Computing
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Early Years	N/A	Despite computing not being explicitly mentioned within the Early Years Foundation Stage (EYFS) statutory framework, which focuses on the learning and development of children from birth to age five, there are many opportunities for young children to use technology to solve problems and produce creative outcomes. In particular, many areas of the framework provide opportunities for pupils to develop their ability to use computational thinking effectively, such as through undertaking projects incorporating digital devices into a variety of tasks. Some examples include, moving a Bee Bot around a classroom, so they will already be familiar with the device before being asked to undertake tasks related to the key stage one computing curriculum, or writing and testing a simple program, with the support of an adult. Not only will children be keen to again use a device they have previously enjoyed using, but also their cognitive load will also be reduced, meaning they are more likely to succeed when undertaking activities linked to the next stage in their learning. For this reason, Computing should be embedded into all areas of the EYFS provision. As, although within the revised EYFS statutory framework, the Technology strand within Understanding the World has been removed, there are opportunities available within each area of the framework to enable practitioners to effectively prepare children for studying the computing curriculum. We are preparing our children for the ever-changing digital world of computers and it is imperative that we instil digital confidence as early as possible. When children at Ribbon reach the end of Year 6, we envisage that they will be confident and inquisitive problem solvers who use Computing as a vehicle for learning; beginning this in the EYFS is pivotal.	Children will have had many interactions with a variety of devices in the home, or Nursery, setting. This could include; a washing machine, a tablet, a dishwasher, an electric toothbrush etc. The children will be possibly unaware of the technological aspects of these everyday items. The children will have also learnt to complete verbal algorithms, as they follow instructions on a daily basis. The will not relate this to computing but human instruction is a pre-cursor to programming in Computer Science.

Year	Term	Rationale	Prior Knowledge/ Connections
Year 1	Autumn 1	**Technology all around us** Following on from their Computing exploration in EYFS, the children will develop a deeper awareness of the digital devices which are in the world around them. Children will be introduced to a computer and its components. The will use a mouse and keyboard in order to gain a basis for future use of computers at school, and home. Identifying technology around them and, their uses, will provide them with the tools to, later, make informed decisions on their technological choices.	**Reception**: Introduction to some digital devices. Explored Beebots, with less of a programming focus. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards.
	Autumn 2 & Spring 2	**Programming (Bee-bots and iPads apps)** Rationale…Following on from their Computing exploration in EYFS, the children will develop a deeper awareness of the digital devices which are in the world around them. Children will be introduced to a Bee-Bot under a more structured setting. They will programme the Bee-Bot using given instructions or to reach a desired destination. They will use a Bee-Bot in order to gain a basis for future use of programmable items and programmes. Understanding how items are programmed to behave in a desired way will provide them with the basic information in which all of their future programming work will build upon. The complex programmes that they will create in Year 6 start at these simple stages.	**Reception:** Introduction to some digital devices. Explored Bee-Bot s, with less of a programming focus. Understand the cause and effect of devices. Following human instruction- an algorithm
	Spring 2	**Keyboard and Mouse Skills** Following on from their Computing exploration in EYFS, the children will develop a deeper awareness of the digital devices which are in the world around them. Children will be introduced to a computer and its components. The will use a mouse and keyboard in order to gain a basis for future use of computers at school, and home. Beginning to use a keyboard and mouse will provide them with the tools to, later, use computers to their capacity.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards.
	Summer 1	**Digital Art** Following on from their Computing exploration in EYFS and Keyboard exploration in Spring 2. Children will be introduced to the idea that computers can create art. This will have been explored in Summer EYFS but in Year 1 the children will use the programmes with purpose, using tools to create art with more precision. This will be the basis for all future Digital Art, which will progress to digital creations such as animations and green scree productions.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. Digital art **Year 1:** Keyboard and Mouse Skills
	Summer 2	**Microsoft Word** Following on from their Computing exploration in EYFS and Keyboard exploration in Spring 2. Children will be introduced to Microsoft Word as a way to present learning. They will add text and simple shapes. They will be required to use the keyboard and mouse skills studied in Autumn but will learn how to use these skills to produce something of meaning. This will be the basis for all future Digital Literacy from Word through to video production etc.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills

Computing
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
Year 2	Autumn 1	**IT all Around us** Following on from their Computing exploration in EYFS and Year 1, the children will develop a deeper awareness of the digital devices which are in the world around them. This unit is the beginnings of understanding how a computer works and sends messages, particularly through barcodes. This will become a foundation for their knowledge in future years, which will progress to the understanding of networks and how messages are sent to devices far and wide. The children need to be aware that a computer is hardware with the capability of connecting to another device to aid much more complicated connections, in layers years.	**Reception:** Introduction to some digital devices. Explored Beebots, with less of a programming focus. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Further understanding of electronic devices and the form they take and some of the computers functions.
	Autumn 2 & Spring 2	**Programming (Scratch Jnr)** Rationale… Following on from their Bee-Bot exploration in Year 1, Children will be introduced to ScratchJr and will begin to code with blocks for the first time. They will also have a focus on debugging. This will prepare them for using the program, Scratch, in KS2. The idea of programming begins with the coding blocks in Scratch Jnr but they are simplified so that the children in KS1 can access it successfully. Gaining the understanding of connecting blocks in order to control the Sprite will influence their use of Scratch in later years where the tasks and debugging become much more complicated.	Children have been introduced to programming using Beebots and online program: J2E. They can code simple algorithms and have worked with support to debug simple algorithms when needed.
	Spring 2	**Microsoft Word/Pages** Following on from their basic use of Microsoft Word in Year 1Keyboard exploration in Spring 2. Children will now be introduced to new skills in Word which will be required for all future work in computing (fonts and copy and paste). This knowledge will then be transferred to Apple Pages. This will enable the children to understand that a lot of their computing skills are transferable and enable them to make their own later choices, based on preference.	**Reception:** Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills Microsoft Word
	Summer 1	**Data Handling** At this point, the children are becoming very aware of the functions of computers in our everyday, and their future lives. What they won't know (just yet) is how important the handling data programmes are, and how many uses they have. This unit will begin their journey of handling data, digitally. They will learn how simple charts and pictograms are crated, modified and how to read the information that they provide. This will be a simple form of handling data but will help with the future understanding of cells and charts in Excel.	**Reception:** Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills

Computing
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Summer 2	**Animation** Following on from the idea that computers can create art in Year 1. Children will continue to use technology purposefully by being introduced to animation for the first time. They will study how small movements create big effects and how these come together to create entertainment such as TV and film programmes. This will be built upon in future years, with more complex animation, so will provide them with a strong understanding of how simple animations are created.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. Digital art **Year 1:** Keyboard and Mouse Skills. Digital art
Year 3	Autumn 1	**Connecting Computers** Following on from their Computing exploration in KS1, where the children developed a deeper awareness of the digital devices which are in the world around them, and their purpose. Now comes the 'How?' This unit is the foundation of understanding how computers and networks are connected together and how inputs, processes and outputs all play a role in connecting networks. This is the basis for understanding how computers are connected together in a range of settings because children need to understand that what happens online does not stay in one place and also do not just 'magically appear' where they want them to. They need to understand the idea of network traffic, in later years. It is important that children are aware that one of the main functions of a device is to send messages and information and, in order to do this, they need to be connected, either wired or wirelessly.	In Key Stage 1 and EYFS the children gained an understanding of a digital device. They looked at the varying purposes of devices and the impact that they have on our lives. The children understand that devices send messages (through scanners in Year 2). This is an expansion of this, via 'Connecting Computers', where learning focuses on messages being sent to multiple devices.
	Autumn 2 & Spring 2	**Programming (Scratch)** In Year 2 the children gained an understanding of programming through Scratch Jnr. The will move this year into Scracth where they will continue to use blocks to create algorithms, but will use more commands, such as: wait, movement and 'if'. This will support their base knowledge of extensive Coding throughout Primary school. The main focus will be debugging as this is a basis for being able to edit their own and other's programmes in the future.	Children have used ScratchJr in Y2 and have experience of writing and debugging simple algorithms using coding blocks.
	Spring 2	**Microsoft Word/Pages** In this term, the children will learn how to use software to publish, the main use of Microsoft Word and Pages. They have spent previous terms understanding its basic functions and adding shapes, clip art and text but this term involves focusing on the presentation of a document and how the positioning of font cane effect this, positively and negatively. This will support their future publishing in all subjects and provide them with the basis for begin to present their work.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills Microsoft Word **Year 2:** Word/Pages
	Summer 1	**Stop-Motion Animation** Following on from learning how small movements create big effects and how these come together to create entertainment such as TV and film programmes in Year 2. Children will build upon their animation introduction in Y2 by using stop motion. The will learn that stop-motion is how many videos are made and how complex they can be. This will be built upon in future years, with more complex animation, so will provide them with a strong understanding of how simple animations are created.	**Reception**: aspects above **Year 1:** Keyboard and Mouse Skills Digital Art **Year 2:** animation

Computing
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Summer 2	**PowerPoint/Keynote** This is the first set of lessons for the children around PowerPoint and Keynote. The skills from both apps are very transferable, as they will have learnt from Apple Pages and Word. Many skills from previous learning (such as text boxes) are also transferable therefore this strand of learning will help solidify previous computing work but also help build the foundations for all the children's future presenting work. The goal being they have an abundance of skills and knowledge of programmes to choose the most suitable presenting device for the purpose.	**Reception**: aspects above **Year 1:** Keyboard and Mouse Skills Microsoft Word **Year 2:** Word/Pages **Year 3**: Word/Pages
Year 4	**Autumn 1**	**The Internet** Following on from their understanding of the concept of 'connecting computers', in this unit the children will understand how computers are connected to the internet, the advantages of this and the appropriate disadvantages/dangers. This unit is the foundation of understanding how networks are connected together and the integral part that the internet plays in this. They will also understand how content is created by humans and that it can be downloaded from the WWW to their computer, through the connections. This unit is the basis for their understanding of how the WWW works and will be relevant to their everyday life. It is also imperative that children understand that they leave a digital footprint when they use the WWW, and that not everything they come across is true, reliable or accurate. Understanding how the internet works is pivotal to their future understanding of networks and how information is shared from one device to another.	Previously, the children gained an understanding of a digital device. Understanding the varying purposes of devices was explained by understanding that they can also be connected and messages can be sent via devices. This is an expansion of this, via 'The Internet', where multiple systems are connected and information can be retrieved from multiple devices.
	Autumn 2 & Spring 2	**Programming (Scratch)** The Children will continue to use Scratch to create games. They will include multiple characters and different backgrounds in their own games, debugging independently when necessary. Children will also take screenshots of their programming to add to a Coding Journal in PowerPoint, so they have a journal to refer back to for independent support when needed. This will support other areas of the computing curriculum as well as increase their understanding. Editing is a focus for this term and will support future learning as they will become more adept at editing bugged algorithms	Children were introduced to Scratch last year. They created simple algorithms.
	Spring 2	**Handling Data** This unit introduces the children to spreadsheets, in a basic form. They will be supported in organising data into columns and rows to create their own data set. The focus will then be on turning their data into graphs and charts. This is a very brief set of lessons, designed in order to bridge the gap from Year 2 to 5. This unit will boost their basic understanding as pre-learning for their Year 5 unit. **Microsoft Word/Pages** This is the last in the series of lessons which have focused on Microsoft Word and Apple Pages. At this point, the children are competent with the main uses of the programmes. In this term, the children will learn the final 'polishing tools' of publishing their work. These final skills will ensure that all children are able to use either programme to publish most future work, in any lesson. This has been shortened with a view to being removed next year.	**Year 2:** Handling Data **Reception**: Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills Microsoft Word **Year 2:** Word/Pages **Year 3:** Word/Pages & KN/PP **Year 4:** Word/Pages
	Summer 1	**Video - Green Screen** Following on from learning how small movements create big effects and how these come together to create entertainment through stop-motion, the children will take their experience of creating videos to a larger and more creative scale. From this unit, the children will learn how to design backgrounds and add effects which help them to create entertaining videos, fit for purpose. The trial and error of the children creating green screen videos will be built upon in future years when their videos are more accurate and designed for a purpose.	

Computing
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Summer 2	**PowerPoint/Keynote** This is the second set of lessons for the children around PowerPoint and Keynote. The children learnt last year that the skills from both apps are very transferable, as they have also learnt from Apple Pages and Word. Many skills from previous learning (such as formatting font) are also transferable, therefore, this strand of learning will help solidify previous computing work but also help build the foundations for all the children's future presenting work. The goal being they have an abundance of skills and knowledge of programmes to choose the most suitable presenting device for the purpose, as well as tools to make their presentations more 'viewer friendly'.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills Microsoft Word **Year 2:** Word/Pages **Year 3:** Word/Pages & KN PP **Year 4**: Word/Pages
Year 5	**Autumn 1**	**Sharing Information** Following on from their understanding of the concepts of 'connecting computers' and 'the internet", in this unit the children will understand how data is physically shared through multiple devices. It will include understanding the digital protocol of the internet within its processes of sending 'packets' of data form one device to another. This concept, for children and adults alike, can be very difficult, as it is very abstract. However, having an understanding of how data is sent through devices which are connected on an online network, and can't when offline, is imperative for understanding the fundamentals of Information Technology and how networks work.	Prior children have explored how computed send messages and how the internet plays a fundamental part in this. This is an expansion of this, via 'Sharing Information', where children will gain an understanding of how data is shared in packets and how this packet travels
	Autumn 2 & Spring 2	**Programming (Scratch)** Children will continue to use and complete their Coding Journal (started in Y4). They will use this to create their game and this year will be taught how to add timers and scoring capabilities into their game. This allows them to complete a project creating and programming a whole game independently. The independence that this creates s needed in Year 6 when open challenges will be set for the children to complete as independently as possible, using all of the skills they have learnt.	The children created their first game last year on Scratch and began their coding journal
	Spring 2	**Apple Keynote (app design) / PowerPoint** This is the final in the set of lessons for the children around PowerPoint and Keynote. The children now have many skills in both presentation programmes, as well as other skills which have been transferable from other programmes. The aim of this unit is to ensure children have an abundance of knowledge around the two programmes, understanding all of its primary level functions. This means that in Year 6, when the children are presented with their 'project work' units they are fully equipped with the knowledge and skills it will require to present their work effectively, combining these two programmes along with many others (i.e. excel/word/green screen etc.) They will learn that PP is used as a showcase for many creations, each having their own slide in their project.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills Microsoft Word **Year 2:** Word/Pages **Year 3:** Word/Pages KN/PP **Year 4**: Word/PagesKN/PP

Computing
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Summer 1	**Video Editing/Green Screen** So far at Ribbon Academy the children have had many experiences in creating videos. From animation, stop-motion and green screen. Last year the children experimented with creating on a larger scale and learnt how auto ques are used and followed, like a script. The focus of this term will be to continue to define and improve their green screen skills but also work more closely on editing using features available in the app to ensure that their creation is the best it could be, for the purpose. These skills will be utilised during project work and web design next year where their creativity can create actual content for their productions.	Reception: Digital art Year 1: Keyboard and Mouse Skills Digital Art Year 2: animation. Year 3: Stop motion. Year 4: Green Screen
	Summer 2	**Handling Data (Excel)** This unit introduces the children to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners 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. 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. This will provide them valuable skills for future spreadsheet use. This will be poignant in the Year 6 project modules but also their future life in Computing.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills Microsoft Word **Year 2:** Data **Year 4**: Data
Year 6	Autumn 1	**Internet Communication** Following on from their sound understanding of how computers are connected and are able to send and receive data through packets, this unit will explore the inner workings of search engines and how the results are ranked, optimised and filtered to suit what the software thinks is the most useful response. It will also explore how chat websites are able to send messages instantaneously, and the dangers associated with it. This unit is extremely important to the lives of the children as they will use search engines regularly and they need to understand that they are programmed to deliver results in a certain way which may or may not be useful to their personal searches. Therefore, they will learn ways in which to word their search in order to receive he most useful results. Additionally, the safeguarding aspect of chat rooms and how they work is required to ensure that the children stay safe whilst online, in the future.	By Year 6, the children will have a sound understanding of how computers are connected via ports and wirelessly, to multiple networks. The also understand that within these networks, messages, information and data can be shared via packets and downloading. This is an expansion of this, via 'Internet Communication', where children will gain an understanding of how search engines work, beneath the surface' and how that information is transmitted from one place to another, as well as how communication travels using a similar format.
	Autumn 2 & Spring 1	**Programming (Swift Playgrounds - Challenge)** Some children will be introduced to Apple Swift Playground and the associated coding challenges. They will use their knowledge of programming to work through the challenges provided within this app. This allows them to use all of the skills developed in KS2 and apply them in a program that has the capacity to continue into KS3. Other children will continue with Scratch.	The children have worked extensively on Scratch gaining all knowledge needed to coordinate Scratch to its fullest.

Computing
Curriculum Rationale

Year	Term	Rationale	Prior Knowledge/ Connections
	Spring 2	**Project Work** This is the first project lesson within Computing. The children have learnt a lot of skills during their time at Ribbon Academy and have a strong understanding of a wide range of programmes. The idea of the 'project' is that a topic will be picked by the class teacher and the children will use all of their skills to create a PowerPoint to showcase all of their skills. In the PowerPoint we would expect to see, an excel graph, a short green screen video, a word document and all of the PP skills they have learnt over the years. This will truly demonstrate to the children how PowerPoint and all of the other programmes are used in adult life as a true way to present information and make learning and presenting interactive.	**Reception**: Introduction to some digital devices. Introduction to iPads and some app functions. Understand the cause and effect of devices. The safety implications of devices. Navigating devices, but not keyboards. **Year 1:** Keyboard and Mouse Skills Microsoft Word **Year 2:** Word/Pages **Year 3:** Word/Pages KN/PP **Year 4**: Word/PagesKN/PP/GreenScreen **Year 5**: Word/PagesKN/PP/Excel/GreenScreen
	Summer 1	**Website** Similar to the project work, Website design gives the Year 6 children scope to experiment with all of their previous skills, whilst creating a website with a real purpose. The children will learn how websites are put together and how hyperlinks connect pages within pages but then they will add their own content using their previous learning in computing. This unit provides children with a greater understanding of how we use computing every day and inspire them to think about what future career they could have in computing.	**Reception**:Introduction to some digital devices. Introduction to iPads and some app functions. The safety implications of devices. Navigating devices, but not keyboards. Digital art Year 1: Keyboard and Mouse Skills & Digital Art Year 2: animation. Year 3: Stop motion. Year 4:Green Screen + all previous
	Summer 2	**Project Work** This is the second and final project lesson within Computing. This lesson follows on from Project 1 to allow children to fully embed the skills which they have accumulated in the last 7 years.	**As Spring2**