	Computing - Early Years / Key Stage 1 Long Term Plan 2021/ 2022	
	Autumn 1	**Autumn 2**
	Understanding the World **Marvellous me and people who help us.**	**Understanding the World** **Where we live/there's an adventure out there!**
Early Years	Using interactive whiteboards to play games	Using interactive whiteboards to play games/Beebots Using the internet to use google maps
	Spring 1	**Spring 2**
	Understanding the World **Arctic Life/What do we see when we look up?**	**Understanding the World** **All things bright and beautiful**
	Using interactive whiteboards to play games/ bee bots. https://musiclab.chromeexperiments.com/Song-Maker	Using interactive whiteboards to play games/ bee bots.
	Summer 1	**Summer 2**
	Understanding the World **Magnificent Mini beasts**	**Understanding the World** **What's your Superpower?**
	Using interactive whiteboards to play games/ bee bots. Using Beebot maps. Design and make the hungry caterpillar using iPads.	Using interactive whiteboards to play games/ bee bots. Taking photos using iPads Design a cape using the computer.

	Autumn 1	Autumn 2
	Computing Systems and Networks	**Creating Media**
Year 1	**Technology around us** Recognising technology in school and using it responsibly. **1. Technology in our classroom** ● Children will become familiar with the term 'technology'. ● They will classify what is and what is not technology in their school and/or classroom. ● They will demonstrate their understanding of how technology helps us in different ways. **2. Using Technology** ● Children will get to know the main parts of a desktop or laptop computer. ● They will practise turning on and logging in to a computer. ● They will apply their knowledge of the different parts of a computer, to complete a mouse-based task. **3. Developing mouse skills** ● Children will be building on the mouse skills they were introduced to in Lesson 2. ● They will review images of a computer to explain what each part does. ● They will develop an understanding that different computers use different mice, but they perform the same function. ● They will use the mouse to open a program and create a simple picture.	**Digital Painting** Choosing appropriate tools in a program to create art and making comparisons with working non-digitally. **1. How can we paint using computers?** ● Children will be introduced to the freehand tools available for digital painting. **2. Using shapes and lines** ● Children will be introduced to the line and shape tools and revisit the fill and undo tools used for digital painting. ● Children will create their own digital painting in the style of an artist. **3. Making careful choices** ● Children will be introduced to a range of shape tools, allowing them to create a painting in the style of an artist. **4. Why did I choose that?** ● Children will be introduced to a range of shape tools, allowing them to create a painting in the style of an artist. **5. Painting all by myself** ● Children will select appropriate colours, brush sizes, and brush tools to independently create their own image in the style of an artist.

	4. Using a computer keyboard ● Children will begin to use the computer keyboard for a purpose. ● They will understand that writing on a keyboard is called typing and will begin to demonstrate their ability to write their name. ● They will then save their work using the save icon and understand that this icon is used in lots of different programs. **5. Developing keyboard skills** ● Children will begin by opening a file they have previously created. ● They will demonstrate their ability to use a keyboard to edit text, by writing a sentence and then deleting letters. ● They will also use the keyboard arrow keys to move the text cursor in their text box. **6. Using a computer responsibly** ● Children will be introduced to the concept of using computers safely, within the context of a school setting. ● They will explore why we have rules in school and how those rules help us, and then apply this understanding to rules needed for using computer technology safely.	**6. Comparing computer art and painting** ● Children will compare their preferences when creating paintings on computers and on paper.
	<u>Computing Champions</u> Tim Berners Lee	**<u>Computing Champions</u>** Lisa Gelobter

	Career Profile Web Developer	**Career Profile** IT Trainer
	Digital Citizenship and Literacy – e-safety **Health, well being and lifestyle** To explain rules to keep myself safe when using technology both in and beyond the home.	**Digital Citizenship and Literacy – e-safety** **Copyright and Ownership** To explain why work I create using technology belongs to me. **Copyright and Ownership** To understand that work created by others does not belong to me even if I save a copy.

	Spring 1	**Spring 2**
	Creating Media	**Data and Information**
Year 1	**Digital Writing** Using a computer to create and format text, before comparing to writing non-digitally. **1. Exploring the keyboard** ● This is the first lesson in which Year 1 children will experience using a computer to create and manipulate text. ● It is important that they know how to log on and follow the rules that keep them safe. In this lesson, the learners will familiarise themselves with a word processor and think about how they might use this application in the future. ● Children will also be identifying and finding keys, before adding text to their page by pressing keys on a keyboard. ● Note: If this lesson is the first time that the learners will be logging in to the computer, additional support/time may be required to facilitate this step **2. Adding and removing text** ● Children will continue to familiarise themselves with word processors and how they can interact with the computer using a keyboard.	**Grouping Data** Exploring object labels, then using them to sort and group objects by properties. 1. **Label and match** ● Children will begin to understand that objects have many different labels that can be used to put them into groups. ● They will name different objects and begin to experiment with placing them into different groups. ● Children will also label a group of objects, and begin to understand that an object can fit into more than one group depending on the context. 2. **Group and Count** ● Children will begin to think about grouping objects based on what the objects are. ● They will demonstrate the ability to count a small number of objects before they group them, and will then begin to show that they can count groups of objects with the same property. ● Children will also begin to learn that computers are not intelligent and require input from humans to perform tasks.

- They will focus on adding text and will explore more of the keys found on a keyboard.
- They will begin to use the backspace button to remove text from the computer.
- Note: This lesson and subsequent lessons could be linked to a topic that the learners are currently learning about other curriculum areas. The 'lost toy' could be replaced with a character from their current topic of work.

3. **Exploring the toolbar**
   - Children will begin to explore the different tools that can be used in word processors to change the look of the text.
   - They will use the Caps Lock key to add capital letters to their writing and will begin thinking about how to use this successfully.
   - They will match simple descriptions with the key that they relate to.
   - They will begin exploring the different buttons available on the toolbar in more detail, and use these to change their own text.
4. **Making changes to text**
   - Children will begin to understand when it is best to change the look of their text and which tool will achieve the most appropriate outcome.
   - They will begin to use their mouse cursor to select text to enable them to make more efficient changes.
   - They will explore the different fonts available to them and change the font for their lost toy poster.
5. **Explaining my choices**
   - Children will begin to justify their use of certain tools when changing text.

3. **Describe an object**
   - Children will begin to understand that objects can be described in many different ways.
   - They will identify the properties of objects and begin to understand that properties can be used to group objects; for example, objects can be grouped by colour or size.
   - Children will demonstrate their ability to find objects with similar properties and begin to understand the reason that we need to give labels to images on a computer.
4. **Making different groups**
   - Children will classify objects based on their properties.
   - They will group objects that have similar properties and will be able to explain how they have grouped these.
   - They will begin to group a number of the same objects in different ways, and will demonstrate their ability to count these different groups.
5. **Comparing groups**
   - Children will choose how they want to group different objects by properties.
   - They will begin to compare and describe groups of objects, then they will record the number of objects in each group.
6. **Answering questions**
   - Children will decide how to group objects to answer questions.
   - They will compare their groups by thinking about how they are similar or different, and they will record what they find.
   - They will then share what they have found with their peers.

	● They will decide whether the changes that they have made have improved their writing and will begin to use 'undo' to remove changes. ● They will begin to consolidate their ability to select text using the cursor, through double-clicking and clicking and dragging. ● Children will be able to explain what tool from the toolbar they have used to change their writing. **6. Pencil or Keyboard** ● Children will make comparisons between using a computer for writing and writing on paper. ● They will discuss how the two methods are the same and different, and think of examples to explain this. ● They will demonstrate making changes to writing using a computer to compare the two methods. ● Children will begin to explain which they liked best, and think about which method would be the best method to use in different situations.	
	Computing Champions Sergei Brin	**Computing Champions** Tim Berners Lee
	Career Profile Computer Games Tester	**Career Profile** Web Developer
	Digital Citizenship and Literacy – e-safety **Online Reputation**	**Digital Citizenship and Literacy – e-safety** **Online Relationships**

	To recognise that information can stay online and could be copied. **Online Reputation** To describe what information I should not put online without asking a trusted adult first.	To explain why things one person finds funny or sad online may not always be seen in the same way by others. **Online Bullying** To describe how to behave online in ways that do not upset others and can give examples.
	Summer 1	**Summer 2**
	Programming A	**Programming B**
Year 1	**Moving a robot** Writing short algorithms and programs for floor robots, and predicting program outcomes. 1. **Buttons** ● This lesson introduces the children to floor robots. ● Children will talk about what the buttons might do and then try the buttons out. ● Time will be spent linking an outcome to a button press. ● Children will consider the direction command buttons, as well as buttons to clear memory and run programs. 2. **Directions** ● During this lesson, children will think about the language used to give directions and how precise it needs to be. ● They will also work with a partner, giving and following instructions. This real-world activity	**Introduction to animation** Designing and programming the movement of a character on screen to tell stories. 1. **Comparing tools** ● During this lesson children will become accustomed to the ScratchJr programming environment. ● They will discover that they can move characters on-screen using commands, and compare ScratchJr to the Bee-Bots used in the previous unit. 2. **Joining Blocks** ● During this lesson children will discover that blocks can be joined together in ScratchJr. ● They will use a Start block to run their programs. ● They will also learn additional skills such as adding backgrounds and deleting sprites.

should, at suitable points during this lesson, be related to the floor robot that was introduced in the last lesson.

3. **Forwards and Backwards**
    - In this lesson, children will focus on programming the floor robot to move forwards and backwards
    - They will see that the robot moves forwards and backwards a fixed distance. This highlights the idea that robots follow a clear (fixed) command in a precise and repeatable way.
    - Children will think about starting the robot from the same place each time. Using the same start position with fixed commands will allow learners to predict what a program will do.
    - Note: This lesson focuses specifically on forwards and backwards movement only. This is to ensure that learners are developing a depth of knowledge in the concepts surrounding programming, as well as increasing their ability to make the robot move.
4. **Four directions**
    - In this lesson, learners will use left and right turn commands along with forwards and backwards commands. Doing this will allow children to develop slightly more complex programs.
    - Children will create their programs in this lesson through trial and error before moving onto planning out their programs in the next lesson.
    - In the last activity, children will predict where given programs will move the robot.
    - They will make their predictions by 'stepping through' the commands and matching the program steps to movements.
5. **Getting there**
    - **I**n this lesson, children will decide what their program will do.
    - Children will follow given algorithms to create simple programs.
3. **Make a change**
    - During this lesson children will discover that some blocks in ScratchJr have numbers underneath them.
    - They will learn how to change these values and identify the effect on a block of changing a value.
4. **Adding Sprites**
    - During this lesson children will be taught how to add and delete sprites in ScratchJr.
    - They will discover that each sprite has its own programming area, and learn how to add programming blocks to give instructions to each of the sprites.
5. **Project Design**
    - During this lesson children will choose appropriate backgrounds and sprites for a 'Space race' project.
    - They will decide how each sprite will move, and create an algorithm based on the blocks available in ScratchJr that reflects this.
6. **Following my design**
    - During this lesson children will use their project designs from the previous lesson to create their projects on-screen in ScratchJr.
    - They will use their project design, including algorithms created in the previous lesson, to make programs for each of their rocket sprites.
    - They will test whether their algorithms are effective when their programs are run.

	• They will then create their program and test it on the robot. • Where needed, children will also debug their programs. 6. **Routes** • This lesson encourages children to plan their routes before they start to write their programs. The activities also introduce the concept of there being more than one way to solve a problem. • This concept applies to a lot of programming activities: the same outcome can be achieved through a number of different approaches, and there isn't necessarily a 'right' way. • The lesson also introduces the idea of program design, in which children need to plan what they want their program to achieve before they start programming.	
	Computing Champions Lisa Gelobter	**Computing Champions** Sergei Brin
	Career Profile IT Trainer	**Career Profile** Computer Games Tester
	Digital Citizenship and Literacy – e-safety **Self Image and Identity** To know if something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples	**Digital Citizenship and Literacy – e-safety** **Managing Online Information**

	of when and how to speak to an adult I can trust and how they can help.	To know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke. **Privacy and Security** To explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others.
	Computing - Key Stage 1 Long Term Plan 2021/ 2022	
	Autumn 1	**Autumn 2**
	Computing Systems and Networks	**Creating Media**
Year 2	**Information Technology around us** Identifying IT and how its responsible use improves our world in school and beyond. 1. **What is IT?**	**Digital Photography** Capturing and changing digital photographs for different purposes. 1. **Taking photographs**

- Children will develop their understanding of what information technology (IT) is.
- They will identify devices that are computers and consider how IT can help them both at school and beyond.

2. IT in school

- Children will consider common uses of information technology in a context that they are familiar with.
- They will identify examples of IT and be able to explain the purpose of different examples of IT in the school setting.

3. IT in the world

- Children will begin to explore IT in environments beyond school, including home and familiar places such as shops.
- They will talk about the uses of IT in these environments and be able to explain that IT is used in many workplaces.

4. The benefits of IT

- Children will explore the benefits of using IT in the wider world.
- They will focus on the use of IT in a shop and how devices can work together.
- Children will sort activities based on whether they use IT or not and will be able to say why we use IT.

5. Using IT safely

- Children will consider how they use different forms of information technology safely, in a range of different environments.
- They will list different uses of IT and talk about the different rules that might be associated with using them.

- Children will be introduced to the concept that many devices can be used to take photographs.
- They will begin to capture their own photographs.

2. Landscape or portrait?

- A photograph can be taken in either portrait or landscape format.
- Children explore taking photographs in both portrait and landscape formats and explore the reasons why a photographer may favour one over the other.

3. What makes a good photograph?

- A photograph is composed by a photographer.
- Children will discover what constitutes good photography composition and put this into practice by composing and capturing photos of their own.

4. Lighting

- Children investigate the effect that good lighting has on the quality of the photos they take, and explore what effect using the camera flash and adding an artificial light source have on their photos.

5. Effects

- Children will be introduced to the concept of simple image editing.
- They are introduced to the Pixlr image editing software and use the 'Adjust' tool to change the colour effect of an image.

6. Is it real?

- Children are introduced to the concept that images can be changed for a purpose.

	● Children will then say how rules can help keep them safe when using IT. 6. **Using IT in different ways** ● Children will think about the choices that are made when using information technology, and the responsibility associated with those choices. ● They will use IT in different types of activities and explain that sometimes they will need to use IT in different ways.	● They are introduced to a range of images that have been changed in different ways and through this, develop an awareness that not all images they see are real. ● Children are first challenged to take their best photograph by applying the photography composition skills that they have developed during the unit.
	Computing Champions Steve Jobs	**Computing Champions** Gladys West
	Career Profile A Network Administrator	**Career Profile** Data Entry Clerk
	Digital Citizenship and Literacy – e-safety **Health, well being and lifestyle ???** To explain simple guidance for using technology in different environments and settings e.g. accessing online technologies in public places and the home environment.	**Digital Citizenship and Literacy – e-safety** **Managing Online Information** To explain the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real'.

	Health, well being and lifestyle To say how those rules / guides can help anyone accessing online technologies.	**Copyright and Ownership** To recognise that content on the internet may belong to other people.

	Spring 1	**Spring 2**
	Creating Media	**Data and Information**
Year 2	**Making Music** Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. **1. How music makes us feel?** ● Children will listen to and compare two pieces of music from The Planets by Gustav Holst. ● They will then use a musical description word bank to describe how this music generates emotions, i.e. how it makes them feel. **2. Rhythms and Patterns** ● Children will explore rhythm. ● They will create patterns and use those patterns as rhythms.	**Pictograms** Collecting data in tally charts and using attributes to organise and present data on a computer. 1. **Counting and Comparing** ● Children will begin to understand the importance of organising data effectively for counting and comparing. ● They will create their own tally charts to organise data, and represent the tally count as a total. ● They will answer questions comparing totals in tally charts using vocabulary such as 'more than' and 'less than'. 2. **Enter the data** ● Children will become familiar with the term 'pictogram'.

- They will use untuned percussion instruments and computers to hear the different rhythm patterns that they create.

3. How music can be used?

- Children will develop their understanding of music.
- They will use a computer to create and refine musical patterns.

4. Notes and tempo

- Children will develop their understanding of music.
- They will use a computer to create and refine musical patterns.

5. Creating digital music

- Children will choose an animal and create a piece of music using the animal as inspiration.
- They will think about their animal moving and create a rhythm pattern from that.
- Once they have defined a rhythm, they will create a musical pattern (melody) to go with it.

6. Reviewing and editing music

- Children will retrieve and review their work.
- They will spend time making improvements and then share their work with the class.

- They will create pictograms manually and then progress to creating them using a computer.
- They will begin to understand the advantages of using computers rather than manual methods to create pictograms, and use this to answer simple questions.

3. **Creating pictograms**

- Children will think about the importance of effective data collection and will consider the benefits of different data collection methods: why, for example, we would use a pictogram to display the data collected.
- They will collect data to create a tally chart and use this to make a pictogram on a computer.
- Children will explain what their finished pictogram shows by writing a range of statements to describe this.

4. **What is an attribute?**

- Children will think about ways in which objects can be grouped by attribute.
- They will then tally objects using a common attribute and present the data in the form of a pictogram.
- Children will answer questions based on their pictograms using mathematical vocabulary such as 'more than'/'less than' and 'most'/'least'.

5. **Comparing people**

- Children will understand that people can be described by attributes.
- They will practise using attributes to describe images of people and the other learners in the class.
- Children will collect data needed to organise people using attributes and create a pictogram to show this pictorially.
- They will draw conclusions from their pictograms and share their findings.

		6. **Presenting Information** • Children will understand that there are other ways to present data than using tally charts and pictograms. • They will use a pre-made tally chart to create a block diagram on their device. • Children will then share their data with a partner and discuss their findings. • They will consider whether it is always OK to share data and when it is not OK. • They will know that it is alright to say no if someone asks for their data, and how to report their concerns.
	Computing Champions Satashi Tajiri	**Computing Champions** Steve Jobs
	Career Profile Computer Games Developer	**Career Profile** A Network Administrator
	Digital Citizenship and Literacy – e-safety **Privacy and Security**	**Digital Citizenship and Literacy – e-safety** **Online Reputation** To explain how information put online about someone can last for a long time.

	To describe and explain some rules for keeping personal information private (e.g. creating and protecting passwords). **Self Image and Identity** To explain how other people may look and act differently online and offline.	**Online Reputation** To know who to talk to if something has been put online without consent or if it is incorrect.

	Summer 1	Summer 2
	Programming A	**Programming B**

Year 2	**Robot Algorithms**	**An introduction to quizzes**
	Creating and debugging programs, and using logical reasoning to make predictions. **1. Giving Instructions** ● Children will follow instructions given to them and give instructions to others. ● They will consider the language used to give instructions and how that language needs to be clear and precise. ● They will combine several instructions into a sequence that can then be issued to another pupil to complete. ● They will then consider this clear and precise set of instructions in relation to an algorithm, and they will think about how computers can only follow clear and unambiguous instructions. **2. Same but different** ● This lesson focuses on sequences, and guides pupils to consider the importance of the order of instructions within a sequence. ● Children will create several short sequences using the same commands in different orders. ● They will then test these sequences to see how the different orders affect the outcome. **3. Making predictions** ● Children will use logical reasoning to make predictions.	Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. **1. ScratchJr Recap** ● Children will recap what they know already about the ScratchJr app. ● They will begin to identify the start of sequences in real-world scenarios, and learn that sequences need to be started in ScratchJr. ● They will create programs and run them in full-screen mode using the Green flag. **2. Outcomes** ● Children will discover that a sequence of commands has an 'outcome'. ● They will predict the outcomes of real-life scenarios and a range of small programs in ScratchJr. ● They will then match programs that produce the same outcome when run, and use a set of blocks to create programs that produce different outcomes when run **3. Using a design** ● Children will be taught how to use the Start on tap and Go to page (Change background) blocks.

	● They will follow a program step by step and identify what the outcome will be. **4. Mats and routes** ● Children will design, create, and test a mat for a floor robot. ● This will introduce the idea that design in programming not only includes code and algorithms, but also artefacts related to the project, such as artwork and audio. **5. Algorithm design** ● Children will design algorithms to move their robot around the mats that they designed in Lesson 4. ● As part of the design process, pupils will outline what their task is by identifying the starting and finishing points of a route. ● This outlining will ensure that pupils clearly understand what they want their program to achieve. **6. Debugging** ● Children will take on a larger programming task. ● They will break the task into chunks and create algorithms for each chunk. This process is known as 'decomposition' and is covered further in key stage 2. ● Children will also find and fix errors in their algorithms and programs. This is known as 'debugging'.	● They will use a predefined design to create an animation based on the seasons. ● Children will then be introduced to the task for the next lesson. ● They will predict what a given algorithm might mean. **4. Changing a design** ● Children will look at an existing quiz design and think about how this can be realised within the ScratchJr app. ● They will choose backgrounds and characters for their own quiz projects. ● They will modify a given design sheet and create their own quiz questions in ScratchJr. **5. Designing and creating a program** ● Children will create their own quiz question designs including their own choices of question, artwork, and algorithms. ● They will increase the number of blocks used within their sequences to create more complex programs. **6. Evaluating** ● Children will compare their projects to their designs. ● They will think about how they could improve their designs by adding additional features. ● They will modify their designs and implement the changes on their devices. ● Children will find and correct errors in programs (debug) and discuss whether they debugged errors in their own projects.

	Computing Champions Gladys West	**Computing Champions** Satashi Tajiri
	Career Profile Data Entry Clerk	**Career Profile** Computer Games Developer
	Digital Citizenship and Literacy – e-safety **Self Image and Identity** To know if something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust and how they can help.	**Digital Citizenship and Literacy – e-safety** **Managing Online Information** To know / understand that we can encounter a range of things online including things we like and don't like as well as things which are real or make believe / a joke. **Privacy and Security** To explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others.