Curriculum Subject: Computing

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Curriculum Overview and Statement of Intent, Implementation, and Impact.

Motto

"Being the best we can be, because with God all things are possible"

'For I know the plans for you,' declares God, 'plans to prosper you and not harm you, plans to give you hope and a future.' Jeremiah 29:11

Vision & Intent

Together, through 'The St Lawrence Way' we will embrace the love of learning, be curious of, and be inspired by the endless possibilities that our wonderful world can offer.

Mission/Implementation Through the 'St. Lawrence Way' we will.....

- Design a curriculum that: recognises children's prior learning, providing first-hand learning experiences, allowing the children to build resilience and become creative, critical thinkers who have the *courage* to become lifelong learners fulfil their aspirations.
- Recognise every child as a unique individual. We teach the children to be tolerant of one another whilst understanding and *respecting* difference and diversity, knowing that all have been created in the image of God.
- ➤ Help pupils and adults to develop lifelong learning habits so that they can contribute successfully to their local community and navigate an increasingly complex national and global community so that they recognise their place in the world and show *thankfulness* for what they have.
- Foster a Christian community whereby everyone feels valued and has a strong sense of belonging building upon strong, caring relationships that are based on mutual **respect**; demonstrated through courtesy, **forgiveness** and reconciliation.
- Value the community to which we belong by listening, being honest with each other whilst showing compassion, and creating opportunities for the pupil voice to be heard, which will support good mental health and the wellbeing for all.

Our Core Christian Values

Compassion
Courage
Respect
Honesty
Thankfulness
Forgiveness





Intent, Implementation and Impact		A C.C. PHORE
Intent	<u>Implementation</u>	<u>Impact</u>
Develop children's experience and Computing including E-safety to prepare and instil	At St Lawrence, computing is taught using a blocked curriculum approach. This ensures	Our approach to the curriculum results in a fun, engaging, and high-quality computing
confidence for jobs of the future.	children are able to develop depth in their knowledge and skills over the duration of	education. The quality of children's learning is evident on Seesaw, a digital platform where
Computing skills are a major factor in enabling children to be confident, creative and	each of their computing topics.	pupils can share and evaluate their own work, as well as that of their peers. Evidence such as
independent learners and it is our intention	Knowledge and skills are mapped across each	this is used to feed into teachers' future
that children have every opportunity available to allow them to achieve this. Through teaching Computing we equip children to	topic and year group to ensure systematic progression. We have class sets of iPads to ensure that all year groups have the	planning, and as a topic-based approach continues to be developed, teachers are able to revisit misconceptions and knowledge gaps
participate in a rapidly-changing world where	opportunity to use a range of and programs	in computing when teaching other curriculum
work and leisure activities are increasingly transformed by technology. Technology is	for many purposes across the wider curriculum, as well as in discrete computing	areas.
changing the lives of everyone. It is our intention to enable children to find,	lessons.	This supports varied paces of learning and ensures all pupils make good progress.
explore, analyse, exchange and present information. We want children to know more,	Employing cross-curricular links motivates pupils and supports them to make	Much of the subject-specific knowledge developed in our computing lessons equip
remember more and understand more in computing so that they leave primary school	connections and remember the steps they have been taught.	pupils with experiences which will benefit them in secondary school, further education
computer literate.	The implementation of the curriculum also	and future workplaces.
At St. Lawrence, computing is seen as both a resource and a learning tool. It prepares children for life outside of and beyond school. We teach computer science as a skill in itself and also as a tool for learning.	ensures a balanced coverage of computer science, information technology and digital literacy. The children will have experiences of all three strands in each year group, but the subject knowledge imparted becomes	

Yearly Computing Overview Cycle A



Cycle A	Autumn	Spring	Summer
- 7	Computer Science / Information Tech.	e-safety (DL) / Computer Science	Digital Literacy / Creating Media
Class 1	Autumn 1	Spring 1	Summer 1
Reception	Introduction to programming through	Internet Safety	How do we use technology in our everyday
Reception	guided Bee-Bot play.		lives?
	Autumn 2	Spring 2	Summer 2
	Multimedia and word processing	Understanding the basic functions of a	<u>Summer Fun</u>
	(page 6)	keyboard/tablet/iPad.	
Class 2	Autumn 1	Spring 1	Summer 1
Y1/2	Year 1 - Programming animations.	Internet Safety	Year 2 - Digital photography
11/2			
	Autumn 2	Spring 2	Summer 2
	Year 1 - Grouping data	Binary Numbers	<u>Planet Protectors</u>
Class 3	Autumn 1	Spring 1	Summer 1
Y3/4	Year 3 – Branching databases.	Internet Safety	<u>Kidbots</u>
13/4			
	Autumn 2	Spring 2	Summer 2
	Word Processing	Error Detection and Correction	Recycling Warriors
Class 4	Autumn 1	Spring 1	Summer 1
Y5/6	Year 5 – Programming Selection in	Internet Safety	Film Making
13/0	quizzes.		
	Autumn 2	Spring 2	Summer 2
	Sorting Networks	Radio Station	Animation

Yearly Computing Overview Cycle B



Cycle B	Autumn	Spring	Summer
C , c.c. D	Computer Science / Information Tech.	e-safety (DL) / Computer Science	Digital Literacy / Creating Media
Class 1	Autumn 1	Spring 1	Summer 1
Reception	Introduction to programming through	Internet Safety	How do we use technology in our everyday
Reception	guided Bee-Bot play.		lives?
	Autumn 2	Spring 2	Summer 2
	Multimedia and word processing	Understanding the basic functions of a	Summer Fun
	(page 6)	keyboard/tablet/iPad.	
Class 2	Autumn 1	Spring 1	Summer 1
Y1/2	Year 2 - Pictograms	Internet Safety	Screen out the Mean
11/2			
	Autumn 2	Spring 2	Summer 2
	Technology Around Us	Year 2 - Computing systems and networks	Computer Art
Class 3	Autumn 1	Spring 1	Summer 1
Y3/4	Animation	Internet Safety	The Power of Words
13/4			
	Autumn 2	Spring 2	Summer 2
	<u>Using pixel puzzles</u>	Year 4 – The internet	Drawing and Desktop Publishing
Class 4	Autumn 1	Spring 1	Summer 1
Y5/6	<u>Spreadsheets</u>	Internet Safety	Talking Safely Online (Kapow Inventing a
15/0			product)
	Autumn 2	Spring 2	
	The Impact of Technology	Year 6 – Communication	Summer 2
			Controlling Devices

EYFS Handbook

<u>Understanding of The World:</u>
Guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment.

KS1								
COMPUTER SCIENCE			INFORMATION TECHNOLOGY	DIGITAL LITERACY				
Algorithms/ Problem solving	Programming	Logical thinking	Creating content	Using IT beyond school	E-safety			
Pupils should be taught to understand: → what algorithms are → how algorithms are implemented as programs on digital devices → that programs execute by following precise and unambiguous instructions	Pupils should be taught to create and debug simple programs	Pupils should be taught to use logical reasoning to predict the behaviour of simple programs	Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content	Pupils should be taught to recognise common uses of information technology beyond school	Pupils should be taught to: → use technology safely and respectfully → keep personal information private → identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.			

	KS2									
	COMPUTER SCIENC	E	INFORMATION 1	TECHNOLOGY	DIGITAL LITERACY					
Problem solving	Programming	Logical thinking	Creating content	Searching	E-safety					
Pupils should be taught to:	Pupils should be taught to:	Pupils should be taught to: → use logical	Pupils should be taught to: → select, use and	Pupils should be taught to:	Pupils should be taught to: → use technology safely,					
 → design, write and debug programs that accomplish specific goals → control or simulate physical systems → solve problems by decomposing them into smaller parts 	→ use sequence, selection, and repetition in programs and to work with variables → work with various forms of input and output	reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs → understand computer networks including the internet → understand how networks can provide multiple services, such as the world wide web.	combine a variety of software (including internet services) on a range of digital devices → design and create a range of programs, systems and content that accomplish given goals → collect, analyse, evaluate and present data and information	→ use search technologies effectively → appreciate how search results are selected and ranked	respectfully and responsibly → recognise acceptable/unacceptable behaviour → know a range of ways to report concerns and inappropriate behaviour → be discerning in evaluating digital content → understand the opportunities networks offer for communication and collaboration					

	Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Generic	Most children:	Most children:	Most children:	Most children:	Most children:	Most children:	Most children:
Skills	· Are aware that pressing buttons will make a device respond e.g. a remote control toy · Can use the mouse and the keyboard to explore programs · Are aware that moving the mouse moves the pointer on the screen · Can talk about how they are using ICT · Can start to use appropriate ICT vocabulary	· Can print work using the Print icon · Can use both hands on the keyboard · Can load programs with support · Can save work with support · Can retrieve work with support · Can talk about how they are using ICT · Can start to use appropriate ICT vocabulary	· Can load programs independently · Can save work independently · Can retrieve work independently · Can plan what they are going to do · Can edit their work · Can practise keyboard skills using both hands, try to use more than two fingers, and try to use the thumb on the spacebar · Can explain their work and how they have used ICT · Can annotate their work samples using prompts · Can use appropriate ICT vocabulary	· Can use a range of ICT equipment and software with support · Can create and name new folders, with support · Can print work using the drop down menu · Can make changes to their work · Can consolidate keyboard skills · Can highlight/select items · Can use cut, copy and paste · Can explain their work and how they have used ICT	· Can choose an appropriate program, with support. · Can create and name new folders, independently · Can use Print Preview · Can understand that work can be saved in different places e.g. network, writeable CD ROM, Pen Drive, Cloud storage · Can plan what they are going to do and evaluate the results · Can describe their work and explain how and why they have used ICT	· Can choose an appropriate program to perform a task · Can understand and use the hierarchical file system · Can combine information from various sources · Can describe and discuss their work and explain how and why they have used ICT	· Can choose and combine the use of appropriate ICT tools to complete a task · Can critically evaluate the fitness for purpose of work as it progresses. · Can annotate their work samples using prompt questions
Data Handling	Do practical sorting activities and discuss sorting criteria Begin to develop simple classification skills	· Can develop simple classification skills based on practical sorting activities · Can, with support, use simple data plotting/ graphing programs to produce pictograms and other simple graphs · Can place objects and pictures in a list or a simple table.	· Can independently plot data as a pictogram, block chart or bar graph · Can know that graph types can be changed · Can interpret the graphs - discuss the graphs and answer simple questions · Can make a simple Y/N tree diagram to sort	· Can collect information using a questionnaire · Can enter data into a prepared database · Can use the search tools to answer simple questions relevant to an investigation · Can sort and organise information to use in other ways	· Can begin to identify data handling opportunities · Can create and search a branching database · Can create a database from information I have selected · Can use the database to carry out an investigation	Can create data collection forms and enter data from these accurately Can know how to check for and spot inaccurate data. Can enter information into a spreadsheet using appropriate headings	· Can know how to check for and spot inaccurate data · Can use formulae and functions in a spreadsheet · Can enter and use simple formula in a spreadsheet · Can understand that

			information Can use the search tools in a prepared database to answer simple questions e.g. how many minibeasts have wings?	· Can produce graphs from the data with support · Can enter data in a prepared spreadsheet, with support · Can select data to produce a graph, with support · Can recognise which information is suitable for their topic	· Can present data in different ways - e.g. graphs, tables · Can start to amend errors · Can use a spreadsheet to record data and produce graphs independently · Can enter data in a prepared spreadsheet independently · Can select data to produce a graph independently · Can use a spreadsheet to explore number patterns e.g. in a hundred square, multiplication table	· Can move to a specific cell in spreadsheets. · Can use a simple formula e.g. SUM · Can use a spreadsheet to investigate e.g. cost of foods /drinks Which is the best value drink?	changing the numerical data effects a calculation • Can change data to satisfy 'What if' queries • Can use a spreadsheet to solve simple problems e.g. the relationship between the perimeter and area of a quadrilateral • Can make graphs from the calculations on my spreadsheet • Can use editing tools to alter the design of a graph • Can organise, refine and present information appropriate to the audience
Research	· Explore selected internet website resources (with adult support) · Begin to be aware of internet safety rules	· Can talk about websites they have been on · Can explore a website by clicking on buttons, arrows, menus and hyperlinks · Can navigate 'back' by clicking on the 'back' button · Can complete a search using a child friendly search engine under the supervision of adults	· Can complete a search using a child friendly search engine independently · Can use the Internet to find information for a topic, with support (Favourites file, hyperlinks set up by the teacher)	· Can type in a URL to find a website · Can add websites to favourites · Can use a search engine to find a range of media, e.g. images, text · Can understand Internet safety rules.	· Can think of search terms to use linked to questions they are finding the answers for · Can talk about the reliability of information on the Internet, e.g. the difference between fact and opinion · Can use Internet safety rules	· Can use advanced search functions in Google, e.g. quotations · Can use AND and OR in their searches · Can check the accuracy of information, with support · Can begin to be aware of privacy and other issues related to using the Internet · Can interpret and question the plausibility of information	· Understand websites such as Wikipedia are made by users (link to E-Safety) · Can suggest ways to check the accuracy of information independently · Can be aware of privacy and other issues related to using the Internet
Computer Science	· Be aware that many everyday devices respond to commands · Learn to switch on a programmable toy to activate movement · Begin to follow simple instructions e.g. playing at robots, country	· Can understand how many everyday devices respond to commands · Can give and follow instructions using Forward and Backward commands (arrows)	· Can compare use of a programmable robot with robots working in factories doing repetitive tasks · Can plan and create a sequence of instructions to move a programmable robot	· Can plan, write, evaluate, and edit a sequence of instructions · Can be aware that scratch is a computer language	· Can include an algorithm to include selection (if) and repetition (loops) · Can decomposed algorithms into component parts (procedures)	· Can create and edit variables · Can predict the outcome of a control procedure · Can use conditional Statements · Can use loops and	· Can use external triggers and infinite loops to control sprites · Create and edit variables · Can use conditional statements · Can design

	dancing (pre-Logo activities) Play with remote control toys Play with programmable robots be aware that pressing buttons makes the toy or robot respond	and the Go command, one at a time (Can use a programmable robot) · Can explore outcomes when instructions are given in a sequence · Can give a simple sequence of instructions · Can discuss/explore what will happen when instructions are given in a sequence	· Can control a programmable robot, with a purpose (Defined by either teacher or child.) · Can use the 'repeat' (loop) and 'when' (conditional statement) command within a series of instructions · Can discuss how to edit/refine a sequence of commands · Can create a sequence of instructions including 'right angle' turns	Can write a simple program in scratch to produce a line drawing Can use more advanced scratch programming, including pen up, pen down etc. Write a program to reproduce a defined problem, e.g. geometric shape/pattern Can begin to experiment with onscreen control software to control outputs Can use a variety of inputs Can use the 'repeat' (loop) command within a series of instructions Can use the 'if then' (conditional statement) command within a	· Can test and correct parts of an algorithm separately · Can use conditional statements ("ifthen") to create dangerous items in their world	conditions to refine algorithms Can use conditional statements to control external outputs Can use conditional statements and infinite loops Can evaluate and edit the set of instructions to make a more efficient system Can be aware of control applications in everyday life, e.g. automatic doors, robots in car factories, automatic security lights	their own game including sprites, backgrounds, scoring and/or timers · Can use conditional statements, loops, variables and broadcast messages in the game. The game finishes when a player wins or loses and they must know they have won or lost · Can evaluate the effectiveness of the game and debug as required
Text	· Use the keyboard to enter letter strings (play writing) · Begin to use the space bar to break letter strings into groups of letters · Use the Back Space key to delete, use a word bank or word list to enter text e.g. to match with pictures	· Can access and open a word processing document · Can enter text · Can use upper and lower case letters · Can use the space bar · Can use the Return key · Can use the Shift key to create a capital letter · Can understand how to sue the delete/backspace key if they have mistyped or repeated a letter · Can word process short texts using word lists · Can move the cursor and insert text	· Can understand how text can be saved and retrieved · Can change the font style · Can change the font size · Can change the font colour · Can use the cursor (arrow) keys for simple on screen editing · Can import graphics and add text, with support	can select text and change the font style, size and colour Can select text and use Bold and Underline icons Can confidently use the cursor (arrow) keys for simple on screen editing Can use the scroll bars to view different parts of the document justify/align text Can import graphics and add text	· Can import graphics and use the Picture Toolbar to choose the text wrapping · Can use the spell checker · Can use Page Setup to choose Portrait or Landscape page as appropriate · Can learn how to insert and use a simple table · Can use the Zoom menu to view the whole page · Can use word art	· Children should be given the opportunity to use their word processing skills in a range of contexts · Can change the layout of a document using centring and justification · Can use the tab key to format a list · Can import, position and manipulate graphics into word processing document · Can moving, resizing and reshaping text and graphics on a page	· Children should be given the opportunity to use their word processing skills in a range of contexts · Can split cells in a table · Can merge cells in a table · Can insert/delete cells in a table · Can use Find, search and replace if appropriate

Graphics and Publisher	· Experiment with an art package trying different tools and effects, as one of a range of media available · Begin to use an art package as a medium to convey their ideas, as one of a range of media available	· Can use ICT to generate ideas for their work · Can start using various tools including brushes and pens in a paint package · Can start to use the spray can, fill tool and stamps in a paint package · Can change the colour or pattern of the paintbrush, paint bucket or spray can in a paint package · Can draw a simple picture	· Can use the line tool in a paint package · Can independently use various tools including brushes and pens in a paint package · Can independently use the spray can, fill tool and stamps in a paint package · Can select and use tools appropriately Can create a new blank document · Can select full page layout · Can increase the view by changing the zoom % · Can create a text box and enter text · Can apply formatting skills learnt in word Processing	· Can acquire, store and combine images from cameras or the Internet for a purpose · Can select certain areas of an image and resize, rotate an image · Can move text to different positions on a page · Can insert clipart · Can add photographs · Can cut and paste.	· Can use the print screen function to capture an image · Can edit pictures using various tools in paint or photo-manipulation Software · Can use the rotational function in the text box · Can move/rotate clipart around the page · Can create and import a picture from a paint program · Can use undo/redo tool for immediate action only	· Using previous skills, as should have all been taught. Multimedia presentations · Can plan a layout or presentation to suit an audience · Can create and redraft work combining text, graphics and sound · Can import photographs from a variety of sources · Can create a simple non-linear presentation. · Can use transparent buttons and text links · Can use action buttons to move to and from a slide · Can insert hyperlinks	· Using previous skills, as should have all been taught. Multimedia presentations · Can apply appropriate backgrounds · Can use timings on each effect · Can use rehearse timings before presenting to an audience
Filming, Animation and Sound	· With support, use a digital camera or digital video camera to take pictures, be aware that digital pictures and video can be displayed on a computer screen · With support, use cassette recorders / CD players to listen to pre-recorded sound · With support, use cassette recorders / Dictaphones / sound buttons to record and playback sounds e.g. own voice, other voices and experiment with music software	· Can use a digital camera or digital video camera to take pictures. · Can be aware that digital pictures and video can be saved on a computer · Can add captions or sound to drawn, digital pictures or video, with support · Can understand that sound can be recorded and played back · Can record their own voice or others with support	· Can capture videos · Can discuss which videos to keep and why · Can use a digital camera or digital video camera to take appropriate pictures or video for a specific purpose (E.g. as part of their topic) · Can arrange clips to make a short film that conveys meaning · Can add simple titles and credits · Can select text and make simple changes including bold, italic and underlined · Can edit images using an art package or other software e.g. crop, resize	· Can use a storyboard to edit a sequence of digital pictures or video with support. e.g. change sequence, add transitions, effects, and sound · Can take a series of pictures to form a simple animation · Can move 1 item within their animation to create movement on playback · Can take a series of pictures to form an animation · Can edit and improve their animation · Can record sound on the computer and be able to use the sound files in other	· Can use a storyboard to edit a sequence of digital pictures or video independently. e.g. change sequence, add transitions, effects, and sound · Can plan what they would like to happen in their film or animation. · Can take a series of pictures to form a more complicated animation · Can move items within their animation to create movement on playback · Can begin to evaluate the suitability of the presentation for the given audience · Can make changes to the presentation to	· Can capture video for a purpose · Can discuss the quality of videos and choose which to keep and which to re-shoot · Can trim and arrange clips to convey meaning · Can add titles, credits, slide transitions, special effects and talk about the effect these have on the audience · Can use music software to plan, create and play their own compositions · Can evaluate and modify (edit) their own compositions	· Can plan a multi-scene animation including characters, scenes, camera angles and special effects · Can use stop-go animation software to shoot the animation frames · Can adjust the number of photographs taken and the playback rate to improve the quality of the animation · Can use a movie editing package to edit/refine and add titles · Can plan for the use of Special effects/transitions to enhance their video · Can trim, arrange and edit audio levels of

			· Can record their own voice or others independently · Can use music software to experiment, create and play their own compositions · Can, with support, evaluate and modify (edit) their own compositions · Can be aware that sound can be recorded on the computer as a sound file	applications, with support	make it more suitable for the audience, with support · Can record and edit sound on the computer · Can use the sound files in other applications	· Can use a range of musical instruments in their compositions.	video to improve the quality of their outcome · Can add titles, credits, transitions, special effects · Can export their video in different formats for different purposes · Can use more sophisticated music software to plan, create, edit and play their own compositions
E-safety	· Can tell when they are on the internet and when they are not	· Can identify what pers and understand that the private online · Can consider other perinternet · Can recognise a variety connect users with other Phones etc.) · Know where to go for they have concerns	ey should keep this ople's feelings on the y of devices that er people (Xbox, PSP,	· Can identify a number · Can question the 'valid on the internet · Can recognise approprionline behaviours · Know where to go for they have concerns · Can use technology sa responsibly	dity' of what they see riate and inappropriate help and support if	· Can explore options for range of online settings social media) · Can clearly identify lev · Can identify and appropriate of the control of	vels of online gaming, vels of online risk opriately use social res, making good