map for Computing

	Autumn		Spring		Summer	
EYFS	Through natural development, our modeled teaching and Early Years provision (and enhancements) we ensure that children develop problem solving abilities, listening skills and thoughtful questioning as well as improving subject skills across the seven areas of learning. Through our tailored and progressive Early Years into KS1 curriculum, we build and inspire the foundations for computational thinking, concepts and approaches. We explore varied technology through exposure to a range of devices over time including those old and new.					
Year 1	1.1 Computing Systems and Networks – Technology Around Us Learners will develop their understanding of technology and how it can help them in their everyday lives. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly. Prior Learning: Future Learning: 2.1 Links- PSHE, E-safety	1.2 Creating Media - Digital Painting Learners will develop their understanding of a range of tools used for digital painting. They then use these tools to create their own digital paintings, while gaining inspiration from a range of artists' work. The unit concludes with learners considering their preferences when painting with and without the use of digital devices. Prior Learning: 1.1 Future Learning: Links: Art and Design,	1.3 Programming A - Moving a Robot . Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. The unit is paced to ensure time is spent on all aspects of programming and builds knowledge in a structured manner. Learners are also introduced to the early stages of program design through the introduction of algorithms. Prior Learning: 1.1 Reception- Listening and following instructions. Future Learning: 1.6, 2.3,3.3 Links: English- instructions, Maths- Position and direction	1.4 Data and information - Grouping Data Learners will explore labeling, grouping, and searching as these are important aspects of data and information. Searching is a common operation in many applications, and requires an understanding that to search data, it must have labels. This unit of work focuses on assigning data (images) with different labels in order to demonstrate how computers are able to group and present data. Prior Learning: 1.1 Future Learning: 2.4 Links: Maths Data Handling	1.5 Creating Media - Digital Writing Learners will develop their understanding of the various aspects of using a computer to create and manipulate text. They will become more familiar with using a keyboard and mouse to enter and remove text. Learners will also consider how to change the look of their text, and will be able to justify their reasoning in making these changes. Finally, learners will consider the differences between using a computer to create text, and writing text on paper. They will be able to explain which method they prefer and explain their reasoning for choosing this Prior Learning: 1.1 Future Learning: Links: Maths Data Handling	1.6 Programming B - Programming Animations Learners will be introduced to on-screen programming through Scratch Jr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms. Prior Learning: 1.1, 1.3 Future Learning: 2.3, 2.6

Year 2	2.1 Computing Systems and Networks - IT Around Us Learners will develop their understanding of what information technology (IT) is and will begin to identify examples. They will discuss where they have seen IT in school and beyond, in settings such as shops, hospitals, and libraries. Learners will then investigate how IT improves our world, and they will learn about the importance of using IT responsibly. Prior Learning: 1.1 Future Learning: 3.1 Links- PSHE - Safety	2.2. Creating Media - Digital Photography Learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real. Prior Learning: Future Learning:4.5 Links: Art, PSHE, E-safety	2.3 Programming A – Robot Algorithms Develops learners' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Learners will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them Prior Learning: 1.3 Future Learning: 3.3 Links: English instructions, Maths position and direction	2.4 Data and information – Pictograms Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data visually using software. Learners will use the data presented to answer questions Prior Learning: 1.4 Future Learning: 3.4 Links: Maths Data handling	2.5 Creating Media- Digital Music Learners will be using a computer to create music. They will listen to a variety of pieces of music and consider how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music. Prior Learning: Future Learning: Links: Music	2.6 Programming B – Programming Quizzes Learners begin to understand that sequences of commands have an outcome, and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr, and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects. Prior Learning: 1.1,2.1,1.6 Future Learning: 3.2 3.6
Year 3	3.1 Computing Systems and Networks - Connecting Computers Learners will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the	3.2 Creating media – Stop Frame Animation Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text. Prior Learning: 1.1,2.1 Future Learning: 5.2 Links: English- Narrative writing	3.3 Programming A – Sequencing Sounds Learners will explore the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. The unit is paced to focus on all aspects of	3.4 Data Information- Branching Databases Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world	3.5 Creating Media- Desktop Publishing Learners will become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents.They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts	3.6 Programming B – Events and Actions in Programs Learners will begin by moving a sprite in four directions (up, down, left, and right). They then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of **Pen** blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with learners

	benefits of connecting devices in a network. Prior Learning: 1.1,2.1 Future Learning: 4.1 Links: Maths – Number and place value Art		sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit. Prior Learning: 1.1, 1.3,1.6 2.1, 2.6	applications for branching databases. Prior Learning: 1.4, 2.4 Future Learning: Links: Science	thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world. Prior Learning: 1.2, 1.5, 2.2 Future Learning: Links: English – Draft and write, evaluation and proof read	designing and coding their own maze-tracing program. Prior Learning: 1.3, 1.6 2.3, 2.6. 3.2 Future Learning: 4.3,4.6
Year 4	<u>4.1 Computing Systems and Networks- The Internet</u> Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. Prior Learning: 3.1,2.1,1.1 Future Learning: 5.1 Links: PSHE, E-safety	<u>4.2 Creating Media- Audio Production</u> Learners will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Wavacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers. Future Learning: 5.2 Links: Science – Sound English- Writing- composition, draft and write	<u>4.3 Programming A - Repetition in shapes</u> Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. Prior Learning: 1.1, 1.6 2.1, 2.6, 3.3 Future Learning: 4.6.5.3,5.6 Links: Maths- position and direction, shapes	<u>4.4 Data and Information – Data Logging</u> Learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions. Prior Learning: 1.4, 2.4 Future Learning: 5.4, 6.4 Links: Science- making observation, collecting data	<u>4.5 Creating Media – Photo Editing</u> Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have, and evaluate the effectiveness of their choices. Prior Learning: 2.2 Future Learning: 5. Links: PSHE- Self Image	<u>Programming B – Repetition in Games</u> Learners will explore the concept of repetition in programming using the Scratch environment. The unit begins with a Scratch activity similar to that carried out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout. Prior Learning: 1.3, 1.6 2.3, 2.6. 3.3, 3.6 Future Learning: 5.3,5.6

Year 5	5.1 Computing Systems and Networks – Systems and Searching 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. Prior Learning: 4.1,3.1,2.1,1.1 Future Learning: 5.1 Links: PSHE, E-safety	5.2- Creating Media - Video Production 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. Prior Learning:3.2, 4.5 Future Learning: 5.2 Links: E-safety	5.3 Programming A - Selection in Physical Computing 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 make use of their knowledge of repetition and conditions when introduced to the concept of selection and write algorithms and programs that utilise this concept. To conclude the unit, learners will design and make a working model of a fairground carousel that will demonstrate their understanding of how the microcontroller and its components are connected, and how selection can be used to control the operation of the model. Prior Learning: 1.1, 1.6 2.1, 2.6, 3.3, 4.3, 4.6 Links: Science– Electricity. Design and Technology	5.4 Data and Information – Flat File Databases 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. Prior Learning: 3.4, 4.4 Links: Science– Electricity. Design and Technology	5.5 Creating media - Introduction to Vector Graphics 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. Prior Learning: 3.5 Links: Maths- Shape space and measure	5.6 Programming B - Selection in Quizzes 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 use this knowledge to design a quiz in response to a given task and implement it as a program. Prior Learning: 1.1, 1.6 2.1, 2.6, 3.3, 4.3, 4.6, 5.3
Year 6	6.1- Computing Systems and Networks - Communication and Collaboration Learners explore how data is transferred over the internet. Learners initially focus on	6.2- Creating media – Web Page Creation 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	6.3 Programming A - Variables in Games 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	6.4 Data and information – Spreadsheets Learners will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting	6.5 Creating Media - 3D Modelling Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise	6.6 Programming – Sensing Movement Learning will begin with a simple program for pupils to build in and test within the new programming environment, before transferring it to their

	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. Prior Learning: 5.1, 4.1,3.1,2.1,1.1 Links: PSHE, E-safety	and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths. Prior Learning:2.2, 3.5, 4.5 5.2, 5.5 Links: Writing composition	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. Prior Learning: 3.3,3.6 4.3, 4.6, 5.3, 5.6	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. Prior Learning: 4.4, 5.4 Links: Maths - Number- addition, subtraction, multiplication and division Statistics	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. Prior Learning:5.5	micro: bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth. Prior Learning: 3.3,3.6,4.2,4.6, 5.2 5.6 6.2