Computing at St Mary's

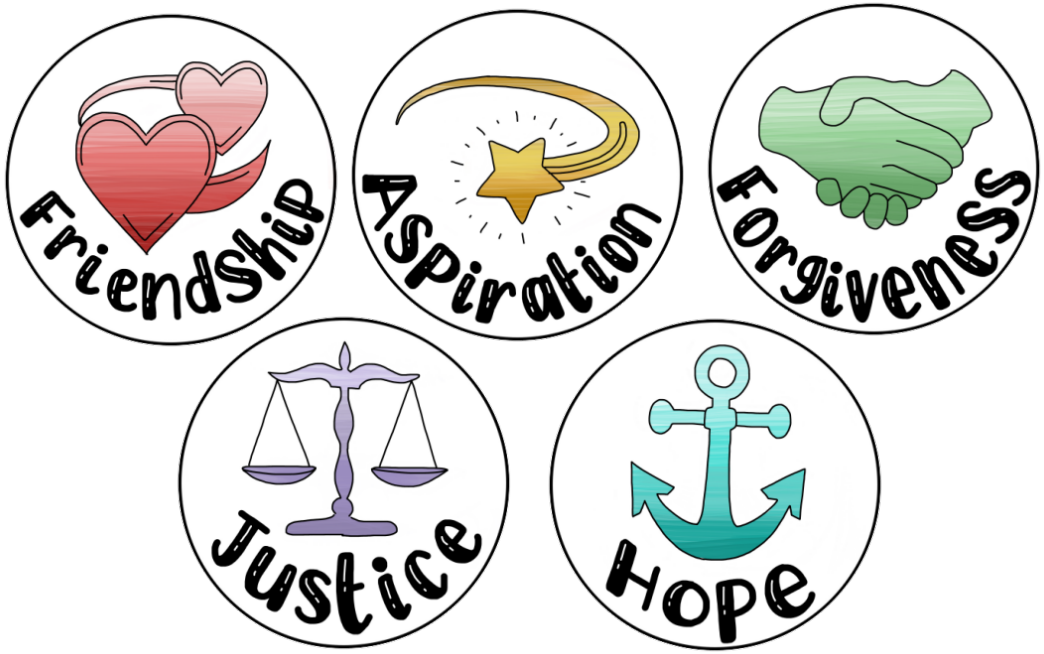
Subject Lead - Abi Welch

St Mary's Values

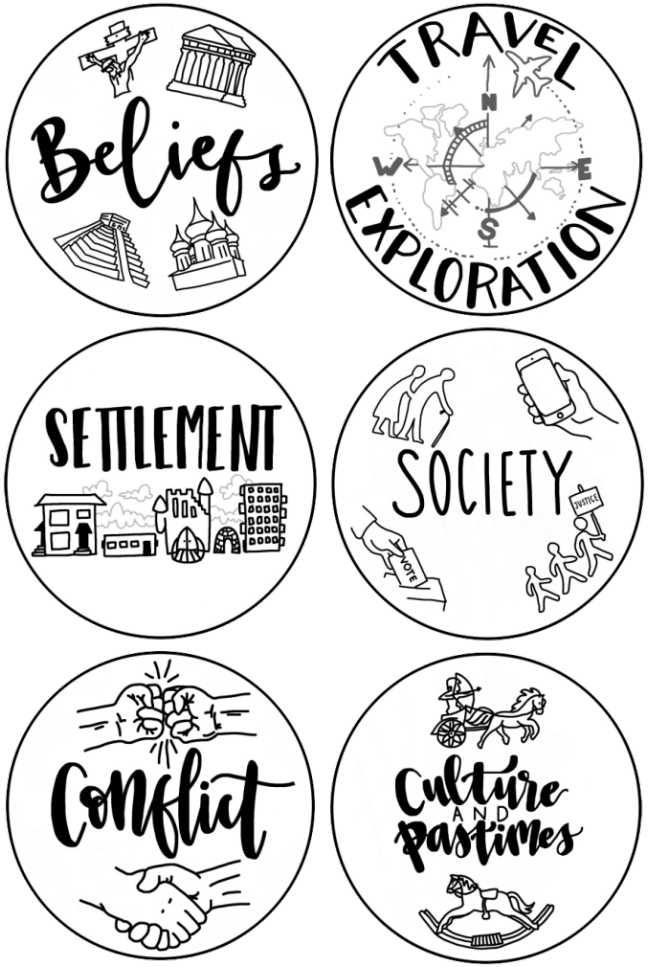
"Do everything in love" 1 Corinthians 16:14

Love yourself, Love others, Love the world.

School Values



Golden Threads



Subject Lead: *Abi Welch*

Curriculum Intent

St Mary's Curriculum Intent

We want our pupils to have transferable, integrated skills and knowledge equipping them for the next step in their learning journey. Our high-quality, personalised provision will be relevant, ambitious and rich in cultural capital enabling all learners to make good or better progress through their time at St. Mary's.

Computing Intent

Computing at St Mary's CEVA Primary School intends to develop 'thinkers of the future' through a modern, ambitious and relevant education in computing. We want to equip pupils to use problem solving in their thinking and creativity that will enable them to become active participants in the digital world. It is important to us that the children understand how to use the ever-changing technology to express themselves, as tools for learning and as a means to, drive their generation forward into the future.

Whilst ensuring they understand the advantages and disadvantages associated with online experiences, we want children to develop as respectful, responsible and confident users of technology, aware of measures that can be taken to keep themselves and others safe online.

Essential characteristics of computer scientists

Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.
The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.
An understanding of the connected nature of devices.
The ability to communicate ideas well by using applications and devices throughout the curriculum.
The ability to collect, organise and manipulate data effectively.

Subject Lead: *Abi Welch*

National Curriculum – Key Stage One

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.

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.

Pupils should be taught to:

- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- Create and debug simple programs
- Use logical reasoning to predict the behaviour of simple programs
- Use technology purposefully to create, organise, store, manipulate and retrieve digital content
- Recognise common uses of information technology beyond school
- 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.

Subject Lead: *Abi Welch*

National Curriculum – Key Stage Two

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.

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.

Pupils should be taught to:

- 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; 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.

Subject Lead: *Abi Welch*

Computing at St Mary's

Intent

Computing at St Mary's CEVA Primary School intends to develop 'thinkers of the future' through a modern, ambitious and relevant education in computing. We want to equip pupils to use problem solving in their thinking and creativity that will enable them to become active participants in the digital world. It is important to us that the children understand how to use the ever-changing technology to express themselves, as tools for learning and as a means to, drive their generation forward into the future.

Whilst ensuring they understand the advantages and disadvantages associated with online experiences, we want children to develop as respectful, responsible and confident users of technology, aware of measures that can be taken to keep themselves and others safe online.

Essential characteristics of computer scientists

A competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.

The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.

An understanding of the connected nature of devices.

The ability to communicate ideas well by using IT applications and devices throughout the curriculum.

The ability to collect, organise and manipulate data effectively.

At the end of Foundation at St Mary's

Children will show resilience and perseverance in the face of a challenge.

Children will develop their fine motor skills so that they can use a range of tools competently, safely and confidently.

Children will know and talk about the different factors that support their overall health and wellbeing: sensible amounts of 'screen time', being safe online

Children will explore how things work and use problem solving to explore their findings

At the end of Key Stage 1 at St Mary's

Children will understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following a sequence of instructions.

Children write and test simple programs.

Children use logical reasoning to predict the behaviour of simple programs.

At the end of Key Stage 2 at St Mary's

Children will design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.

Children will use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs.

Children will use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs.

Children will 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.

Children will describe how internet search engines find and store data; use search engines effectively; be discerning in evaluating digital content; respect individuals and intellectual property; use technology responsibly, securely and safely.

Children organise, store, manipulate and retrieve data in a range of digital formats. Children communicate safely and respectfully online, keeping personal information private and recognise common uses of information technology beyond school.	Children will select, use and combine a variety of software (including internet services) on a range of digital devices to accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

Implementation

- Teaching utilised from 'Teach Computing' Curriculums with some areas woven into our curriculum topics.
- Internet safety is taught through discreet computing lessons as well as PSHE through 'Project Evolve – Education for a Connected World' and the NOS framework.
- Several computing clubs are available for students to learn specialist programs.
- Homework is available online through Bedrock and used to support their typing skills outside of school hours.
- Computing is used across the curriculum to support wider learning.
- Basic computing skills are taught from KS1 to ensure children can use the computers safely and responsibly.
- Computing rules are reviewed with the children to ensure everyone is safe and responsible using computers.
- Children understand and sign the acceptable use policy.

Assessment

Children will be assessed through the 'Teach Computing' scheme or by completing independent tasks based on the learning skills and learning from the unit. For example, if the unit is learning Microsoft word Y3, the assessment would be to independently write sentences, changing the font and size of the writing and saving it into the assessment area.
The children will save the work in their Year Group folder in the W:SharedDrive or on SharePoint for the Chromebook users.

Cultural Capital

Children are exposed to news online, programs and products specifically related to IT and careers within this discipline
In EYFS, staff have access to programs to share information and their learning with their parents at home through tapestry.

Career Professional Development

Useful resources are shared with staff during CPD sessions.
Computing lead delivers CPD sessions on using technology safely and the curriculum.
We develop strong subject knowledge amongst all staff which is achieved through; a comprehensive progression of skills document.

Spirituality

We believe that computing is not just about technology; it's an opportunity to explore profound questions and understand the modern technological world. Through our computing curriculum, we encourage students to ask big questions such as "How can technology make a positive impact on the world?" or "What responsibilities come with using digital tools?" We aim to empower our students with not only technical skills but also a thoughtful and ethical approach to the use of technology.

Impact

- Children develop a secure knowledge on how to be safe on the internet and an understanding of how to safely connect with others.
- Children understand the basic computer programs needed for life (Word, Excel, PowerPoint) and develop an understanding of databases and their uses applying them in a range of situations
- Children understand how to use code to move and manipulate objects either physically or through programs.
- Children develop an understanding of instructions, logic and sequences.

Computing Overview – Years 1-6

friendship
aspiration
forgiveness
justice
hope

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Computing Systems and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year 1	**Technology around us** Recognising technology in school and using it responsibly	**Digital painting** Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.	**Moving a robot** Writing short algorithms and programs for floor robots, and predicting program outcomes.	**Grouping data** Exploring object labels, then using them to sort and group objects by properties.	**Digital writing** Using a computer to create and format text, before comparing to writing non-digitally.	**Programming animations** Designing and programming the movement of a character on screen to tell stories.
Year 2	**Information technology around us** Identifying IT and how its responsible use improves our world in school and beyond.	**Digital photography** Capturing and changing digital photographs for different purposes.	**Robot algorithms** Creating and debugging programs, and using logical reasoning to make predictions.	**Pictograms Collecting** data in tally charts and using attributes to organise and present data on a computer.	**Digital music** Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.	**Programming quizzes** Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz
Year 3	**Connecting computers** Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	**Stop-frame animation** Capturing and editing digital still images to produce a stop-frame animation that tells a story.	**Sequencing sounds** Creating sequences in a block-based programming language to make music.	**Branching databases** Building and using branching databases to group objects using yes/no questions.	**Desktop publishing** Creating documents by modifying text, images, and page layouts for a specified purpose.	**Events and actions in programs** Writing algorithms and programs that use a range of events to trigger sequences of actions.

Year 4	**The internet** Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.	**Audio production** Capturing and editing audio to produce a podcast, ensuring that copyright is considered.	**Repetition in shapes** Using a text-based programming language to explore count-controlled loops when drawing shapes.	**Data logging** Recognising how and why data is collected over time, before using data loggers to carry out an investigation.	**Photo editing** Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.	**Repetition in games** Using a block-based programming language to explore count-controlled and infinite loops when creating a game.
Year 5	**Systems and searching** Recognising IT systems in the world and how some can enable searching on the internet.	**Video production** Planning, capturing, and editing video to produce a short film.	**Selection in physical computing** Exploring conditions and selection using a programmable microcontroller.	**Flat-file databases** Using a database to order data and create charts to answer questions.	**Introduction to vector graphics** Creating images in a drawing program by using layers and groups of objects.	**Selection in quizzes** Exploring selection in programming to design and code an interactive quiz.
Year 6	**Communication and collaboration** Exploring how data is transferred by working collaboratively online.	**Webpage creation** Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation.	**Variables in games** Exploring variables when designing and coding a game.	**Introduction to spreadsheets** Answering questions by using spreadsheets to organise and calculate data.	**3D modelling** Planning, developing, and evaluating 3D computer models of physical objects.	**Sensing movement** Designing and coding a project that captures inputs from a physical device.

Computing Progression of Skills – Years 1-6

friendship
aspiration
forgiveness
justice
hope

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Systems and Networks		**Technology around us** **Unit 1** – I can identify technology – I can identify a computer and its main parts – I can use a mouse in different ways – I can use a keyboard to type – I can use the keyboard to edit text – I can create rules for using technology responsibly	**Information technology around us** **Unit 1** – I can recognise the uses and features of information technology – I can identify information technology in the home – I can identify information technology beyond school – I can explain how information technology benefits us – I can show how to use information technology safely – I can recognise that choices are made when using information technology	**Connecting computers** **Unit 1** – I can explain how digital devices function – I can identify input and output devices – I can recognise how digital devices can change the way we work – I can explain how a computer network can be used to share information – I can explore how digital devices can be connected – I can recognise the physical components of a network	**The internet** **Unit 1** – I can describe how networks physically connect to other networks – I can recognise how networked devices make up the internet – I can outline how websites can be shared via the World Wide Web – I can describe how content can be added and accessed on the World Wide Web – I can recognise how the content of the WWW is created by people – I can evaluate the consequences of unreliable content	**Sharing information** **Unit 1** – I can explain that computers can be connected to form systems – I can recognise the role of computer systems in our lives – I can recognise how information is transferred over the internet – I can explain how sharing information online lets people in different places work together – I can contribute to a shared project online – I can evaluate different ways of working together online	**Communication** **Unit 1** – I can identify how to use a search engine – I can describe how search engines select results – I can describe how search engines select results – I can explain how search results are ranked – I can recognise why the order of results is important, and to whom – I can recognise how we communicate using technology – I can evaluate different methods of online communication
Creating Media		**Digital painting** **Unit 2** – I can describe what different freehand tools do – I can use the shape tool and the line tools	**Digital photography** **Unit 2** – I can know what devices can be used to take photographs – I can use a digital device to take a photograph	**Stop-frame animation** **Unit 2** – I can explain that animation is a sequence of drawings or photographs – I can relate animated movement with a sequence of images	**Audio editing** **Unit 2** – I can identify that sound can be digitally recorded – I can use a digital device to record sound – I can explain that a digital recording is stored as a file	**Video editing** **Unit 2** – I can recognise video as moving pictures, which can include audio – I can identify digital devices that can record video	**Web page creation** **Unit 2** – I can review an existing website and consider its structure – I can plan the features of a web page

		– I can make careful choices when painting a digital picture – I can explain why I chose the tools I used – I can use a computer on my own to paint a picture – I can compare painting a picture on a computer and on paper **Digital writing** **Unit 5** – I can use a computer to write – I can add and remove text on a computer – I can identify that the look of text can be changed on a computer – I can make careful choices when changing text – I can explain why I used the tools that I chose – I can compare writing on a computer with writing on paper	– I can describe what makes a good photograph – I can decide how photographs can be improved – I can use tools to change an image – I can recognise that images can be changed **Making music** **Unit 5** – I can say how music can make us feel – I can identify that there are patterns in music – I can describe how music can be used in different ways – I can show how music is made from a series of notes – I can create music for a purpose – I can review and refine our computer work	– I can plan an animation – I can identify the need to work consistently and carefully – I can review and improve an animation – I can evaluate the impact of adding other media to an animation **Desktop publishing** **Unit 5** – I can recognise how text and images convey information – I can recognise that text and layout can be edited – I can choose appropriate page settings – I can add content to a desktop publishing publication – I can consider how different layouts can suit different purposes – I can consider the benefits of desktop publishing	– I can explain that audio can be changed through editing – I can show that different types of audio can be combined and played together – I can evaluate editing choices made **Photo editing** **Unit 5** – I can explain that digital images can be changed – I can change the composition of an image – I can describe how images can be changed for different uses – I can make good choices when selecting different tools – I can recognise that not all images are real – I can evaluate how changes can improve an image	– I can capture video using a digital device – I can recognise the features of an effective video – I can identify that video can be – improved through reshooting and editing – I can consider the impact of the choices made when making and sharing a video **Vector drawing** **Unit 5** – I can identify that drawing tools can be used to produce different outcomes – I can create a vector drawing by combining shapes – I can use tools to – achieve a desired effect – I can recognise that vector drawings consist of layers – I can group objects to make them easier to work with – I can evaluate my vector drawing	– I can consider the ownership and use of images (copyright) – I can recognise the need to preview pages – I can outline the need for a navigation path – I can recognise the implications of linking to content owned by other people **3D modelling** **Unit 5** – I can use a computer to create and manipulate three-dimensional (3D) digital objects – I can compare working digitally with 2D and 3D graphics – I can construct a digital 3D model of a physical object – I can identify that physical objects can be broken down into a collection of 3D shapes – I can design a digital – model by combining 3D objects – I can develop and improve a digital 3D model
Data and		**Grouping data** **Unit 4** – I can label objects	**Pictograms** **Unit 4**	**Branching databases** **Unit 4** – I can create questions with yes/no answers	**Data logging** **Unit 4** – I can explain that data gathered over time can	**Flat-file databases** **Unit 4** – I can use a form to record information	**Spreadsheets** **Unit 4**

		– I can identify that objects can be counted – I can describe objects in different ways – I can count objects with the same properties – I can compare groups of objects – I can answer questions about groups of objects	– I can recognise that we can count and compare objects using tally charts – I can recognise that objects can be represented as pictures – I can create a pictogram – I can select objects by attribute and make comparisons – I can recognise that people can be described by attributes – I can explain that we can present information using a computer	– I can identify the object attributes needed to collect relevant data – I can create a branching database – I can identify objects using a branching database – I can explain why it is helpful for a database to be well structured – I can compare the information shown in a pictogram with a branching database	be used to answer questions – I can use a digital device to collect data automatically – I can explain that a data logger collects 'data points' from sensors over time – I can use data collected over a long duration to find information – I can identify the data needed to answer questions – I can use collected data to answer questions	– I can compare paper and computer- based databases – I can outline how grouping and then sorting data allows us to answer questions – I can explain that tools can be used to select specific data – I can explain that computer programs can be used to compare data visually – I can apply my knowledge of a database to ask and answer real-world questions	– I can identify questions which can be answered using data – I can explain that objects can be described using data – I can explain that formula can be used to produce calculated data – I can apply formulas to data, including duplicating – I can create a spreadsheet to plan an event – I can choose suitable ways to present data
Programming		**Moving a robot** **Unit 3** – I can explain what a given command will do – I can act out a given word – I can combine forwards and backwards commands to make a sequence – I can combine four direction commands to make sequences – I can plan a simple program – I can find more than one solution to a problem	**Robot algorithms** **Unit 3** – I can describe a series of instructions as a sequence – I can explain what happens when we change the order of instructions – I can use logical reasoning to predict the outcome of a program (series of commands) – I can explain that programming projects can have code and artwork – I can design an algorithm – I can create and debug a program that I have written	**Sequence in music** **Unit 3** – I can explore a new programming environment – I can identify that each sprite is controlled by the commands I choose – I can explain that a program has a start – I can recognise that a sequence of commands can have an order – I can change the appearance of my project – I can create a project from a task description	**Repetition in shapes** **Unit 3** – I can identify that accuracy in programming is important – I can create a program in a text-based language – I can explain what 'repeat' means – I can modify a count-controlled loop to produce a given outcome – I can decompose a program into parts – I can create a program that uses count-controlled loops to produce a given outcome	**Selection in physical computing** **Unit 3** – I can control a simple circuit connected to a computer – I can write a program that includes count-controlled loops – I can explain that a loop can stop when a condition is met, eg number of times – I can conclude that a loop can be used to repeatedly check whether a condition has been met – I can design a physical project that includes selection	**Variables in games** **Unit 3** – I can define a 'variable' as something that is changeable – I can explain why a variable is used in a program – I can choose how to improve a game by using variables – I can design a project that builds on a given example – I can use my design to create a project – I can evaluate my project

		Introduction to animation **Unit 6** – I can choose a command for a given purpose – I can show that a series of – commands can be joined together – I can identify the effect of changing a value – I can explain that each sprite has its own instructions – I can design the parts of a project – I can use my algorithm to create a program	**Introduction to quizzes** **Unit 6** – I can explain that a sequence of commands has a start – I can explain that a sequence of commands has an outcome – I can create a program using a given design – I can change a given design – I can create a program using my own design – I can decide how my project can be improved	**Events and actions** **Unit 6** – I can explain how a sprite moves in an existing project – I can create a – program to move a sprite in four directions – I can adapt a program to a new context – I can develop my program by adding features – I can identify and fix bugs in a program – I can design and create a maze- based challenge	**Repetition in games** **Unit 6** – I can develop the use of count-controlled loops in a different programming environment – I can explain that in programming there are infinite loops and count controlled loops – I can develop a design which includes two or more loops which run at the same time – I can modify an infinite loop in a given program – I can design a project that includes repetition – I can create a project that includes repetition	– I can create a controllable system that includes selection **Selection in games** **Unit 6** – I can explain how selection is used in computer programs – I can relate that a conditional statement connects a condition to an outcome – I can explain how selection directs the flow of a program – I can design a program which uses selection – I can create a program which uses selection – I can evaluate my program	**Sensing** **Unit 6** – I can create a program to run on a controllable device – I can explain that selection can control the flow of a program – I can update a variable with a user input – I can use a conditional statement to compare a variable to a value – I can design a project that uses inputs and outputs on a controllable device – I can develop a program to use inputs and outputs on a controllable device

Vocabulary Progression

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computer Systems and Networks		technology, computer, mouse, trackpad, keyboard, screen, double-click, typing	Information technology (IT), computer, barcode, scanner/scan	digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets	internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts	system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking.	communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many.
Creating Media		paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline,	music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources,	text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits. animation, flip book, stop- frame, frame, sequence, image,	audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback. image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue,	vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-	website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate,

		mouse, select, font, undo, redo, format, compare, typing, writing.	flash, focus, background, editing, filter, format, framing, lighting,	photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.	saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.	range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share.	implication, external link, embed. TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify
Data and Information		object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same	more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing	attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.	data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.	database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.	data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools

Programming		Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program. ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.	instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.	Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code. motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.	Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure. Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.	microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator	variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug.