Linton Mead Subject Curriculum Overview for Computing

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computing systems and networks	Creating media	Programming A	Data and Information	Creating Media	Programming B
1	Technology around us	Digital Painting	Moving a robot	Grouping data	Digital writing	Programming animations
	The children will progress in their knowledge and understanding of technology and how they interact with it in school. Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse.	The children 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.	The children will be introduced to early programming concepts. They will explore using individual commands, both with their peers 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. They will ~~also~~ be introduced to the early stages of program design.	The children will be introduced to data and information. They will begin by using labels to put objects into groups, and labelling these groups. They will demonstrate that they can count a small number of objects, before and after the objects are grouped. Pupils will then begin to demonstrate their ability to sort objects into different groups, based on the properties they choose. Finally, pupils will use their ability to sort objects into different groups to answer questions about data.	The children 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. Also they will consider how to change the look of their text, and will be able to justify their reasoning in making these changes. Finally, they 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.	This unit introduces children to on-screen programming through ScratchJr. 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.
2	Technology around us	Digital photography	Robot algorithms	Pictograms	Making music	Quizzes
	The children will look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. They will investigate how information technology improves our world, and they will learn about using information technology responsibly.	The children 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.	The children will develop their understanding of instructions in sequences and the use of logical reasoning to predict outcomes. They 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.	The children will be introduced to the term 'data'. They will begin to understand what data means and how this 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 in the form of pictograms and finally block diagrams. The children will use the data presented to answer questions.	The children 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. They will compare creating music digitally and non-digitally. They will look at patterns and purposefully create music.	This unit initially recaps on learning from the Year 1 ScratchJr unit 'Programming B – Programming animations'. 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.
3	Connecting computers	Animation	Sequencing sounds	Branching databases	Desktop publishing	Events and actions in programs
	The children 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. They will then be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. The unit concludes with learners discovering the benefits of connecting devices in a network.	The children 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 the children adding other types of media to their animation, such as music and text.	The children will explore the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment. 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 children will develop their understanding of what a branching database is and how to create one. They will gain an understanding of what attributes are and how to use them to sort groups of objects by using yes/no questions. They will create physical and on-screen branching databases. Finally, they will evaluate the effectiveness of branching databases and will decide what types of data should be presented as a branching database.	The children 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 be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. The children will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.	The children will explore the links between events and actions, while consolidating prior learning relating to sequencing. They will begin by moving a sprite in four directions (up, down, left, and right). They will then explore movement within the context of a maze, using design to choose an appropriately sized sprite. They will also be introduced to programming extensions, through the use of **Pen** blocks. The children will be given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with them designing and coding their own maze-tracing program.
4	The internet	Audio editing	Repetition in shapes	Data logging	Photo editing	Repetition in games
	The children 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 be given opportunities to explore the World Wide Web for themselves to learn about who owns content and what they can access,	The children will initially examine devices capable of recording digital audio, which will include identifying the input device (microphone) and output devices (speaker or headphones) if available. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves,	The children will look at repetition and loops within programming. Pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.	The children will consider how and why data is collected over time. Pupils 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. The children will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and	The children 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.	The children explore the concept of repetition in programming using the Scratch environment. They begin with a Scratch activity similar to that carried out in Logo in Programming unit A, they can discover similarities between two environments. The children look at the difference between count-controlled and infinite loops, and use their knowledge to modify existing animations

	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.	learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, the children will evaluate their work and give feedback to their peers.		logging intervals. Pupils will spend time using a computer to review and analyse data. Towards the end of the unit, pupils will pose questions and then use data loggers to automatically collect the data needed to answer those questions.		and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.
5	Sharing information	Video editing	Selection in physical computing	Flat-file databases	Vector drawing	Selection in quizzes
	The children will develop their understanding of computer systems and how information is transferred between systems and devices. They will consider small-scale systems as well as large-scale systems. They will explain the input, output, and process aspects of a variety of different real-world systems. The children will also take part in a collaborative online project with other class members and develop their skills in working together online.	The children will be given the opportunity to learn how to create short videos in 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. They will work in small groups to investigate the use of devices and software. They will be guided with step-by-step support to take their idea from conception to completion. At the teacher's discretion, the use of green screen can be incorporated into this unit. They will be given the opportunity to reflect on and assess their progress in creating a video.	The children will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. They will be introduced to a microcontroller (Crumble controller) and learn how to connect and program components (including output devices — LEDs and motors) through the application of their existing programming knowledge. They will be introduced to conditions as a means of controlling the flow of actions, and explore how these can be used in algorithms and programs through the use of an input device (push switch). They will make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the 'if... then...' structure) and write algorithms and programs that utilise this concept. The children will design and make a working model of a fairground carousel that will incorporate their understanding of how the microcontroller and its	The children will look at how a flat-file database can be used to organise data in records. They 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 use a real-life database to answer a question, and present their work to others.	The children will find out that vector images are made up of shapes. They will learn how to use the different drawing tools and how images are created in layers. They will explore the ways in which images can be grouped and duplicated to support them in creating more complex pieces of work. This unit is planned using the Google Drawings app.	In this unit, the children 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 will represent this understanding in algorithms, and then by constructing programs using the Scratch programming environment. They will learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They will use this knowledge to design a quiz in response to a given task and implement it as a program. To conclude the unit, the children will evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.

			components are connected, and how selection can be used to control the operation of the model.			
6	Communication	3D modelling	Variables in games	Introduction to spreadsheets	Web page creation	Sensing
	The children will learn about the World Wide Web as a communication tool. First, they will learn how we find information 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. They will then investigate different methods of communication, before focusing on internet-based communication. Finally, they will evaluate which methods of internet communication to use for particular purposes.	The children will develop their knowledge and understanding of using a computer to produce 3D models. They will initially familiarise themselves with working in a 3D space, including combining 3D objects to make a house and examining the differences between working digitally with 2D and 3D graphics. They will then progress to making accurate 3D models of physical objects, such as a pencil holder, which include using 3D objects as placeholders. Finally, They will examine the need to group 3D objects, then go on to plan, develop, and evaluate their own 3D model of a photo frame.	The children will explore the concept of variables in programming through games in Scratch. First, they will learn what variables are, and relate them to real-world examples of values that can be set and changed. They will then use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, the children will experiment with variables in an existing project, then modify them, and then they will create their own project. In Lesson 4, they will focus on design. Finally, in Lesson 6, they will apply their knowledge of variables and design to improve their game in Scratch	The children will be introduced to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. They 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. They will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. The children will use spreadsheets to plan an event and answer questions. Finally, they will create graphs and charts, and evaluate their results in comparison to questions asked.	The children will be introduced to the creation of websites for a chosen purpose. They will identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process they will pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.	The children in this final KS2 programming unit will bring 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'). The children will have 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 them to build in and test in the programming environment, before transferring it to their micro: bit. They then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.