

St Clare's Curriculum

Computing



Computing in the EYFS

Although the technology strand no longer appears in the EYFS Framework, we live in a digital world, so we therefore believe that pupils should learn about technology from an early age. Furthermore, technology is cross-curricular, offering a range of language (literacy), numbers, directions (numeracy), co-operative play (building relationships) and fine motor skills (physical development) which contribute towards the Early Learning Goals.

In EYFS, pupils will be taught to recognise that a range of technologies are used at home and in school and will recognise that the interactive whiteboard and teacher iPad, including the camera, are forms of technology.

They will be taught how to be safe online in an age appropriate manner, use a toy with a switch or control and then remote controlled toys. They will then be taught to control a BeeBot.

Finally, they will learn how to turn on a laptop, log on and use a simple program in preparation for their learning in Year 1.

National Curriculum Purpose of study

A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils 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.

National Curriculum Aims

The national curriculum for computing aims to ensure that all pupils:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation
- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

Key Stage One

Pupils should be taught to:	Year 1	Year 2
understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Programming Toys; Programming with Scratch	Preparing for Turtle Logo; Programming with Turtle Logo & Scratch
create and debug simple programs	Programming Toys; Programming with Scratch	Preparing for Turtle Logo; Programming with Turtle Logo & Scratch
use logical reasoning to predict the behaviour of simple programs	Programming with Scratch	Preparing for Turtle Logo; Programming with Turtle Logo & Scratch
use technology purposefully to create, organise, store, manipulate and retrieve digital content	Computer Skills; Painting; Word Processing; Using & Applying	Using the Internet; Computer Art; Presentation Skills; Preparing for Turtle Logo; Programming with Turtle Logo and Scratch
recognise common uses of information technology beyond school	Computer Skills; Painting	Computer Art; Presentation Skills
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	Computer Skills	Using the Internet; Computer Art

Key Stage Two				
Pupils should be taught to:	Year 3	Year 4	Year 5	Year 6
design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Programming with Turtle Logo & Scratch	Programming Turtle Logo; Scratch: Questions & Quizzes	Flowol; Scratch 3.0: Developing Games	Spreadsheets; Kodu Programming
use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Programming with Turtle Logo & Scratch	Programming Turtle Logo; Scratch: Questions & Quizzes	Flowol; Scratch 3.0: Developing Games	Film Making; Scratch: Animated Stories; Kodu Programming
use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Programming with Turtle Logo & Scratch	Programming Turtle Logo; Animation; Scratch: Questions & Quizzes	Flowol; Scratch 3.0: Developing Games	Kodu Programming
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	Internet Research & Communication	Scratch: Questions & Quizzes	Strategic Searching Online	Film Making; Scratch: Animated Stories
use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Internet Research & Communication; Using & Applying; See PD Curriculum	See PD Curriculum	Radio Station; Strategic Searching Online; See PD Curriculum	See PD Curriculum
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	Internet Research & Communication; Drawing & Desktop Publishing; Presentation Skills; Word Processing; Programming with Turtle Logo & Scratch; Using & Applying	Word Processing; Programming Turtle Logo; Animation; Scratch: Questions and Quizzes; Using and Applying	Flowol; Radio Station; Strategic Searching Online; 3d Modelling: SketchUp; Scratch 3.0: Developing Games; Using and Applying	Spreadsheets; Film Making; Scratch: Animated Stories; Kodu Programming; Using and Applying
use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	Internet Research & Communication; See PD Curriculum	See PD Curriculum	Strategic Searching Online; See PD Curriculum	See PD Curriculum

Long Term Plan – 2023/24

	Advent 1	Advent 2	Lent 1	Lent 2	Pentecost 1	Pentecost 2
EYFS	Ongoing through provision					
Year 1	Computer Skills	Painting	Word Processing	Programming Toys	Programming with Scratch	Using and Applying
Year 2	Using the Internet	Computer Art	Presentation Skills	Preparing for Turtle Logo	Programming with Turtle Logo and Scratch	Using and Applying
Year 3		Internet Research & Communication Drawing & Desktop Publishing		Presentation Skills	Word Processing Programming with Turtle Logo and Scratch	Using and Applying
Year 4	Word Processing	Programming Turtle Logo	Animation		Scratch: Questions and Quizzes	Using and Applying
Year 5	Flowol	Radio Station Strategic Searching Online	3D Modelling: Sketch up		Scratch 3.0: Developing Games	Using and Applying
Year 6	Spreadsheets	Film Making	Scratch: Animated Stories		Kodu Programming	Using and Applying

Strands of learning

These three strands run through the St Clare's computing curriculum:

Concept	Definition
Computer Science	Knowledge of computers and computation, including concepts such as data, system architecture, algorithms and programming
Information Technology	How computers are used in different sectors and describes the methods used to create digital artefacts such as presentations, spreadsheets and videos
Digital Literacy	The 'skills and knowledge required to be an effective, safe and discerning user of a range of computer systems'

Computer Science

Knowledge of computers and computation, including concepts such as data, system architecture, algorithms and programming

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Skills	Using the Internet	Internet Research and Communication	Word Processing	Flowol	Spreadsheets
Painting	Computer Art	Drawing and Desktop Publishing	Programming Turtle Logo	Radio Station	Film Making
Word Processing Skills	Presentation Skills	Presentation Skills	Animation	Strategic Searching Online	Scratch: Animated Stories
Programming Toys	Preparing for Turtle Logo	Word Processing		3D Modelling: SketchUp	
Programming with Scratch Jr	Programming with Turtle Logo and Scratch	Programming with Turtle Logo and Scratch	Scratch: Questions and Quizzes	Scratch: Developing Games	Kodu Programming
Using and Applying	Using and Applying	Using and Applying	Using and Applying	Using and Applying	Using and Applying

Information Technology

How computers are used in different sectors and describes the methods used to create digital artefacts such as presentations, spreadsheets and videos

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Skills	Using the Internet	Internet Research and Communication	Word Processing	Flowol	Spreadsheets
Painting	Computer Art	Drawing and Desktop Publishing	Programming Turtle Logo	Radio Station	Film Making
Word Processing Skills	Presentation Skills	Presentation Skills	Animation	Strategic Searching Online	Scratch: Animated Stories
Programming Toys	Preparing for Turtle Logo	Word Processing		3D Modelling: SketchUp	
Programming with Scratch Jr	Programming with Turtle Logo and Scratch	Programming with Turtle Logo and Scratch	Scratch: Questions and Quizzes	Scratch: Developing Games	Kodu Programming
Using and Applying	Using and Applying	Using and Applying	Using and Applying	Using and Applying	Using and Applying

Digital Literacy

The skills and knowledge required to be an effective, safe and discerning user of a range of computer systems

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Skills	Using the Internet	Internet Research and Communication	Word Processing	Flowol	Spreadsheets
Painting	Computer Art	Drawing and Desktop Publishing	Programming Turtle Logo	Radio Station	Film Making
Word Processing Skills	Presentation Skills	Presentation Skills	Animation	Strategic Searching Online	Scratch: Animated Stories
Programming Toys	Preparing for Turtle Logo	Word Processing		3D Modelling: SketchUp	
Programming with Scratch Jr	Programming with Turtle Logo and Scratch	Programming with Turtle Logo and Scratch	Scratch: Questions and Quizzes	Scratch: Developing Games	Kodu Programming
Using and Applying	Using and Applying	Using and Applying	Using and Applying	Using and Applying	Using and Applying

Declarative and Procedural Knowledge

Declarative knowledge, often referred to as conceptual knowledge in the literature, consists of facts, rules and principles and the relationships between them. It can be described as 'knowing that'.

In contrast, procedural knowledge is knowledge of methods or processes that can be performed. It can be described as 'knowing how'.

Declarative and procedural knowledge is embedded in every unit in the computing curriculum and can be identified in the learning objectives detailed below.

Equipment

Throughout the computing curriculum, the pupils use a variety of digital devices:

- Laptops
- iPads
- BeeBots
- Cameras
- Microphones
- Headsets

Computing across the Curriculum

In addition to the computing curriculum, pupils have the opportunity to use their skills to support their learning in other subjects at least once each half term. This can be seen in the class computing black books.

Coding skills are using in Design and Technology when pupils design and control their own products using a Crumble controller.

Presentation skills are used during performances and assemblies when a powerpoint is used as a backdrop and operated by a pupil.

E-safety is also taught as part of the Personal Development Curriculum and is promoted every year during E-safety Week when every pupil undergoes age appropriate activities in this area. Information is also shared with parents at this time.

Other uses include during the Mandarin programme where pupils use headsets with microphones on a laptop to access live online learning.

Year 1 – Computer Skills



St Clare's Unit Plan:

I can use a mouse or trackpad
I can switch on and shut down a laptop
I can launch an application and manipulate windows
I can save a file
I can drag objects
I can practise my computer skills

Learning enhancements:

Links to prior learning:

- EYFS – logging onto a laptop

Year 1 – Digital Painting



St Clare's Unit Plan:

I can paint with different colours
I can paint with different brushes
I can create shapes and fill areas
I can make changes to improve my work
I can add text to a painting
I can use a computer program to make a poster

Learning enhancements:

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Links to prior learning:

- EYFS – experimenting with colours
- Year 1 – using a trackpad

Year 1 – Word Processing Skills



St Clare's Unit Plan:

I can type using a keyboard
I can type symbols and save files
I can edit text
I can use the undo and redo features
I can select and format text
I can format a font

Learning enhancements:

Links to prior learning:

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Year 1 - Programming Toys



St Clare's Unit Plan:

I can create instructions using pictures
I can say why it is important to be precise when writing an algorithm
I can write instructions to program a person like a computer
I can program a Bee-Bot to move
I can debug a Bee-bot program
I can program a sequence to make a Bee-Bot move

Learning enhancements:

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Links to prior learning:

- EYFS – using a BeeBot

Year 1 – Programming with Scratch Junior



St Clare's Unit Plan:

I can describe and use instructions to program a character
I can program a character to grow and shrink
I can use instructions to make a character move at different speeds and over different distances
I can use a repeat instruction to make a sequence of instructions run more than once
I can create programs that play a recorded sound
I can create programs with a sequence of linked instructions

Learning enhancements:

Links to prior learning:

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Year 1 – Using and Applying



St Clare's Unit Plan:

I can demonstrate a range of basic skills to use a computer and its software
--

I can type and format text then save my work
--

I can open saved work and edit text

I can use shapes to create a particular image

I can use different brush tools to create a particular image
--

I can create text and pictures about a shared theme

Learning enhancements:

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Links to prior learning:

- Year 1 – all learning across the year

Year 2 – Using the internet



St Clare's Unit Plan:

I can search the internet using one word and stay safe online
I can search for information suitable for children safely online
I can follow links to another web page safely
I can use a camera to take safe photos to share online and create content for an online blog
I can create content for an online blog safely and respectfully
I can post positive comments and responses on a blog

Learning enhancements:

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Links to prior learning:

- EYFS – going online and taking photos

Year 2 – Computer Art



St Clare's Unit Plan:

I can create computer art
I can use a range of tools in a computer program to reproduce a style of art
I can make and edit shapes to create a piece of art
I can change the shade of a colour for effect
I can retrieve a file to edit in a computer program
I can use a range of skills to create a piece of art

Learning enhancements:

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Links to prior learning:

- Year 1 – Digital Painting

Year 2 – Presentation Skills



St Clare's Unit Plan:

I can use basic computer skills, including folders
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I can organise ideas for a presentation

I can create a simple presentation with text
--

I can add and format an image

I can reorder slides and present a presentation

I can search and print

Learning enhancements:

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Links to prior learning:

- Year 1 – Word Processing Skills

Year 2 – Preparing for Turtle Logo



St Clare's Unit Plan:

I can write and follow an algorithm to turn left or right
I can write and follow an algorithm to make half and quarter turns
I can write and follow an algorithm using the commands turn right 90 and left 90
I can write, follow and complete an algorithm
I can use recognised language in an algorithm
I can create, test and debug an algorithm

Learning enhancements:

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Links to prior learning:

- EYFS - BeeBots
- Year 1 – Programming Toys

Year 2 – Programming Turtle Logo and Scratch



St Clare's Unit Plan:

I can create an algorithm to move or rotate the turtle
I can create an algorithm and use the repeat command
I can create an algorithm and add sound
I can create an algorithm and use the repeat and say command
I can create an algorithm and use the green flag to start
I can create an algorithm and use commands to change the backdrop and add sprites

Learning enhancements:

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Links to prior learning:

- EYFS - BeeBots
- Year 1 – Programming Toys
- Year 2 – Preparing for Turtle Logo

Year 2 – Using and applying



St Clare's Unit Plan:

I can use a specific computer skill to reproduce a style of art
I can use a specific computer skill to create and compare styles of art
I can create a presentation including text and images
I can retrieve, edit and organise a presentation
I can create precise instructions for a character on a particular theme
I can create code for a pair of characters involving speech and movement

Learning enhancements:

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Links to prior learning:

- Year 2 – all learning across the year

Year 3 – Internet Research and Communication



St Clare's Unit Plan:

I can identify how word order affects search results
I can explain how searches return results
I can save and share webpages
I can identify the ways, and investigate how, we communicate online
I can explain how to stay safe when communicating online
I can explain why I need to be responsible online

Learning enhancements:

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Links to prior learning:

- Year 2 – Using the Internet

Year 3 – Drawing and Desktop Publishing



St Clare's Unit Plan:

I can draw with different shapes and lines
I can order and group objects
I can manipulate shapes and lines
I can recognise effective layout
I can combine text and images
I can lay out objects effectively

Learning enhancements:

-

Links to prior learning:

- Year 1 – Digital Painting
- Year 2 – Computer Art

Year 3 – Presentation Skills



St Clare's Unit Plan:

I can plan a branching story
I can create slide templates and organise slides with hyperlinks
I can add theme, transitions and animation to a presentation
I can use action settings
I can insert audio and video
I can evaluate slide layout and make improvements

Learning enhancements:

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Links to prior learning:

- Year 2 – Presentation Skills

Year 3 – Word Processing



St Clare's Unit Plan:

I can use basic computer skills
I can change the case of text
I can align text
I can use bullets and numbering
I can use the ctrl key
I can insert and format text boxes

Learning enhancements:

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Links to prior learning:

- Year 1 – Word Processing Skills

Year 3 – Programming Turtle Logo and Scratch



St Clare's Unit Plan:

I can create and debug an algorithm using the move, rotate and repeat commands using Turtle Logo
I can create and debug algorithms using penup and pendown using Turtle Logo
I can create and debug algorithms that draw regular polygons using Turtle Logo
I can create and debug algorithms that draw shapes using Scratch
I can create and debug algorithms that draw regular polygons using Scratch
I can create a debug algorithms to draw patterns using scratch

Learning enhancements:

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Links to prior learning:

- EYFS - BeeBots
- Year 1 – Programming Toys
- Year 2 – Preparing for Turtle Logo
- Year 2 – Programming with Turtle Logo and Scratch

Year 3 – Using and Applying



St Clare's Unit Plan:

I can research, design and write my project
I can add text and images to my presentation
I can use an effective layout
I can improve my presentation using all of the features I have learnt
I can rehearse my presentation
I can present and evaluate my presentation

Learning enhancements:

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Links to prior learning:

- Year 3 – all learning across the year

Year 4 – Word Processing



St Clare's Unit Plan:

I can format images for a purpose
I can use formatting tools to create an effective layout
I can use the spellcheck tool
I can insert and format a table in a word processing document
I can change a page layout for a purpose
I can create hyperlinks within a word document

Learning enhancements:

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Links to prior learning:

- Year 1 – Word Processing Skills
- Year 3 – Word Processing

Year 4 – Programming Turtle Logo



St Clare's Unit Plan:

I can create and debug an algorithm to create a procedure
I can create and debug an algorithm that uses setpos to draw shapes
I can create and debug an algorithm with different colours
I can create and debug an algorithm to fill areas with colour
I can create and debug an algorithm to produce text
I can create and debug an algorithm to draw arcs

Learning enhancements:

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Links to prior learning:

- EYFS - BeeBots
- Year 1 – Programming Toys
- Year 2 – Preparing for Turtle Logo
- Year 2 – Programming with Turtle Logo and Scratch
- Year 3 - Programming with Turtle Logo and Scratch

Year 4 – Animation



St Clare's Unit Plan:

I can describe early forms of animation before computers and how computers have made a difference

I can create a short computer animation using one or more moving stick figures
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I can create a recorded animation involving a number of moving characters on a background

I can structure specific timing of animations using a time slider

I can use a camera to create a short stop motion animation film

I can analyse and evaluate software

Learning enhancements:

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Links to prior learning:

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Year 4 – Online Safety



St Clare's Unit Plan:

I can identify how a message can hurt someone's feelings and what to do if I receive a hurtful message online

I can use a search engine accurately

I can understand the term plagiarism and know how to avoid it

I can create a safe online profile

I can explain how to be a responsible digital citizen

I can create an online safety superhero character

Learning enhancements:

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Links to prior learning:

- E-safety Week
- Year 2 – Using the Internet
- Year 3 – Internet Research and Communication

Year 4 – Coding with Scratch: Questions and Quizzes



St Clare's Unit Plan:

I can understand how to use and compare different types of quizzes
I can use duplication and sequencing to create a short quiz
I can make a quiz more visually appealing by adding backdrops and changing sprites
I can use special effects, sounds and scores to enhance a quiz
I can create a quiz using operators, variables and sensing blocks
I can create and review a multiplication quiz

Learning enhancements:

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Links to prior learning:

- Year 1 – Programming with Scratch Jr
- Year 2 – Programming with Turtle Logo and Scratch
- Year 3 – Programming with Turtle Logo and Scratch

Year 4 – Using and Applying



St Clare's Unit Plan:

I can design a cartoon character
I can choose appropriate software to present my character
I can develop ideas to share my character with others
I can create a story, description and merchandise to share my character
I can rehearse presenting my character to others
I can present and evaluate my project

Learning enhancements:

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Links to prior learning:

- Year 4 – all learning across the year

Year 5 – Controlling Devices: Flowol



St Clare's Unit Plan:

I can draw and interpret a flowchart with the correct symbols
I can create and edit a flowchart to control a simulated device
I can control multiple outlets at the same time
I can use a decision symbol based on the status of an input
I can create a flowchart program containing a subroutine
I can design, write and debug my own flowchart program for a given task

Learning enhancements:

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Links to prior learning:

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Year 5 – Radio Station



St Clare's Unit Plan:

I can use software to create my own sounds by recording, editing and playing
I can combine audio effects to create an original radio jingle
I can research and plan digital content for a podcast
I can use software to create and present digital content for a podcast
I can design and record a persuasive radio advert for a product or service
I can present and evaluate audio content

Learning enhancements:

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Links to prior learning:

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Year 5 – Strategic Searching Online



St Clare's Unit Plan:

I can find information on the internet using search engines
I can refine a search term and know how to use Boolean operators to refine a search
I can identify what makes a website reliable and trustworthy
I can explain how search engines work
I can explain what page ranking is
I can use SEO to improve a web page

Learning enhancements:

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Links to prior learning:

- Year 2 – Using the Internet
- Year 3 – Internet Research and Communication
- Year 4 – Online Safety

Year 5 – 3D Modelling: SketchUp



St Clare's Unit Plan:

I can draw 3D shapes
I can add detail to 3D drawings
I can use the eraser, tape measure and inference tools
I can add and manipulate 3D models
I can create a complex 3D model
I can create a 3D model of my own design

Learning enhancements:

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Links to prior learning:

- Maths – 3D shapes

Year 5 – Scratch: Developing Games



St Clare's Unit Plan:

I can design and program a character game
I can design an original character or backdrop for a game
I can add features or effects to enhance a game
I can create an original animated game with a specific goal
I can program costume changes for a sprite
I can add point-scoring and levels to game code

Learning enhancements:

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Links to prior learning:

- Year 1 – Programming with Scratch Jr
- Year 2 – Programming with Turtle Logo and Scratch
- Year 3 – Programming with Turtle Logo and Scratch
- Year 4 – Scratch: Questions and Quizzes

Year 5 – Using and Applying



St Clare's Unit Plan:

I can brainstorm ideas for the perfect bedroom
I can research ideas online for my own design
I can choose appropriate software to present my design
I can design the perfect bedroom using software
I can rehearse presenting my project
I can present and evaluate my project

Learning enhancements:

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Links to prior learning:

- Year 5 – all learning across the year

Year 6 – Spreadsheets



St Clare's Unit Plan:

I can enter data and formulae into a spreadsheet
I can order and present data based on calculations
I can add, edit and calculate data
I can use a spreadsheet to solve problems
I can plan and calculate a spending budget
I can design a spreadsheet for a specific purpose

Learning enhancements:

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Links to prior learning:

- Personal Development - Economics

Year 6 – Film-Making



St Clare's Unit Plan:

I can use appropriate software and other tools effectively to write a film script
I can locate and check appropriate digital content and provide accurate crediting of sources
I can use digital recording devices to film and import into video editing software
I can plan, conduct and import video interviews as part of a short film
I can use video editing software to create a short film
I can use video editing software to turn a film project into a finished movie and present it

Learning enhancements:

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Links to prior learning:

- English – play scripts

Year 6 – Coding with Scratch: Animated Stories



St Clare's Unit Plan:

I can create appropriate animations
I can structure and control the timing of events
I can control when sprites are visible
I can plan a sequence of events to create a story narrative
I can sequence events to create a story narrative
I can add voice sounds to enhance an animated story

Learning enhancements:

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Links to prior learning:

- Year 1 – Programming with Scratch Jr
- Year 2 – Programming with Turtle Logo and Scratch
- Year 3 – Programming with Turtle Logo and Scratch
- Year 4 – Scratch: Questions and Quizzes
- Year 5 – Scratch: Developing Games

Year 6 – Kodu Programming



St Clare's Unit Plan:

I can investigate and evaluate the features of programming software
I can program Kodu using when and do instructions
I can use tools and add features to create an original landscape in Kodu
I can analyse and deconstruct code to work out its purpose
I can program a character to be controlled around a custom track to reach a goal
I can program a character to follow an automatic path

Learning enhancements:

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Links to prior learning:

- Year 1 – Programming with Scratch Jr
- Year 2 – Programming with Turtle Logo and Scratch
- Year 3 – Programming with Turtle Logo and Scratch
- Year 4 – Scratch: Questions and Quizzes
- Year 5 – Scratch: Developing Games
- Year 6 – Scratch: Animated Stories

Year 6 – Using and applying



St Clare's Unit Plan:

I can brainstorm ideas for a new game launch
I can research which type of games are popular
I can plan ideas for an original game or develop one of my own from an earlier unit
I can research adverts for computer games
I can develop a project to launch a new game
I can present and evaluate my project

Learning enhancements:

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Links to prior learning:

- Year 6 – all learning across the year