

Implementation

The computing curriculum at St James has been tailored to focus and build upon the three core aspects of Computing; Digital Literacy, Computer Science, and Information Technology and follows the DofE funded Teach Computing. This approach ensures each pupil makes the necessary connections within their learning as they progress through the Computing Curriculum. We use this framework to create a scheme of work for each year group building upon the skills learned in previous years.

Our Computing Lessons are taught weekly. Children are introduced to a wide range of technology including Beebots, Probots, laptops, iPads, Chromebooks, BBC micro:bits and interactive whiteboards which allow them to continually improve and develop their ideas and skills. The sequence of learning develops pupils' understanding of how digital technology and other computational systems are designed, programmed and operated. As pupils progress through the school and build upon their computational thinking skills, they feel confident in drawing upon familiar and unfamiliar technology and software.

St. James



C. of E. PRIMARY SCHOOL

Curriculum intent

Through our computing curriculum at St James CofE Primary School, we aim to ensure our children have rich, deep learning experiences which promote the life-skills required to enable them to embrace and utilise a wide range of technology in a creative, responsible, safe and effective way in order for each pupil's potential to flourish.

With technology playing such a significant role in society today, we strive to prepare our children to be confident participants in the digital world and to equip them with all they will need to engage effectively in their digital future. We acknowledge that technological devices and software are an integral part of everyday life, where society is becoming increasingly reliant on technology to guide, innovate and develop practice in many sectors of work, education and daily life.

Our curriculum promote resilience, independence, critical thinking, communication skills and problem solving. We want children to become autonomous, independent users of computing technologies. We want the use of technology to support learning across the entire curriculum and to ensure that this is accessible to every child. Through the teaching of Computing, our pupils will not only gain an understanding of themselves as individuals within their community but also members of a wider global community and responsible digital citizens.

Skills progression

- Algorithms — Be able to comprehend, design, create, and evaluate algorithms
- Computer networks — Understand how networks can be used to retrieve and share information, and how they come with associated risks
- Computer systems — Understand what a computer is, and how its constituent parts function together as a whole
- Creating media — Select and create a range of media including text, images, sounds, and video
- Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
- Design and development — Understand the activities involved in planning, creating, and evaluating computing artefacts
- Effective use of tools — Use software tools to support computing work
- Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems
- Programming — Create software to allow computers to solve problems
- Safety and security — Understand risks when using technology, and how to protect individuals and systems

These are outlined in the progression of skills document which can be seen on the school website.

Early years	<u>Personal, Social and Emotional Development:</u> Show resilience and perseverance in the face of challenge. Know and talk about the different factors that support their overall health and wellbeing:- sensible amount of ‘screen time’. <i>Managing self-</i> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. (ELG) <u>Physical Development:</u> Develop their small motor skills so that they can use a range of tools competently, safely and confidently. <u>Expressive Art and Design:</u> Explore, use and refine a variety of artistic effects to express their ideas and feelings <i>Creating with materials-</i> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. (ELG)		
	Autumn Term	Spring Term	Summer Term
Year 1	Autumn 1: Digital Literacy & Information Technology Unit Title: Technology Around Us - Paintz.app (Computing Systems and Networks) National curriculum coverage: 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. Recognise common uses of information technology beyond school. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To be able to recognise technology in school and use it responsibly. Autumn 2 – Digital Literacy and Information Technology Unit Title: Digital Painting Paintz.app (Creating Media) National curriculum coverage:	Spring 1: Computer Science Unit Title : Moving A Robot -Floor Robot (Programming A) National curriculum coverage: Recognise common uses of information technology beyond school. Use logical reasoning to predict the behaviour of simple programs. Create and debug simple programs. Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. Unit Outcome: To be able to write short algorithms and programs for floor robots and predicting program outcomes. Spring 2- Digital Literacy and Information Technology Unit Title: Grouping Data (Data & Information) National curriculum coverage: Use technology safely and respectfully, keeping personal information private; identify where to go for help and	Summer 1: Digital Literacy & Information Technology Unit Title : Digital Writing - Google Docs (Creating Media) National curriculum coverage: 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. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To be able to use a computer to create and format text and to compare to writing non-digitally. Summer 2 – Computer Science Unit Title : Programming Animations ScratchJr (Programming B)

	Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To be able to choose appropriate tools in a program to create art and making comparisons with working non-digitally.	support when they have concerns about content or contact on the internet or other online technologies Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To explore object label and use them to sort and group objects by properties.	National curriculum coverage: Use logical reasoning to predict the behaviour of simple programs. Create and debug simple programs. Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. Unit Outcome To be able to design and program the movement of a character on screen to tell stories.
Year 2	Autumn 1- Digital Literacy and Information Technology Unit Title: IT Around Us (Creating Computer Systems and Networks) National curriculum coverage: 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 Recognise common uses of information technology beyond school. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To create an algorithm to fulfil a given purpose. Autumn 2 –Digital Literacy and Information Technology Unit Title: Digital Photography (Creating Media) National curriculum coverage: 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	Spring 1- Computer Science Unit Title : Robot Algorithms - Floor Robot (Programming A) National curriculum coverage: 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 Use logical reasoning to predict the behaviour of simple programs. Create and debug simple programs. Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. Unit Outcome: To be able to create and debug programs whilst using logical reasoning when making predictions. Spring 2- Digital Literacy and Information Technology Unit Title: Pictograms (Data and Information) National curriculum coverage: Use technology safely and respectfully, keeping personal information private; identify where to go for help and support	Summer 1 – Digital Literacy and Information Technology Unit Title : Digital Music (Creating Media) National curriculum coverage: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To use a computer as a tool to explore rhythms and melodies to create a musical composition. Summer 2- Computer Science – ScratchJr Unit Title :Programming Quizzes (Programming B) National curriculum coverage: Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Use logical reasoning to predict the behaviour of simple programs. Create and debug simple programs. Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions.

	Recognise common uses of information technology beyond school. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To be able to capture and change digital photographs for different purposes.	when they have concerns about content or contact on the internet or other online technologies Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Unit Outcome: To be able to collect data in tally charts and use attributes to organise and present data on a computer.	Unit Outcome: To be able to design algorithms and programs that use trigger sequences of code to make an interactive quiz.
Year 3	Autumn 1- Digital Literacy and Information Technology Unit Title: Computing Systems and Networks: Connecting Computers National curriculum coverage: Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. 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 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. Unit outcome: Identifying that digital devices have inputs, processes and outputs, and how devices can be connected to networks. Autumn 2- Digital Literacy and Information Technology Unit Title: Creating Media: Stop-Frame Animation National curriculum coverage: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 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.	Spring 1- Computer Science Unit Title : Programming A: Sequencing Sounds Scratch National curriculum coverage: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts 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 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. Unit Outcome: Creating sequences in a block-based programming language to make music. Spring 2- Digital Literacy and Information Technology Unit Title: Data and Information: Branching Databases - J2E National curriculum coverage: 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Summer 1- Digital Literacy and Information Technology Unit Title : Creating Media: Desktop Publishing Adobe Spark National curriculum coverage: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content 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. Unit Outcome: Creating documents by modifying text, images and page layouts for a specific purpose. Summer 2- Computer Science - Scratch Unit Title : Programming B: Events and Actions in Programs National curriculum coverage: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 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. 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

	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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Unit Outcome: Capturing and editing digital still images to produce a stop-frame animation that tells a story.	Unit Outcome: Building and using branching databases to group objects using yes/no questions.	accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Unit Outcome: Writing algorithms and programs that use a range of events to trigger sequences of actions.
Year 4	Autumn 1- Digital Literacy and Information Technology Unit Title: Computing Systems and Networks: The Internet National curriculum coverage: 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. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Unit outcome: Recognising the internet as a network of networks including the WWW and why we should evaluate online content. Autumn 2- Digital Literacy and Information Technology Unit Title: Creating Media: Audio Production Audacity	Spring 1- Computer Science Unit Title : Programming A: Repetition in Shapes Logo National curriculum coverage: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 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. 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. Unit Outcome: Using a text-based programming language to explore count controlled loops when drawing shapes. Spring 2- Digital Literacy and Information Technology Unit Title: Data and Information: Data Logging National curriculum coverage: Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	Summer 1- Digital Literacy and Information Technology Unit Title : Creating Media: Photo Editing Paint.net National curriculum coverage: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Unit Outcome: Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled. Summer 2- Computer Science Unit Title : Programming B: Repetition in Games Scratch

	National curriculum coverage: Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. 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. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Unit Outcome: Capturing and editing audio to produce a podcast, ensuring that copyright is considered	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. Unit Outcome: Recognising how and why data is collected over time, before using data loggers to carry out an investigation.	National curriculum coverage: Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 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. 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. Unit Outcome: Using a block-based programming language to explore count-controlled and infinite loops when creating a game.
Year 5	Autumn 1- Digital Literacy and Information Technology Unit Title: Computing Systems and Networks: Systems & Searching - Google Slides National curriculum coverage: 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. Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Unit Outcome: Recognising IT systems in the world and how some can enable searching on the internet.	Spring 1- Computer Science Unit Title : Programming A: Selection in Physical Computing - Crumble Controller and Software National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. 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. Unit Outcome: Exploring conditions and selection using a programmable microcontroller. Spring 2- Digital Literacy and Information Technology	Summer 1- Digital Literacy and Information Technology Unit Title : Creating Media: Introduction to Vector Graphics - Google Drawings National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Unit Outcome: Creating images in a drawing program by using layers and groups of objects. Summer 2- Computer Science Unit Title: Programming B: Selection in Quizzes. Scratch National curriculum coverage:

	Autumn 2- Digital Literacy and Information Technology Unit Title: Creating Media: Video Production National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Unit Outcome: Planning, capturing and editing video to produce a short film.	Unit Title: Data and Information: Flat-file Databases - J2E National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Unit Outcome: Using a database to order data and create charts to answer questions.	Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information 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. Unit Outcome: Exploring selecting in programming to design and code an interactive quiz.
Year 6	Autumn 1- Digital Literacy & Information Technology Unit Title Computing Systems and Networks: Communication and Collaboration National curriculum coverage: 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. Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Spring 1- Computer Science Unit Title: Programming A: Variables in Games. Scratch National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.	Summer 1- Digital Literacy & Information Technology Unit Title : Creating Media: 3D Modelling National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Unit Outcome: Planning, developing and evaluating 3D computer models of physical objects. Summer 2- Computer Science

	Unit outcome: Exploring how data is transferred by working collaboratively online. Autumn 2- Digital Literacy and Information Technology Unit Title: Creating Media: Web Page Creation Google Slides National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Unit Outcome: Designing and creating webpages, giving consideration to copyright, aesthetics and navigation.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. Unit Outcome: Exploring variables when designing and coding a game. Spring 2- Digital Literacy and Information Technology Unit Title: Data and Information: Introduction to Spreadsheets - Google Sheets National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Unit Outcome: Answering questions by using spreadsheets to organise and calculate data.	Unit Title : Programming B: Sensing Movement Micro:bit Controller and MakeCode National curriculum coverage: Select, use and combine a variety (including internet services) on a range of digital devices to try and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. 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. Unit Outcome: Designing and coding a project that captures inputs from a physical device.
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