St Laurence's CE Primary School
Computing – Knowledge and Skills Progression

Aims of the Computing curriculum at St Laurence's:

At St Laurence's, we aim for children to:

- Develop the knowledge, understanding and skills to use technology safely and purposefully to create, organise, store, control and retrieve digital content.
- Become digitally literate – able to use, and express themselves and develop their ideas through information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.
- Understand the importance of keeping personal information private; know where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Project Evolve	Term 1	Term 2	Term 3
	Managing Online Information Copyright and Ownership	Self Image and Identity Online Relationships Online Bullying	Health, Well-being and Lifestyle Privacy and Security Online Reputation

Computing Key

AL Algorithms
CS Computing systems
CM Creating media
DI Data and information
DD Design and development
ET Effective use of tools
NW Networks
PG Programming
SS Safety and security
IT Impact of Technology

Education for a connected World Links Key

1 Self-image and Identity
2 Online relationships
3 Online reputation
4 Online bullying
5 Managing online information
6 Health, wellbeing and lifestyle
7 Privacy and security
8 Copyright and ownership

EYFS - Reception					
Autumn 1 Marvellous Me Autumn Staying Safe	**Autumn 2** Bonfire Night / Diwali Superheroes Winter	**Spring 1** Winter Dinosaurs	**Spring 2** Pets Signs of Spring	**Summer 1** On the Farm Once upon a Time	**Summer 2** Minibeasts Under the Sea
- Uses ICT hardware to interact with age-appropriate computer software. (T)	- Uses ICT hardware to interact with age-appropriate computer software. (T)	- Completes a simple program on a computer. (T)	- Completes a simple program on a computer. (T)	- Children recognise that a range of technology is used in places such as homes and schools. - They select and use technology for particular purposes (T)	- Children recognise that a range of technology is used in places such as homes and schools. - They select and use technology for particular purposes (T)

KS1 Computing Curriculum		
Computer Science *(How computers and computer systems work and how they are designed and programmed)*	**Information Technology** *(the purposeful use of existing programs to develop products and solutions)*	**Digital Literacy** *(the skills, knowledge and understanding needed in order to participate fully and safely in an increasingly digital world)*
A- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions		
B- create and debug simple programs		
C- use logical reasoning to predict the behaviour of simple programs		
D- use technology purposefully to create, organise, store, manipulate and retrieve digital content		
E- recognise common uses of information technology beyond school		

F- use technology safely and respectfully, keeping 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

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
1	**Technology Around Us** (CS, AL, 6, 8)	**Digital Painting** (ET, CM)	**Moving a Robot** (PG, AL)	**Grouping Data** (AL, DI, 8)	**Digital Writing** (ET, CM, 7)	**Programming Animation** (PG, DD)
	- identify technology. - identify a computer and its main parts. - use a mouse and a keyboard in different ways. - create rules for using technology responsibly.	- describe what different freehand tools do. - make careful choices when painting a digital picture and explain why I chose the tools I used. - use a computer on my own to paint a picture. - compare painting a picture on a computer and on paper.	- explain what a given command will do. - combine forwards, backwards and direction commands to make a sequence. - plan a simple program. - find more than one solution to a problem.	- label objects. - describe objects in different ways. - count objects with the same properties. - compare groups of objects.	- use a computer to write, add and remove text. - identify that the look of text can be changed on a computer. - make careful choices when changing text and explain why I used the tools that I chose. - compare typing on a computer to writing on paper.	- show that a series of commands can be joined together. - identify the effect of changing a value. - explain that each sprite has its own instructions. - design the parts of a project and use my algorithm to create a program.
2	**IT Around Us** (NW, CS, 6)	**Digital Photography** (CM, ET, 5)	**Robot Algorithms** (PG, AL)	**Pictograms** (ET, DI, 1, 6, 7)	**Digital Music** (CM, DD, 8)	**Programming Quizzes** (DD, PG)
	- recognise the uses and features of information technology including in/out of school. - explain how information technology helps us. - explain how to use information technology safely. - recognise that choices are made when using IT.	- use a digital device to take a photograph. - decide how photographs can be improved. - use tools to change an image.	- describe a series of instructions as a sequence. - use logical reasoning to predict the outcome of a program (series of commands). - explain that programming projects can have code and artwork. - design an algorithm. - create and debug a program that I have written.	- recognise that we can count and compare objects using tally charts. - recognise that objects can be represented as pictures and create a pictogram. - select objects/people by attribute and make comparisons.	- say how music can make us feel. - identify that there are patterns in music. - show how music is made from a series of notes. - create, review and refine music for a purpose.	- create a program to move a sprite in four directions. - develop my program by adding features. - design and create a maze-based challenge.

KS2 Computing Curriculum		
Computer Science *(How computers and computer systems work and how they are designed and programmed)*	**Information Technology** *(the purposeful use of existing programs to develop products and solutions)*	**Digital Literacy** *(the skills, knowledge and understanding needed in order to participate fully and safely in an increasingly digital world)*
A- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.		
B- use sequence, selection, and repetition in programs; work with variables and various forms of input and output.		
C- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.		
D- 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- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.		
F- select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.		
G- use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
3	**Connecting Computers** (NW, CS)	**Animation** (ET, CM, 5)	**Sequencing Sounds** (PG, DD)	**Branching Databases** (DI, ET)	**Desktop Publishing** (ET, CM, 5, 8)	**Events and Actions** (PG, DD)
	- identify input and output devices. - recognise how digital devices can change the way we work including sharing information. - recognise the physical components of a network.	- explain that animation is a sequence of drawings or photographs. - plan, review and improve an animation. - evaluate the impact of adding other media to an animation.	- explore a new programming environment. - recognise that a sequence of commands can have an order. - create a project from a task description.	- create questions with yes/no answers. - identify the object attributes needed to collect relevant data. - create a branching database and explain why it is helpful for it to be well structured. - compare the information shown in a pictogram with a branching database.	- recognise how text and images convey information. - add content to a desktop publishing publication. - consider how different layouts can suit different purposes.	- create a program to move a sprite in four directions. - develop my program by adding features. - design and create a maze-based challenge.
4	**The Internet** (NW, SS, 5)	**Audio Production** (ET, CM, 8)	**Repetition in Shapes** (AL, PG)	**Data Logging** (CS, DI)	**Photo Editing** (ET, CM, 1, 8)	**Repetition in Games** (PG, DD)
	- describe how networks physically connect to other networks and make up the Internet. - outline how websites can be shared via the World Wide Web (WWW). - describe how content can be accessed on the World Wide Web (WWW) and recognise how it is created by people. - evaluate the consequences of unreliable content.	- identify and use digital devices that record sound. - explain that a digital recording is stored as a file. - explain that audio can be changed through editing and evaluate editing choices made.	- create an accurate program in a text-based language. - explain what 'repeat' means. - decompose a task into small steps. - modify and create a program that uses count-controlled loops to produce a given outcome.	- explain how selection and conditional statements are used in computer programs. - explain how selection directs flow. - design, create and evaluate a program which uses selection.	- explain that digital images can be changed. - change the composition of an image by selecting tools and evaluate how changes can improve an image. - recognise that not all images are real.	- explain that in programming there are infinite loops and count controlled loops. - develop a design that includes two or more infinite loops which run at the same time. - design and create a project that includes repetition.

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
5	**Systems and searching** (NW, ET, 8)	**Video production** (CM, DD)	**Selection in Physical Computing** (PG, CS)	**Flat-file Databases** (DI, ET)	**Vector Drawing** (ET, CM, 8)	**Selection in Quizzes** (AL, PG)
	- explain that computers can be connected together to form systems and recognise their role in our lives. - recognise how information is transferred over the internet and explain how this lets people in different places work together. - contribute to and evaluate a shared project online.	- explain what makes a video effective and consider the impact of the choices made when making and sharing a video. - identify and use digital devices that can record video. - create a storyboard.	- control a simple circuit connected to a computer. - write a program that includes count-controlled loops. - explain that a loop can be used to repeatedly check whether a condition has been met. - create a program that includes selection and controls a physical computing project.	- use a form to record information. - compare paper and computer-based databases. - outline how grouping and then sorting data allows us to answer real-world questions. - explain that computer programs can be used to compare data visually.	identify that drawing tools can be used to produce different outcomes. - create and evaluate a vector drawing combining shapes and layers.	- explain how selection and conditional statements are used in computer programs. - explain how selection directs flow. - design, create and evaluate a program which uses selection.
6	**Internet Communication** (NW, ET, 5)	**Web Page Creation** (CM, DD, 2,5, 8)	**Variables in Games** (PG, DD)	**Spreadsheets** (ET, DI, 5)	**3D Modelling** (ET, CM, 7)	**Sensing movement** (PG, CS)
	- identify how to use a search engine. - describe how search engines select and rank results. - recognise how we communicate using technology and evaluate different methods of online communication.	- review an existing website and consider its structure. - plan the features of a web page. - consider the ownership and use of images/links (copyright). - recognise the need for preview pages and navigation paths.	- explain why a variable is used in a program. - design, create and evaluate a project that builds on a given example.	- explain that objects can be described and questions can be answered using data. - apply formulas to data, including duplicating and present the data. - create a spreadsheet to plan an event.	- use a computer to create and manipulate three-dimensional (3D) digital objects. - compare working digitally with 2D and 3D graphics. - identify that physical objects can be broken down into a collection of 3D shapes.	- create and develop a program to run on a controllable device and update a variable with a user input. - use a conditional statement to compare a variable - a value.

Useful Links:

JIT5 (j2e.com) (Just2easy)

https://pivotanimator.net/

https://musiclab.chromeexperiments.com/

https://www.culturestreet.org.uk/activities/stopframeanimator/

Crazy Character Algorithms | Barefoot Computing

Bee-Bot Online (terrapinlogo.com)

https://www.scratchjr.org/

https://turtleacademy.com/playground

Dance - Final on Scratch (mit.edu)

How does the internet work? - BBC Bitesize
https://www.j2e.com/jit5#animate

https://www.j2e.com/jit5#pictogram

Further resources:

https://www.thinkuknow.co.uk/

The National Crime Agency's CEOP Education team aim to help protect children and young people from online child sexual abuse.

We do this through our education programme, providing training, resources and information to professionals working with children, young people and their families.

https://www.childnet.com/