

St Lawrence Computing overview

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
To code	Knows how to operate simple equipment e.g. turns on CD player and uses remote control.	- Control motion by specifying the number of steps to travel. - Add text strings and show and hide objects. - Select sounds and control when they are heard. - Set pen colour. - Click to control events. - Specify the nature of a single event. - Create simple actions that require user input.	- Control motion by specifying the number of steps to travel and turn. - Add text and change the features of an object.. - Select sounds and control their duration and sound. - Set pen colour, shape and size. - Specify user input. - Specify the nature of events (loop). - Debug simple programs. - Use logical reasoning to predict the behaviour of simple programs. - Create actions that require user input.	- Use the reporter operators + - to perform calculations - Use sequence in programs - Use variables to store a valueCreate conditions for actions by waiting for a user input - Use IF THEN conditions to control events or objects - Work with various forms of input - Work with various forms of outputControl the shade of pens - Create sounds and control when they are heard, their volume, duration and rests - Create sequences of changes - Use screen commands to control movement	- Use specified screen coordinates to control movement - Set the appearance of objects and create sequence of changes - Control and edit sounds and control when they are heard, their, volume, duration and rests - Control the transparency of pens - Specify conditions to trigger events - Control or simulate physical systems - Debug programs that accomplish specific goalsCreate conditions for actions by sensing proximity - Use repetition in programs - Use the functions define, set, change, show and hide to control the variablesUse the reporter operators + - / * to perform calculations	- Specify types of rotation giving the number of degrees - Change the position of objects between screen layers - Upload sounds from a file and edit them - Combine pens with movement - Set events to control other events - Use logical reasoning to detect and correct errors in programming - Use IF THEN ELSE conditions to control objectsUse a range of sensing tools to control actions - Use selection in programming - Use the Boolean operators: < = > - Pick Random - Join - Letter - Length	- Set IF conditions for movements - Change the size of objects using the cropping tool - Create and upload sound from a file and edit them - Combine pens with movement and effects - Set events to control other events by 'broadcasting' information as a trigger - Use logical reasoning to detect and correct errors in algorithms - Use logical reasoning to explain how some simple algorithms work - Use IF THEN ELSE conditions to control events or objects.Use a range of sensing tools to control actions - Work with variables - Use lists to create a set of variables.Use the Boolean operators: - And - Or - Not - Mod - Round - Of
	Using remote control cars and beebots- programming in the direction they are to move.	- Using scratch to perform basic tasks. - Beebots - Coding a sandwich making robot. - Use of interactive whiteboards for various reasons- interactive games, pen control etc. PROGRAMMING A- MOVING A ROBOT (SUMMER 1) PROGRAMMING B- INTRODUCTION TO ANIMATION. (SUMMER 2)	Programming A - Robot Algorithms Summer 1 Pupils will use given commands in different orders to investigate how the order affects the outcome. Pupils 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 Programming B- An introduction to quizzes Summer 2	Using scratch to be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. They will need to make a representation of a Piano Spring 1 Programming A- Sequencing sounds Children begin by moving a sprite in four directions (up, down, left, and right). They explore movement within the context of a	Using Logo software children will plan, modify and test commands to create shapes and patterns. Follow algorithms, fix mistakes and refine work. SUMMER 1 - REPETITION IN SHAPES SUMMER 2 - REPETITION IN PATTERNS	VECTOR DRAWING Spring 2 Learners will learn about vector images made up of shapes. They will use different drawing tools and look at images created in layers. Learners will explore ways in which images can be grouped and duplicated to support them in creating more complex pieces of work.	Creating Media - Web page creation - Autumn 2 This unit introduces learners to the creation of websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.

			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. Creating Media - Making Music Spring 1 Learners will explore how music can make them think and feel. They will make patterns and use those patterns to make music with both percussion instruments and digital tools. They will also create different rhythms and tunes, using the movement of animals for inspiration. Finally, learners will share their creations and compare creating music digitally and non-digitally.	maze, using design to choose an appropriately sized sprite. Summer 2 Programming B- Events and actions Use a range of techniques to create a stop-frame animation using tablets. They will apply those skills to create a story-based animation. Autumn 2- stop frame animation		PROGRAMMING A - SELECTION IN PHYSICAL COMPUTING Summer 1 Using the Crumble Programme, learners will learn how to connect and program components. They will programme a flow of actions and explore how these can be used in algorithms and programs. They will design and make a working model of a fairground carousel that will incorporate their understanding of how the microcontroller and its components are connected and how selection can be used to control the operation of the model. PROGRAMMING B - SELECTION IN QUIZZES Summer 2 Using Scratch, learners will use 'if...then...else' command to select different components for 'true' or 'false', representing understanding in algorithms. Learners will write programmes that ask questions and use selection to control the outcomes.	Programming A - Variables in games - Summer 1 This unit explores the concept of variables in programming through games in Scratch. First, pupils will learn what variables are, and relate them to real-world examples of values that can be set and changed. Pupils will then use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, pupils will experiment with variables in an existing project, then modify them, then they will create their own project. In Lesson 4, pupils will focus on design. Finally, in Lesson 6, pupils will apply their knowledge of variables and design to improve their game in Scratch. Programming B - Sensing - Summer 2 It offers learners 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 learners to build in and test in the programming environment, before transferring it to their micro:bit. Learners then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.
To connect	Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	● Participate in class photo-sharing social media ● Use technology safely ● Keep personal information private ● Recognise common uses of information technology beyond school.	● Participate in learning platform forum ● Use technology respectfully ● Identify where to go for help and support when they have concerns about the content or contact on the internet or other online technologies.	● Contribute to podcasts that are moderated by teachers ● Use technology responsibly ● Identify a range of ways to report concerns about contact ● Use search technology effectively	● Contribute to blogs that are moderated by teachers ● Give examples of the risks posed by online communications ● Understand the term 'copyright' ● Understand that comments made online that are hurtful or offensive are the same as bullying ● Identify a range of ways to report concerns about content	● Understand the opportunities computer networks offer for communication ● Recognise acceptable/unacceptable behaviour ● Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems ● Understand the effect of online comments and	● Understand the opportunities computer networks offer for collaboration ● Be discerning in evaluating digital content ● Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder.

					Understand how online services work	show responsibility and sensitivity when online - Understand how computer networks can provide multiple services - Appreciate how search results are selected - Select, use and combine internet services	- Understand computer networks - Appreciate how search results are ranked
	Discovering about the different uses of information technology used in school and at home	- Weekly e-safety via class assemblies. - Filming of the jam sandwich making robot - How to safely share information online on various platforms. COMPUTING SYSTEMS AND NETWORKS- TECHNOLOGY ALL AROUND US (AUTUMN 1)	Computing Systems around us - Autumn 1 Learners will look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Learners will investigate how information technology improves our world, and they will learn about using information technology responsibly.	To understand digital devices, with an initial focus on inputs, processes, and outputs. They also compare digital and non-digital devices. Following this, learners are 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.- Autumn 1 -connecting computers-	To understand that not everything they see on the internet is true, honest, or accurate. AUTUMN 1 - THE INTERNET To consider ownership and copyright issues relating to recording of audio AUTUMN 2 - AUDIO EDITING Search and save images from a copyright free website. SPRING 1 - PHOTO EDITING Online safety is addressed during each lesson to ensure they recap on how to stay safe.	SHARING INFORMATION Autumn 2 Learners will develop their understanding of computer systems and how information is shared. Learners will explain the input, output and process aspect of a variety of different real-world systems. Learners will participate in a collaborative online project with other class members.	
To communicate		- Open Microsoft Word. - Write a simple sentence with capital letters, finger spaces, a full stop and use the backspace key. - Save a word document. - Open a saved document.	- Write several correctly punctuated sentences, with correct spacing. - Use the comma key. - Print a document. - Understand that the red line indicates a spelling error.	- Use the return button for paragraphs. - Lay out a basic informal letter. - Create a basic Powerpoint presentation containing images. - Change font size, type, bold, italics, underline and colour.	- Insert an image into a word document with a text box as a caption. - Use simple animations in Powerpoint. - Insert a table into Microsoft Word. - Grammar check. - Highlight text, use the copy and paste functions (including shortcuts). - Use of spell check function.	- Use bullet points and numbering. - Layout and create a formal letter. - Formatting an inserted table (e.g merging cells). - Use of Thesaurus for synonyms and antonyms. - Input data into Microsoft Excell. - Create a bar graph on Excell.	- Formatting paragraphs in Microsoft Words. - Insert headers and footers into a word document. - Use Excell to calculate sums and means of data. - Create line graphs and pie charts using Excell data.
		- Write a sentence about what their favourite food is. - Save this document. - Open it to show it to others. CREATING MEDIA- DIGITAL WRITING (SPRING 1) CREATING MEDIA- DIGITAL PAINTING (AUTUMN 2)	- Use Word to type up an independent piece of English writing. - Print piece of work to be put up on display.	- Become familiar with the terms 'text' and 'images' - 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 Summer 2- Desktop Publishing	When collecting data children will create a table in microsoft word - this will be cross-curricular as can be linked to maths and statistics. SPRING 2 - DATA LOGGING Children will locate photos and insert into a document that then will give a caption to when editing SPRING 1 - PHOTO EDITING	VIDEO EDITING. Spring 1 Learners will create short videos, linking to topic-based language and they will develop the skills of capturing, editing and manipulating video. Learners will reflect and evaluate their progress in creating a video. Opportunities for children to use Word or PowerPoint to present their work across the curriculum	Communication Autumn 1 Learners will be introduced to a range of search engines. They will be given the opportunity to explain how we search, then they will write and test instructions. Learners will explore how the person performing a web search can influence the results that are returned, and how content creators can optimise their sites for searching. They will explore different methods of communication, then they will consider internet-based communication in more detail.

To collect		- Use technology to purposefully store digital content - Use technology to purposefully retrieve digital content	- Use technology purposefully to organise digital content - Use simple databases to record information	Collect and present information	- Analyse and evaluate information - Devise and construct databases using applications designed for this purpose in areas across the curriculum.	Collect and present data	- Design and create systems - Analyse and evaluate data
		- Use laptops to be able to save basic word documents. - Use file explorer to be able to retrieve saved documents. DATA AND INFORMATION-GROUPING DATA (SPRING 2)	Data and Information - Pictograms Spring 2 Learners 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. Learners will use the data presented to answer questions.	- Develop an understanding of what branching database is and how to create it. - sort groups of objects by using yes/no questions. - Evaluate the effectiveness of branching databases. Spring 2- Branching databases	Collect data over time considering what data can be collected and how. Use a data logger to collect data automatically - using the data logger to answer questions SPRING 2 - DATA LOGGING	FLAT-FILE DATABASES Autumn 1 Learners will understand how to create databases and use them to organise data in records. Learners will create graphs and charts from data to solve problems, presenting their work to others.	Data and information - Spreadsheets - Spring 1 This unit introduces the learners 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 graphs and charts, and evaluate their results in comparison to questions asked.
E Safety	Children recognise the impact of good choices and consequences of wrong ones. They can select and use technology for a purpose. Children understand that they must ask an adult whether they can use a game or app. Children know that information can be retrieved from computers and can tell an adult if what they see makes them feel worried. Children recognise who they can ask for help and know when they need help. Children understand that they need to share equipment and take turns.	- To understand why we need to keep passwords safe. To understand although parents and teachers can help you log on, passwords should never be shared with anyone else. To know that we treat people the same online as we do offline. - Children begin to understand what personal information is and who you can share it with, including the need to keep passwords private. They begin to recognise the need to know who they are sharing their learning with online and recognise the difference between real and imaginary online experiences. Children know who to tell when they see something that makes them uncomfortable and make sure an adult knows what they are doing. Children recognise the Internet as an exciting place	To understand the importance of communicating safely and respectfully online, and the need for keeping personal information private. To know what to do and who to tell when concerned about content or being contacted. Children understand what personal information is and who you can share it with, including the need to keep passwords private. Children begin to recognise the need to know who they are sharing their learning with online and recognise the difference between real and imaginary online experiences. Children know who to tell when they see something that makes them uncomfortable and	- To demonstrate using computers safely and responsibly, knowing a range of ways to report unacceptable content and contact when online. To develop and understand rules for personal internet safety. To know that some information should be kept private and why. - Children recognise the need to keep personal information and passwords private. They recognise the need for a secure password. Children understand that an adult needs to know what they are doing online and understand how to report concerns, including cyberbullying. Children understand that any personal information they put online can be seen and used by others.	- To develop and understand rules for personal internet safety. To know it is dangerous to meet anyone you have met online. To know what is personal information and why we need to keep it private. To know who to tell if uncomfortable online. To understand reliability when using online services. To know how to be respectful online. - Children understand the need for rules to keep them safe when exchanging ideas online. They understand that an adult needs to know what they are doing online and understand how to report concerns, including cyberbullying. Children recognise the need to choose age appropriate	To understand what cyberbullying is. To recognise the impact that cyberbullying can have on people. To learn the strategies to avoid getting into or contributing to negative situations online. To share ideas using a range of online methods. To develop key skills and ideas about personal safety when using any form of electronic communication. Children understand the need to keep personal information and passwords private, and know how to choose a secure password. Children understand appropriate and inappropriate use of the Internet including excessive use. Children	To understand what information is personal and how to create safe profiles online. To develop an awareness of potential risks and how to prevent them. To demonstrate responsible use of technologies and online services and knows a range of ways to report concerns. Children recognise their own right to be protected from the inappropriate use of technology by others and their responsibility to report concerns. Children understand how to use social networking websites appropriately, keeping an adult informed about their online activity. They make good choices when they

		to be but understand the need for a balance in how they spend their time and make good choices about age appropriate activities.	make sure an adult knows what they are doing. Children recognise the Internet as an exciting place to be but understand the need for a balance in how they spend their time and make good choices about age appropriate activities.		games to play on their devices, and when to limit use. They recognise the need to protect their devices from viruses. Children understand that any personal information they put online can be seen and used by others. They recognise that they can use online tools to collaborate and communicate with others and the importance of doing this responsibly, choosing age-appropriate websites. Children recognise the effect their writing or images might have on others.	recognise the risks and rewards of using Internet communication tools and understand how to protect themselves and the devices they use. Children understand the need to respect the rights of other users, and understand their own responsibility for information that is shared and how it may impact on others.	present themselves online. Children recognise the appropriate online tools to collaborate and communicate with others, understanding how to protect themselves from cyberbullying or causing hurt to others, especially when using social networks (including online gaming communities). Children understand the need to respect the rights of other users, and understand their own responsibility for information that is shared and how it may impact on others.
	- Children to take part in an E Safety workshop to learn about keeping safe and making good choices. - Follow links to appropriate games on the internet which they can sit with a friend to play. - Change to different activity when they have spent a reasonable amount of time using technology using something such as an egg timer to remind them.	- Discuss common uses of IT beyond school Log in to Purple Mash or other age appropriate websites. Talk about the different kinds of websites it is good to use. - Read Digiduck's Big Decision to talk about good and bad choices and the effect these can have on others. - Role-play how to talk kindly and politely to friends online and in the real world, and how to comment kindly on people's work. - Role-play deciding that you have spent too much time online. - Suggest ways that you can remind yourself to change to other kinds of activities.	- Lee & Kim's Big Adventure CEOP resources and lesson plans Agree sensible e-safety rules for the classroom. Use a selection of websites and consider who can see the information online. - Play appropriate games on the internet, including games against real people. - Talk about how adults can help us, including when we see something we don't like or something makes us feel uncomfortable. - Play games that reinforce the idea of personal information, including password privacy. - Discuss uses of IT at home and reinforce the above	- Hector's World website, lesson plans and video clips http://www.thinkuknow.co.uk/5_7/hectorsworld/ - Discuss and agree classroom rules / expectations about safe use of the Internet. Model how to protect personal information and how to choose a secure password. Reinforce the rule about keeping adults informed about Internet activity and telling if you see something you don't like or if you feel you're being bullied. Model how to choose ageappropriate websites and minimise risk of viruses. Talk about what games they enjoying playing and what good choices are when playing games e.g. content, screen time.	- Kids SMART website Explore and discuss the website. Look at the SMART rules for staying safe online. Discuss what actions could be taken if they are uncomfortable or upset online e.g. Report Abuse button. Talk about what games they enjoy playing and what good choices are when playing games e.g. content, screen time. Use a class blog to share information and talk about who can see it, and how to communicate safely and respectfully. Create your own SMART rules poster. - Watch Captain Kara Chapter 1 Accept and talk about responsible behaviour online. Watch Captain Kara Chapter 2 What is Reliable? Watch Captain Kara Chapter 3 What should you keep Safe? Watch Captain Kara Chapter 4 (Tell) and Suffering in Silence to discuss the effects of unkind communication. Watch Captain Kara Chapter 5 (Meet) or Jigsaw CEOP video to reinforce	- Kids SMART website Explore and discuss the website. Remind pupils of the SMART rules for staying safe online that they covered in Year 4. Use the Safe Searching lesson plan unit of work from Kidsmart and also try some of the drama activities to explore online citizenship. There are also units of work entitled ' help a Friend' and 'Have Fun Communicating' that could be used / adapted for use with the class. http://www.kidsmart.org.uk/teachers/KS2/lessonplans.aspx - Zip it – Don't share your personal information with strangers. Keep your profile settings private. Block it – Block friend requests from strangers on social networking sites. Flag it – Always tell a trusted adult if something online scares/upsets you. Report any meeting requests from strangers to a trusted adult. Remember to be	- Use ThinkUKnow Cybercafe activities to explore how to stay safe online and use mobile phones and chat rooms http://www.thinkuknow.co.uk/8_10/cybercafe/Cyber-Cafe-Base/Cyber Café - Lesson plans 1-9 and resources available from the following website. You will need to register on the website. https://www.thinkuknow.co.uk/Teachers/Resources/ Cyberbullying - video clip for teachers http://www.playbackschools.org.uk/programme/2012/combating-cyberbullying

					reporting concerns and discuss the ways this can be done. Watch Captain Kara Chapter 6 What is Reliable?	as careful online as you are offline.	
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Sticky Knowledge

Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
- To recognise that a range of technology is used in places such as homes and schools - Select and use technology for particular purposes. - To be able to programme and control beebots and remote control toys. - To be able to describe ways that some people can be unkind online- - To recognise some ways in which the internet can be used to communicate E-Safety - Know how to select and use appropriate technology - know that information can be retrieved from computers and can tell an adult if what they see makes them feel worried - Know who they can ask for help and know when they need help	- Know how to move a beebot. - Explain and create a simple algorithm. - Know how to use a keyboard and a mouse - Know and explain how to use technology safely. - Know how to keep my personal information private - Know what to do if I see something I don't like online. - Know how to search for information. E-Safety - Know that passwords should never be shared - know that we treat people the same online as we do offline - Know the need to know who they are sharing their learning with online and recognise the difference between real and imaginary online experiences	- Know how to create and debug a simple programme. - Know how to logically reason the behaviour of simple programs - Know and recognise common uses of information technology beyond school - Know how to use technology safely and respectfully, keeping personal information private - Know how to use technology purposefully to access digital content. - Know how to use the internet to communicate. E-Safety - Know what is the meant by the term 'identity' - Know that personal information should be kept private online - know what to do and who to tell when concerned about content or being contacted - Know and recognise the difference between real and imaginary online experiences	- Know how to design, write and debug programs that accomplish specific goals - Use logical reasoning to detect and correct errors in algorithms and programs. - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output - Know how to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information - Know how to use technology safely, respectfully and responsibly. - Understand computer networks, including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. E-Safety - Be able to explain how people represent themselves online. - Be able to explain ways in which someone may change their identity online (depending on what they are doing) (gaming,social media an avatar - Know only share information with people	- Know how to use technology safely, respectfully and responsibly; know a range of ways to report concerns and unacceptable behaviour - KNow how to use and combine a variety of software (including internet services) to accomplish given goals, including presenting information - Know how to design, write and debug programs that accomplish specific goals. - Know how to use sequence, selection, and repetition in programs; work with variables and various forms of input and output - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. - Know how to use search technologies effectively. - Know how to use a variety of software (including internet services) to create content including presenting information E-Safety - Know what strategies to use to stay safe - Know ways online bullying can occur - Know the danger of app purchases	- Know how to use reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs, identifying the outcome of user input in an algorithm - Know how to use databases to search information, asking relevant questions to direct their inquiries. - Know how to recognise that connected digital devices can allow us to access shared files stored online and to do this safely and appropriately, explaining how the internet enables effective collaboration. - Know how to identify that video can be improved through reshooting and editing, making edits to videos to help improve the final outcome - Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration and doing so safely. - Know how to create a vector drawing by combining shapes and suggest improvements to a vector drawing E-Safety - Able to define cyber bullying	- Know responsibilities online and how to build a positive representation. - Able to design, write and debug programs that will create a game identifying different variables within the game. - Able to use sequence, selection and repetition in programs; work with variables and various forms of input and output. - Know the different ways to communicate using the internet safely. - Know how to use search technologies effectively, appreciate how results are selected and ranked. - Know how to build a data set in a spreadsheet application including collecting, analysing, evaluating and presenting data and information. E-Safety - Know what information is personal and how to create safe profiles online. - Know a range of ways to report concerns. - Know how to use social networking responsibly and sensibly - Know and demonstrate how to show respect for others when using online tools

			chosen and can trust. • Know what is meant by 'trusting someone online' • Be able to describe appropriate ways to behave towards other people online and why this is important. • Know how to recognise bullying behaviour online and how someone can get support.		• Know how to stay safe online, recognising fake identities and share information safely	
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