Lady Bay Primary School Subject Overview for Computing

NB. Some lessons have more than 1 big question.						
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Foundation	See below *					
Year 1	What are the rules for using computers in school and staying safe online? **Online safety** How do you use an iPad? **Understand how computers work.** Navigating an iPad. Use a QR code to access a website and log in to online platforms. What apps are good to use? How do they help us? **Online safety**	What is a Bee-Bot? How do we use robots in everyday life? **Programming in the real world** Observe examples of how programming is used in the real world What are the different instructions that we can give Bee-Bot? **Sequencing** Explore what happens when you press the different buttons on the Bee-Bot Can I create a set of instructions for the virtual Bee-Bot? **Sequencing** Use Bee-Bot symbols to represent an instruction. Use clear and go.	How do you paint using computers? **Manipulating data: images** using a paint program to create a digital image – freehand online tools. How do you use shapes and lines in the paint program? **Manipulating data: images** Using tools for shapes and lines. How do you choose the right colours and shapes? **Evaluating** – choosing the right colours/shapes. Why did I choose that? **Evaluating**. Knowing when a piece of work	What special keys are there on a computer keyboard? **Manipulating data: text** Use space bar, delete key, enter key, caps lock, number/letter key Can we insert images and add text? Can we save our work? **Manipulating data – text & images** Insert an image Adjust size of image Flood fill for background Insert text Saving work on online platform Can we use a computer to write our own sentences about animals?	How do we label and match groups of objects? **Manipulating data:** Labelling and grouping How does grouping help us count? **Manipulating data:** Labelling and grouping. Use grouping to help count data. How can we describe objects? **Manipulating data:** sorting data using properties or values. How can we make different groups? **Manipulating data:** making decisions about grouping data How can we compare groups? How can we use an iPad to sort	How do we use an iPad to take a photograph? **Manipulating data: images** Use iPads to take photographs Shall we take portrait or landscape photographs? **Manipulating data: images** Evaluating: choosing what to include in an image. Choosing portrait or landscape. How can photographs be changed? **Manipulating data: images** Use filters and other effects featured in apps, to make changes to digital images.

		Understand the set of instructions is called an algorithm. Can I create a set of instructions for a real Bee-Bot? Can I use less instructions and be more efficient? **Sequencing** Same as above	is finished. Explain your choices. How can you create a picture from dots? **Manipulating data: images** Using a paint program to create a digital image – change colour/size of pen.	**Manipulating data: text** Use word bank. Position text. Saving work on online platform Accessing images from source on online platform How can we make changes to our writing on a computer? **Manipulating data: text** Change text, font, size, colour tools What is best – computer or keyboard? **Manipulating data: text** Making edits to text **Evaluate** the use of word processing	shapes into groups? **Manipulating data:** comparing datasets. Sorting data using software.	How can stickers be added to a photograph? **Manipulating data: images** Use apps to create a border and apply stickers to a digital image. How can a photograph be animated? **Manipulating data: images** Use an app to change a still image to an animated image
Year 2	What is IT? **Computing systems** Understand the range of uses and features of IT What IT is there in our school? **Computing systems**	What tools can we use to create a digital image? **Manipulating images** Using a paint program to create a digital image. Insert shapes, resize and background fill.	How can I search for information safely on the internet? **Using the internet for multiple services eg. research.** Understand that technology is used to research a topic in the	How can I give instructions for others to follow? What happens if instructions are not clear? **Sequencing** Follow and create set of instructions for a	What have we learnt about programming Bee-Bots that we can use in ScratchJr? **Sequencing** Transfer coding skills learnt about Bee-Bots to ScratchJr **Event handling**	How can we use tally charts to count and compare objects? **Manipulating data:** use a tally chart to count and compare objects.

	Know the common uses of IT in school. What IT is there in places beyond our school? **Computing systems.** Know the common uses of IT in the home and other familiar places. What are the benefits of using IT? **Computing systems** Understand the benefits of IT How can I use IT safely**?** **Online Safety** Health, Wellbeing and Lifestyle? What ways can we choose to use IT? **Computing systems.** Recognise choices are made when using IT	Know how to undo an action that is a mistake. What tools can we use to create a digital image? **Manipulating images** Using a paint program to create a digital image. Insert shapes, resize and background fill. Know how to undo an action that is a mistake. How can we use an image bank? How can we move/resize images? **Evaluating -** Insert an image from the image bank to create an object. Resize so that images used are in proportion. Use flip, fill and rotate. How can we add text to our image? How can we make changes to this text? **Manipulating text**	same way as books can be. View, navigate and select websites safely. Explore website content safely. Use keywords to research a topic in pairs. How does technology like Alexa work? Can we trust what Alexa tells us? **Understand how computers work.** Explore the various devices used in school and at home including the use of Smart speakers. **Managing online information.** Explain what a voice activated search is and how it might be used. What specific information can I find using the Internet? **Using the internet for multiple services eg. research.**	human. Order in which instructions are given will make a difference to the outcome. Turn clockwise, anti-clockwise Debug sets of instructions. Can we give BeeBot a set of instructions to make it move? **Sequencing** Use BeeBot symbols to represent an instruction. Know how to clear code. **Event handling** Know that when the go button is pressed, the BeeBot will move. Can I predict the outcome of a sequence of instructions? Can we debug it if it's wrong? **Sequencing** Predict the outcome of a sequence. Compare prediction with outcome. Test and debug	Know that when the block is tapped the sprite will move. How do we join a set of instructions together? **Sequencing** Joining blocks together. Making changes to a set of blocks. Recognising the different kinds of blocks and their function. Predict the outcome of a sequence. **Event handling** Know that when the green flag is tapped the sprite will move. Know that doing this in full screen mode will reset the completed program back to the start. How can we make our algorithms shorter in ScratchJr? **Program design & algorithmic thinking** Changing number value on blocks to	How do we use a computer to show data? **Manipulating data:** use graphing software to enter data into a pictogram. Use data to answer simple questions. How do we create a pictogram of our own using a computer? **Manipulating data:** collect and organise data to create pictograms. What is an attribute and how can we use it to collect data? **Manipulating data:** Use attributes to group data. Use grouped data in a pictogram. Answer > and < questions and most/least questions. What attributes can be used to compare people? **Manipulating data:** Make decisions about grouping data using

		Format text using text tool– changing font, size, colour, upper/lower case. Duplicate text box. Have we created a successful digital image? **Manipulating text** Evaluating - Make choices about the use of text. Can we create a digital image using everything we have learnt? **Manipulating images** – use range of tools from paint program to complete final product	How do you write using a computer? How do you save your work online? **Organise, store, manipulate and retrieve digital content.** Save files and open them again (using J2E). **Manipulating data: text** Use word processing software to write simple sentences. Use space bar only once between words Use cursor to find the letter/word to delete Use caps lock button for a capital How can I present and type information that I have found online? **Desk Top Publishing** View, reflect on and share children's documents using learning platform. Use simple word processing skills.	Can I design an algorithm to move a BeeBot around a set route? **Sequencing** Create algorithms to meet set goals. Explain what an algorithm will achieve. Use algorithms to create a program. Test and debug. How do I create a set of instructions for an online BeeBot? **Sequencing** Transfer skills and use to program a virtual BeeBot. Understand that the direction of turn is relative to the position of the object that is being moved. Test and debug.	make algorithms shorter. How do we add a background and program more than one sprite? **Program design & algorithmic thinking** Designing a program that involves more than one sprite. Adding a background.	attributes. Use grouped data in a pictogram. Answer >;< questions and most/least questions. Can we present data in a block diagram? Is it safe to share data? **Manipulating data:** create a block diagram using the computer. **Online safety:** Give simple examples of why information should not be shared.

Year 3	How does a digital device work? Explain how digital devices function (input, output, process) What parts make up a digital device? Identify input and output devices How do digital devices help us? Learn about the benefits of digital devices How am I connected? How are computers connected? Explain how a computer network can be used to share information Recognise the physical components of a network (switch, sever, wireless access point) What does our school network look like? Learn about the school network	What are the features of the app? What ideas do you have? What should you do first? Enter and format text Capture images to use either by internet download or photos to photo album What page headings do you need for your book? What images will you need? Capture images. How will the images be incorporated into the book? Create a multipage comic combining text & images to tell a story. Create text on iPad. Choose colour, fonts, size & use of speech bubbles. Reposition. What do you need to do to complete the e-book? Use floating cells. Transparent cells.	What is Scratch and how do we use it? Review previous learning about how to program How do we use code to move sprites? Add movement commands to different sprites Create a program following a design Can we create a sequence of connected commands in our code? Use an event block to start a program Create a sequence of commands using a block language to produce a given outcome How do we put a sequence in a certain order? Explain the order (sequence) of commands can affect the outcome Identify that different sequences can	How can we use texts and images to communicate? To recognise how text and images convey information How do we edit our writing on a computer? To recognise that text and layout can be edited How can we use page settings to create a template? To choose appropriate page settings How can we add text and images to our template? To add content to a desktop publishing publication How can different layouts be used for a particular purpose? To consider how different layouts can suit different purposes	How can we use yes or no questions to split objects into groups? Use yes or no questions to sort How can we arrange objects in a branching database or tree diagram? Use attributes to group objects How can we create an online branching database? Create a branching database Why is the order that questions are asked important? Understand the structure of branching databases Why do we use branching databases to sort data? Can we create an identification tool? Identify ways to present information	How can we use an 'event' block to control sprites? Explore and use 'event' blocks to control multiple sprites. How can we move sprites in different directions? Create a sequence of commands using block language to produce a given outcome. How can we show what path our sprites have taken? Using extension blocks in a project. Consider the real world in design choices. What blocks are the best ones to use in our projects? Continue to create a sequence of commands using block language to produce a given outcome.

		Use airdrop and allow pupils to share images. Have we made a successful e-book? Use data to create a multipage comic combining text and images to tell a story.	achieve the same outcome (same commands, different order -> same or different outcome) How can we use what we have learnt in our own project? Apply skills Can we use Scratch to make a musical instrument? Debug errors to accomplish specific goals			How can we debug errors in our projects? Debug errors to accomplish specific goals. Work with support to decompose a problem into smaller steps in planning a project. How can we design and create our own maze-based challenges? Design and create projects using a template
Year 4	How is information shared across the internet? What is a network? Computer user Describe how networks physically connect to other networks What is the internet and how does it let us view the World Wide Web? Computer user:	How do we record sounds on a device? Press/tap buttons to start and stop recordings Can we explain that audio recordings can be edited? Recognise recorded audio is stored as a file Edit and alter recorded audio What are the different parts of	What do we know about programming devices? Sequencing Recap skills for programming a BeeBot. How can we use Logo to draw letters? Sequencing Use Logo to create simple algorithms. Explore and use blocks to move turtle. How can we use Logo to draw shapes using	What is animation? What do we know about onagers? Understand the assets needed for an animation. Understand terminology. How do we structure an animation video? What are the key stages of firing an onager? Plan the stages of an animation	What is repetition and how can we use it in Scratch? Identify patterns (repetition) in a sequence What are infinite or count-controlled loops? Understand, identify and justify when to use 'infinite' or 'count-controlled' loops. How can we use repetition to animate objects in Scratch?	What effect can cropping and rotating have on the composition of an image? Enhance digital images using the crop tool How can we use colours and filters to edit a digital image? Recognise images can be changed for different purposes

	Describe the internet as a network or networks What is the World Wide Web – what is shared and stored on it? How can it be accessed? Computer user: Describe how the World Wide Web (WWW) is part of the internet How can we create our own online content and add it to the 'web'? What is meant by ownership? Computer user: Describe how content can be added and accessed on the World Wide Web (WWW) Recognise how the content of the WWW is created and shared by people How do we know if what we read on the 'web' is true? Computer user:	creating a podcast project? Layer sounds Can we apply audio editing skills? Edit, trim and align recordings How do we combine audio to enhance our podcast projects? Save/export an audio file How effective are our podcasts? Consider the results of editing choices made	the repeat command? Repetition Understand how to programme repeat commands using Logo How can we use Logo to draw shapes using count controlled loops? Repetition Understand how to work with count-controlled loops using Logo How can we make snippets of code? Program design & algorithmic thinking Identify bugs in a program. Test to check the problem is resolved. How are count controlled loops used in the real world? Program design & algorithmic thinking Identify bugs in a program. Test to check the problem is resolved. Programming in the real world	Understand the need for small movements between frames. Understand about onion skinning. How do we use Zu3D to film and save the animation clips? Set up stage for an animation and create characters. Show movement by taking lots of shots of figures/props in different positions. How do we finish off our animations by adding music and voiceover? Record a voiceover for animations. Add background sound/sound effects. How effective are our animations? Review and suggest improvements to our animations	Use repletion to animate objects Evaluate the effectiveness of repeated sequences How can we modify the loops in a program to make it different? Modify an infinite loop in a given program Identify and change the loops in a program	Change digital images using colour and filters. How can we use the cloning tool to edit an image? Editing digital images using the cloning tool. How can we copy between images? Why is this a good /bad thing to do? Edit digital images by copying between images. Describe positive and negative effects of photo editing. How can we apply the skills we have learnt so far to combine images to create a new one? Combining parts of images to create new images. How we been successful using photo editing skills? Evaluate the changes and assess whether improvements have been made effectively

	Evaluate the consequences of unreliable content Use a search engine to find information		Understand how programming a device can be used in the real world.			
Year 5	What is video and what makes it effective? Identify the features of a good video How to record a video using an iPad What range of techniques can be used when capturing video? Plan a video production using a story board How do you create a storyboard? Share a video between devices in order to edit How do you import and edit a video using computer software? Use a computer to edit a video Make edits to a video to improve the outcome	What is a computer system? Computer user Explain that computers can be connected together to form systems Describe a computer system What role do computer systems play in our lives? Computer user Recognise the role of computer systems in our lives How can we get the best from a web search? Computer user Use of a range of search engines appropriate to finding information that is required Refine searches to be more effective	How do we use a Crumble controller with a PC? Selection in physical computing using an electronic controller (Crumble) Create a simple circuit and connect and program a microcontroller to make an LED light up. How do we combine and control output components? Program Crumble so that more than one output is connected and so that a count controlled loop controls an output – speed and direction of a motor. How do we control the flow in a program using conditions? Program Crumble to include a switch and a	What steps do we take to create a paper-based database? Explain fields and records How can data be recorded and viewed in a database? Navigate a flat file database. Record and view data using a graphing package; complete records and fields to store information. How can grouping and sorting be used to answer questions about data? Choose tools to select and analyse data to answer questions How can advanced techniques be used to search more than 1 field? Use 'AND' and 'OR' to	What is a vector drawing? Recognise that vector drawings are made using shapes How can objects within a drawing be modified? Add, remove, modify and combine objects to create a graphical drawing on a computer How can the zoom tool, grids and resize handles help us to increase the complexity of drawings? Use the zoom tool, grids and resize handles to increase complexity Why are layers important in our drawings?	How are conditions used in a program? Modify a program which includes selection How does a condition inform which outcome will be selected? Explain how repetition is used in selection and that a loop can stop when a condition is met How can we use conditions and selection to give 'yes' or 'no' answers to a question? Use a condition in an 'if…then…else…' statement to produce a given outcome using a branching structure How do we use selection to control the outcomes in an interactive quiz? Explain that a

	What impact do the changes made have on the quality of the video? Consider the impact of changes made on the quality of the video	How do search engines select results? Computer user Understand that search engines rank pages according to relevance How are search results ranked? Computer user Understand that search engines follow rules and criteria to rank results How are searches influenced? Computer user Understand the impact and limitations that searchers, search engines, and webpage creators have on the effectiveness of a search. Understand how search engines make money	condition to control the flow. Plan a program which includes selection to produce a given outcome How do we use infinite repetition to check if a condition has been met? Program Crumble to show that infinite repetition is required to repeatedly check if a condition has been met. Can we apply what we have learnt about microcontrollers? Demonstrate an understanding of how both programming and physical control technology can be applied. Plan a program which includes selection to produce a given outcome.	refine data selection How do computer programs help us compare data visually? Select an appropriate chart to visually compare data How do we use databases in real life? Searching data using more than 1 field Refining a search in a real-world context	Change the order of layers in a vector drawing How does grouping of objects make them easier to work with? Group objects to create a single object How can we create a vector drawing for a specific purpose? Edit and refine work	program flow can branch according to a condition How do we implement, test, and share our own programs? Implement, test and debug our programs What improvements can we make to our games? How do we create a setup code for our users? Plan a program which includes selection to produce a given outcome Debug errors in increasingly complex programs to accomplish specific goals Evaluate the effectiveness of a program and ways it could be improved
Year 6	Why are internet addresses important?	What makes a good website? Understanding how the internet works.	What is a variable in real life? How can we include variables in our own programs?	What is 3D modelling? Exploring 3D space in the 3D web app 'Tinkercad'	How do I collect and organise data? Identify questions	What is a micro:bit and how does it work? Programming

	Understand the importance of internet addresses How is information transferred over the internet? Recognise how information is transferred over the internet using packets What ways can we work together over the internet? Explain how sharing information online lets people in different places work together. Contribute to a shared project online What different ways do we communicate using the internet? How can we be responsible when communicating online? Evaluate different ways of working together online	Understanding how websites are created. How would you lay out your web page? Use data to create solutions: Creating a web page with appropriate text and images. How does my website look? Use data to create solutions: Creating a website with multiple pages with appropriate text and images. How do we follow the breadcrumbs? Understanding how the internet works. Understand how websites have navigation paths and hyperlinks. Why is it important to think before you link? Computing systems and networks Implications of linking using the internet.	Develop and demonstrate understanding of variables in an algorithm. Variables can be numbers or text. How are variables updated and why is it important to name them carefully? Understand how a variable is a placeholder and has a name and value. How can variables be set and how can they be used to improve a game? Program design & algorithmic thinking Predict the effect of making changes and enhance an existing game using variables. How can we include variables in our own project designs? Design own scripts using variables. Can we use variables and code in our own project? Combine the	How do you modify 3D models? Modification and location of 3D shapes within 'Tinkercad'. How do you design a 3D name badge/key ring? Applying skills of duplicating, grouping and ungrouping to manipulate 3D objects. How can you create a desk tidy? Apply skills already learnt to create a specific design with accurate dimensions. How do you plan a 3D building? Creating media – 3D modelling Apply scale to a real world problem.	that can be answered using data Create a spreadsheet for a purpose How do I format a spreadsheet? Apply appropriate formats in a spreadsheet What is a formula in a spreadsheet? Apply a formula that can be used to produce calculated data How do I calculate data and create formulas? Recognise data can be calculated using different operations How do I plan an event using a spreadsheet? Evaluate results in comparison to the question asked How do I create a chart and use it to answer questions? Choose suitable ways to present data eg. a graph	Using a controllable device. Test programs on an emulator. How can we change the flow of a program? Programming Selection & variables: Use a variable in an if, then, else statement to select the flow of a program. How do we use the sensors on our micro:bit? Programming Selection & variables: Change the value of a variable using selection. Use a condition to change a variable. How can we use a micro:bit as a compass? Programming Selection & variables: Use operands in selection. Use a conditional statement to compare a variable to a value.

			scripts and variables to create a game Can we improve and share our own projects? Evaluate the effectiveness of the games			Can we design a step counter using a micro:bit? Programming design and algorithmic thinking Apply skills learnt to create a step counter

*Computing is woven through the whole curriculum in EYFS. It is centred around play-based, unplugged activities that focus on building children's listening skills, curiosity, creativity and problem solving.
Technology in the Early Years can mean:

- -taking a photograph with a camera or tablet
- -playing games on the interactive whiteboard
- -exploring old mechanical toys
- -using a Bee-Bot
- -watching a video clip
- -listening to music/ stories via the listening station

Allowing children the opportunity to explore technology in this carefree and often child-led way, means that not only will they develop a familiarity with equipment and vocabulary, but they will have a strong start in Key Stage 1 Computing and all that it demands.