



ST. MARY'S CE PRIMARY SCHOOL, PUTNEY

Vision: Delivering excellence, allowing all to flourish

Mission: Creating a culture of wonder, guided by faith

Values: Endurance, Compassion, Thankfulness

COMPUTING CURRICULUM OVERVIEW

SUBJECT LEADER: MARK LETT

OUR COMPUTING CURRICULUM

Vision: Delivering excellence, allowing all to flourish

Mission: Creating a culture of wonder, guided by faith

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The computing curriculum at St. Mary's aims to equip all children with the experience and skills of computing that they will use in a rapidly changing technological world. Learners in our environment will become confident and independent in their use of computing to solve problems across the curriculum. We provide opportunities that enable our children to use computing with purpose and enjoyment, to have an awareness of how computing is used in the world around them, to understand the capabilities, advantages, risks and limitations of computing and above all to provide our children with the tools for their safety and well-being when online.

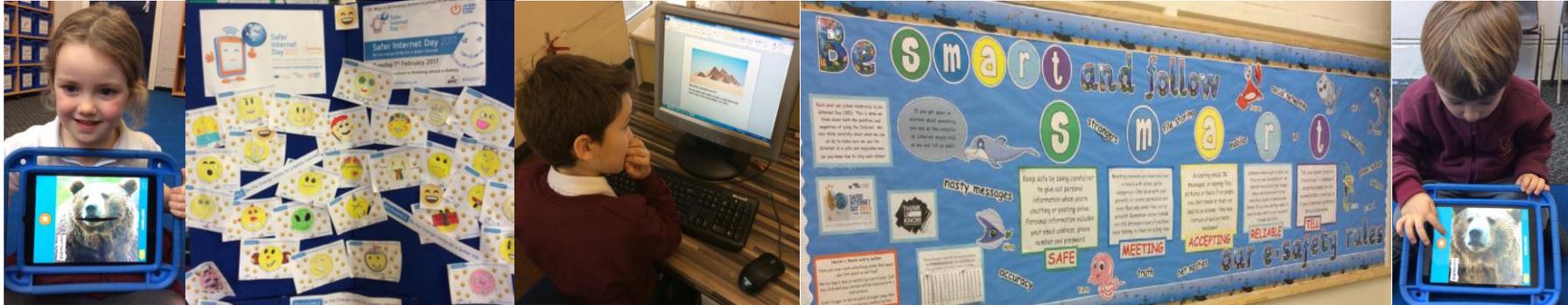
At St Mary's our children in the Early Years Foundation Stage will be exposed to the understanding of internet safety as they explore the world around them and how technology is an everyday part of their learning and understanding of the world. In the rest of the school the computing curriculum is taught in line with the computing programmes of study from the national curriculum.

In Key Stage 1 our children will learn to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. They will be taught to create and debug simple programs and use logical reasoning to predict the behaviour of simple programs. They will be shown how to use a range of technology purposefully to create, organise, store, manipulate and retrieve digital content as well as recognise common uses of information technology beyond school. They will be taught to 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.

At Key Stage 2 our children will design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. They will use sequence, selection, and repetition in programs, use logical reasoning to explain how some simple algorithms work and correct errors in algorithms and programs. Children will be taught to understand computer networks, including the internet, and the opportunities they offer for communication and collaboration. They will use search technologies effectively, learn to appreciate how results are selected and ranked, and be discerning in evaluating digital content. Children will be taught to select, use and combine a variety of software (including internet services) on a range of digital devices to create a range of programs, systems and content that accomplish given goals. They will use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

Children at St. Mary's have access to a computing suite and a class set of iPads to ensure that all year groups have the opportunity to use a range of devices and programs for many purposes across the wider curriculum, as well as in discrete computing lessons.

Our computing curriculum is planned to demonstrate progression and if children are keeping up with this they will become more digitally literate and equipped with the knowledge, skills and understanding to use technology effectively, confidently and safely. Our approach to teaching computing results in enjoyable and engaging learning experiences that provide children with the building blocks that enable them to pursue a wide range of interests and vocations in the next stage of their lives.



On using creative tools on an iPad: "I liked taking pictures of the bears; we took pictures and made the bear talk." Olivia, YR

On using the computing suite: "I like these lessons because it teaches you lots of things on the computer for when you grow up. I like doing the touch typing because it's fun." Will, Y1

On using HTML to code: "I really enjoy coding because I am learning how to create a web page, how to do paragraphs and add images." Xavier, Y4

Year 1

DEVELOPMENT OF KNOWLEDGE, SKILLS AND UNDERSTANDING IN COMPUTING - YEAR 1

NATIONAL CURRICULUM SUBJECT CONTENT FOR KEY STAGE ONE

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
<ul style="list-style-type: none">Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructionsCreate and debug simple programsUse logical reasoning to predict the behaviour of simple programs	<ul style="list-style-type: none">Use technology purposefully to create, organise, store, manipulate and retrieve digital content	<ul style="list-style-type: none">Recognise common uses of information technology beyond schoolUse 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

CURRICULUM COVERAGE & PROGRESSION OF LEARNING FOR YEAR 1

AUTUMN TERM

- WALT: agree to the SMART Online Safety rules and the school's Acceptable Use Policy (AUP)
- WALT: use the internet safely and discuss how to stay safe online
- WALT: understand the importance of asking for help from an adult when on the internet - Smartie the Penguin
- WALT: search the internet for suitable pictures
- WALT: keep our personal information private
- WALT: describe how to take ownership of work online
- WALT: take on the role of a robot, responding to instructions we are given
- WALT: take on the role of a robot-pirate, to work out a sequence of instructions (an algorithm)
- WALT: explore the Bee-Bot controls
- WALT: follow, create and test sequences of instructions to solve problems with the Bee-Bot
- WALT: predict what the Bee-Bot will do when given different sequences of instructions
- WALT: correct mistakes in Bee-Bot programs (debugging)
- WALT: work out the steps for making a jam sandwich (an algorithm)
- WALT: work out and record the steps of another recipe (an algorithm)
- WALT: record video on an iPad
- WALT: film one another making a snack
- WALT: add audio commentary to a video
- WALT: review each other's recordings and provide feedback

SPRING TERM

- WALT: understand that personal information should not be shared without a parent or teacher's permission - Hector's World

- *WALT: explore the theme of Safer Internet Day (SID)*
- *WALT: create colour blocks in the style of the artist Rothko*
- *WALT: create patterns and shapes in the style of the artist Kandinsky*
- *WALT: create a simple drawing in the style of the artist Picasso*
- *WALT: create and transform multiple layers in the style of the artist Matisse*
- *WALT: create a painting as a layer above a photo in the style of the artist Opie*
- *WALT: draw grid paintings in the style of the artist Mondrian*
- *WALT: plan a multimedia eBook, thinking carefully about the audience*
- *WALT: select and import images for our eBook*
- *WALT: record high-quality audio commentary to our eBook*
- *WALT: add written text to our eBook pages and format it*
- *WALT: add images from the internet to our eBook, thinking about copyright*
- *WALT: review and revise our work*

SUMMER TERM

- *WALT: record and playback audio in ScratchJr*
- *WALT: program sprites in ScratchJr to playback recorded audio*
- *WALT: create a simple program to playback recorded audio in a rhythmic pattern*
- *WALT: record audio in GarageBand and experiment with audio effects*
- *WALT: create a repeating percussion pattern in GarageBand*
- *WALT: experiment with playing some of GarageBand's built-in instruments*
- *WALT: explore a dataset as printed cards and understand the structure of data*
- *WALT: explore the dataset as virtual cards in Popplet*
- *WALT: organise data into a tree, using questions to create subgroups*
- *WALT: input data from the cards to an online form in order to create a table*
- *WALT: create filters on a spreadsheet to identify subsets of the data*
- *WALT: use the spreadsheet to solve clues about the pirates*

Year 2

DEVELOPMENT OF KNOWLEDGE, SKILLS AND UNDERSTANDING IN COMPUTING - YEAR 2

NATIONAL CURRICULUM SUBJECT CONTENT FOR KEY STAGE ONE

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
<ul style="list-style-type: none">Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructionsCreate and debug simple programsUse logical reasoning to predict the behaviour of simple programs	<ul style="list-style-type: none">Use technology purposefully to create, organise, store, manipulate and retrieve digital content	<ul style="list-style-type: none">Recognise common uses of information technology beyond schoolUse 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

CURRICULUM COVERAGE & PROGRESSION OF LEARNING FOR YEAR 2

AUTUMN TERM

- WALT: agree to the SMART Online Safety rules and the school's Acceptable Use Policy (AUP)
- WALT: understand the importance of asking for help from an adult when on the internet - Smartie the Penguin
- WALT: discuss how to stay safe on the internet and describe the rules for staying safe online
- WALT: use technology safely
- WALT: plan a sequence of movements between 'planets' (algorithms)
- WALT: use ScratchJr to program sprite movements
- WALT: understand output and use multiple sprites
- WALT: understand input and how sprites can pass messages to each other
- WALT: understand repetition in ScratchJr
- WALT: create new 'costumes' for our sprites
- WALT: work out the rules for a simple arithmetic game (algorithms)
- WALT: work out the rules for a simple chase game (algorithms)
- WALT: work out the rules for a two-player sports game (algorithms)
- WALT: work out the rules used in a shooting game (algorithms)
- WALT: practise some programming skills using a professionally produced coding-based game
- WALT: play a turn-based two-payer game, working together to identify winning strategies

SPRING TERM

- WALT: understand that personal information should not be shared without a parent or teacher's permission - Hector's World
- WALT: explore the theme of Safer Internet Day (SID)
- WALT: browse some online collections of photographs to help us understand what makes a good photo

- WALT: use a digital camera, and start to experiment with these
- WALT: practise taking effective photos
- WALT: review the photos we have taken, selecting our best for further work
- WALT: edit and enhance our photographs
- WALT: use selective editing tools
- WALT: think about the topic we are going to research and structure our research questions in a mind mapping tool, such as Popplet
- WALT: conduct independent research, using a custom search engine and taking care when using information from the internet
- WALT: search the web safely, using Google SafeSearch and other search engines to answer our research questions
- WALT: create a short multimedia presentation
- WALT: add appropriate images to our multimedia presentation
- WALT: deliver our presentation to an audience and review the key online safety messages from this learning

SUMMER TERM

- WALT: plan our animations using a storyboard
- WALT: create original media to use in our animations (characters, props and backgrounds)
- WALT: film our animations and troubleshoot any problems
- WALT: film our animations and use editing tools
- WALT: add audio to our animations
- WALT: watch one another's animations and provide feedback
- WALT: understand how a classification key and branching database can be used to classify invertebrates
- WALT: use tick and tally charts to record how many invertebrates we find and take photographs of some of the bugs we find
- WALT: edit and enhance the photos we have taken and add these to a shared document together with captions identifying the bug
- WALT: create a chart from the data we collected and make choices about the most appropriate chart to use to display our data
- WALT: record information on a digital map such as Google Maps
- WALT: summarise the information we have collected in a presentation, drawing on our photographs, charts and maps

Year 3

DEVELOPMENT OF KNOWLEDGE, SKILLS AND UNDERSTANDING IN COMPUTING - YEAR 3

NATIONAL CURRICULUM SUBJECT CONTENT FOR KEY STAGE TWO

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
<ul style="list-style-type: none">• 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• Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web• Appreciate how [search] results are selected and ranked	<ul style="list-style-type: none">• Use search technologies effectively• 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	<ul style="list-style-type: none">• Understand the opportunities [networks] offer for communication and collaboration• Be discerning in evaluating digital content• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

CURRICULUM COVERAGE & PROGRESSION OF LEARNING FOR YEAR 3

AUTUMN TERM

- *WALT: agree to the SMART Online Safety rules and the school's Acceptable Use Policy (AUP)*
- *WALT: think about our safety when going online - Lee and Kim's Adventure*
- *WALT: discuss what information should be kept private*
- *WALT: identify ways information can be found online about people*
- *WALT: create a positive online presence*
- *WALT: discuss different levels of privacy*
- *WALT: use Scratch and explore its tools*
- *WALT: determine key features of a good animation and create a storyboard of our own*
- *WALT: plan and program characters and dialogue for our animation*
- *WALT: animate characters by planning and programming movement*
- *WALT: plan and program adding costumes and backdrops to our animation*
- *WALT: add sound to our animations before reviewing, debugging and improving it*

- WALT: identify and correct off-by-one bugs
- WALT: identify and correct performance bugs
- WALT: identify and correct multithread bugs
- WALT: identify and correct conceptual bugs
- WALT: identify and correct arithmetical bugs
- WALT: identify and correct resource bugs

SPRING TERM

- *WALT: understand the SMART Online Safety rules in detail - The Adventures of Kara, Winston and The SMART Crew*
- *WALT: explore the theme of Safer Internet Day (SID)*
- WALT: research a topic for a presentation
- WALT: find background images to illustrate the presentation
- WALT: rehearse the spoken part of our presentations
- WALT: record our presentations against a green screen background
- WALT: edit the recorded footage and backgrounds of our presentations
- WALT: review and peer assess our presentations
- WALT: create slides to write about our earliest memories
- WALT: make a presentation about our interests and hobbies
- WALT: create slides about an issue we feel strongly about
- WALT: create a short presentation and record it on camera
- WALT: create a narration for a presentation
- WALT: consider carefully who to share created content safely with

SUMMER TERM

- WALT: plan the content for a class wiki
- WALT: use Wikipedia to find information
- WALT: create our own class wiki pages
- WALT: edit our class wiki pages
- WALT: edit content on Wikipedia
- WALT: review our class wiki work
- WALT: plan a survey about a topic
- WALT: develop questions for the survey
- WALT: create an online survey (Microsoft Forms)
- WALT: collect the data from the online survey
- WALT: analyse and evaluate data collected from the online survey
- WALT: present the data collected from the survey to others

Year 4

DEVELOPMENT OF KNOWLEDGE, SKILLS AND UNDERSTANDING IN COMPUTING - YEAR 4

NATIONAL CURRICULUM SUBJECT CONTENT FOR KEY STAGE TWO

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
<ul style="list-style-type: none">• 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• Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web• Appreciate how [search] results are selected and ranked	<ul style="list-style-type: none">• Use search technologies effectively• 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	<ul style="list-style-type: none">• Understand the opportunities [networks] offer for communication and collaboration• Be discerning in evaluating digital content• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

CURRICULUM COVERAGE & PROGRESSION OF LEARNING FOR YEAR 4

AUTUMN TERM

- WALT: agree to the SMART Online Safety rules and the school's Acceptable Use Policy (AUP)
- WALT: think about our safety when going online - Play Like Share
- WALT: recognise ways people steal personal information
- WALT: recognise when someone is trying to steal personal info
- WALT: analyse existing educational games and identify what makes them effective
- WALT: create a working prototype of our game (ask questions and provide feedback)
- WALT: develop the functionality of our game (to include repetition)
- WALT: improve the interface of our educational game
- WALT: develop progression within our game (additional levels or increased difficulty)
- WALT: test and improve our game, correcting any errors
- WALT: explore the MakeCode environment and learn about the BBC micro:bit
- WALT: work out how a match-scoring program has been written

- WALT: modify a rock-paper-scissors game to make a sorting hat game
- WALT: modify a sorting hat game to make a dice game
- WALT: plan our own micro:bit project
- WALT: code and test our own micro:bit project

SPRING TERM

- WALT: understand the SMART Online Safety rules in detail - *The Adventures of Kara, Winston and The SMART Crew*
- WALT: explore the theme of Safer Internet Day (SID)
- WALT: create a percussion loop sequence
- WALT: explore the touch instruments
- WALT: create music using the piano roll view
- WALT: create music experimenting with live loops
- WALT: create our own multi-track composition
- WALT: refine our compositions, perform and get feedback from peers
- WALT: explore class blogs and identify features of a good blog
- WALT: write and edit our own blog posts
- WALT: comment on blog posts
- WALT: add images to blog posts
- WALT: add media (audio and video) into blogs
- WALT: create a live blog of an event

SUMMER TERM

- WALT: create simple tessellations using Inkscape
- WALT: create more complex tessellations using Inkscape
- WALT: program Islamic-style art using Scratch
- WALT: create a repeating pattern using Scratch
- WALT: create art, inspired by the later work of Bridget Riley
- WALT: create art, inspired by the earlier work of Bridget Riley
- WALT: discuss ways to describe and measure the weather; explore equipment
- WALT: record weather over a period of time using a range of methods
- WALT: analyse the weather data collected
- WALT: analyse the photographs taken and link them to data
- WALT: predict the weather and plan a weather forecast
- WALT: deliver a TV-style weather forecast and reflect on learning

Year 5

DEVELOPMENT OF KNOWLEDGE, SKILLS AND UNDERSTANDING IN COMPUTING - YEAR 5

NATIONAL CURRICULUM SUBJECT CONTENT FOR KEY STAGE TWO

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
<ul style="list-style-type: none">• 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• Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web• Appreciate how [search] results are selected and ranked	<ul style="list-style-type: none">• Use search technologies effectively• 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	<ul style="list-style-type: none">• Understand the opportunities [networks] offer for communication and collaboration• Be discerning in evaluating digital content• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

CURRICULUM COVERAGE & PROGRESSION OF LEARNING FOR YEAR 5

AUTUMN TERM

- WALT: agree to the SMART Online Safety rules and the school's Acceptable Use Policy (AUP)
- WALT: think about our safety when using social media - Jigsaw: Becky's Story
- WALT: customise privacy settings
- WALT: analyse games and plan our own game
- WALT: create and source assets (backgrounds, sprites, music)
- WALT: create a prototype of a Scratch game
- WALT: debug programs (the game script)
- WALT: test and improve our games
- WALT: write game instructions and publish our games
- WALT: understand semaphore and communicate information using it
- WALT: understand Morse code and communicate information using it
- WALT: use ciphers to create and crack codes

- WALT: use frequency analysis, common words and substitution ciphers to crack codes
- WALT: understand the importance of password security
- WALT: check security certificates for encrypted websites

SPRING TERM

- WALT: understand some of the issues in an online world, including cyber-bullying - My Selfie
- WALT: explore the theme of Safer Internet Day (SID)
- WALT: explore online art galleries, before sketching ideas of our own
- WALT: build our virtual gallery and explore tools in SketchUp
- WALT: build our virtual gallery, creating the main room, walls and stairs
- WALT: create furniture and fixtures to add to our virtual gallery
- WALT: hang artwork in our virtual gallery
- WALT: create a virtual tour of our gallery
- WALT: understand the school network and how it connects to the internet
- WALT: understand how messages are passed on the internet
- WALT: understand how web pages are written in HTML
- WALT: plan an online safety website
- WALT: write pages for our online safety website
- WALT: add media and links to our online safety website

SUMMER TERM

- WALT: plan an interactive adventure game
- WALT: write descriptions for their game
- WALT: source images for their game
- WALT: create hyperlinks between the slides of the game
- WALT: record and add audio narration to our game
- WALT: test one another's games and give feedback
- WALT: explore familiar and unfamiliar locations in virtual reality (VR)
- WALT: create a 360° photo and import it to Google Maps
- WALT: record book reviews and link them to books using QR codes
- WALT: understand how to use CoSpaces
- WALT: create a scene in CoSpaces
- WALT: write a program to control a VR or AR object in CoSpaces

Year 6

DEVELOPMENT OF KNOWLEDGE, SKILLS AND UNDERSTANDING IN COMPUTING - YEAR 6

NATIONAL CURRICULUM SUBJECT CONTENT FOR KEY STAGE TWO

COMPUTER SCIENCE	INFORMATION TECHNOLOGY	DIGITAL LITERACY
<ul style="list-style-type: none">• 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• Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web• Appreciate how [search] results are selected and ranked	<ul style="list-style-type: none">• Use search technologies effectively• 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	<ul style="list-style-type: none">• Understand the opportunities [networks] offer for communication and collaboration• Be discerning in evaluating digital content• Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact

CURRICULUM COVERAGE & PROGRESSION OF LEARNING FOR YEAR 6

AUTUMN TERM

- WALT: agree to the SMART Online Safety rules and the school's Acceptable Use Policy (AUP)
- WALT: think about some of the issues concerning cyber-bullying - Let's Fight It Together: Joe's Story
- WALT: discuss different ways to respond to bullying online
- WALT: recap the use of BBC micro:bit and MakeCode
- WALT: research electronic toys, thinking about input and output
- WALT: design an interactive toy
- WALT: program the micro:bit to act as a controller for our toy
- WALT: prepare our toys for adding interactive components
- WALT: connect the micro:bit inputs and outputs to our toy
- WALT: understand algorithms by finding the shortest route between towns
- WALT: understand algorithms by finding the smallest number of coins needed to make change
- WALT: understand random and linear search algorithms

- WALT: understand binary search algorithms
- WALT: understand selection sort algorithms
- WALT: understand quicksort algorithms

SPRING TERM

- WALT: explore our online world: being alert, secure, kind and brave - Be Internet Legends
- WALT: explore the theme of Safer Internet Day (SID)
- WALT: plan our class yearbook or magazine
- WALT: plan a section of our yearbook/magazine and gather content
- WALT: use software to create a section of our yearbook/magazine
- WALT: assemble the pages of our yearbook/magazine
- WALT: assess and proofread our yearbook/magazine
- WALT: review, edit and print our yearbook/magazine
- WALT: think about online safety and establish guidelines to follow when debating a controversial topic
- WALT: research a chosen controversial topic, thinking carefully about how to decide whether information is reliable or not
- WALT: argue our own perspective on the topic, backing up our views with relevant sources
- WALT: show respect and tolerance as we respond to others' views
- WALT: think about how reliable sources of information are
- WALT: discuss online bullying and how we should respond to it

SUMMER TERM

- WALT: review existing adverts or promotional films and identify why they are effective
- WALT: create a storyboard for an advert or promotional film
- WALT: shoot original footage for an advert or promotional film
- WALT: source other media to use and consider copyright
- WALT: create a rough cut of an advert or promotional film
- WALT: make improvements to create a final cut.
- WALT: construct, train and refine decision tree classifiers
- WALT: experiment with speech recognition systems
- WALT: understand how a neural net operates
- WALT: train a neural net to recognise images
- WALT: explore sentiment analysis
- WALT: program a self-driving car and consider the ethics of AI