Gresham Primary School's Computing Curriculum

Mission Statement
Creating the digital learners of tomorrow

Intent
- Pupils have a firm understanding of e-safety, including what this is and how they can keep themselves (and others) safe online
- Pupils to regularly access Google Classroom to complete home learning and, in the event of a lockdown, online lessons
- Pupils to identify and work with a range of technical equipment including computers, iPads and different programs within these
- To understand the importance of the internet for research purposes and how it can help inform understanding of a range of different topics
- Pupils to understand the basics of computing including the names of equipment they will use
- Pupils to understand how code works and the importance of algorithms in everyday life
- Pupils to develop an understanding of the importance of search engines and search terms to retrieve better results online
- Pupils to develop an understanding of how to communicate effectively online
- Pupils to develop collaboration skills when using equipment
- Pupils to develop independence in using and accessing computing equipment
- Pupils to reflect on information they find online and know the importance of checking using a range of different sources
- Pupils to build a confidence in using online equipment and know how to troubleshoot simple errors
- Pupils to understand how technology is used on a daily basis in the wider world and how new technology has developed in recent years
- Pupils to use a range of computer software to create different kinds of content

Implementation
- Class teachers to use the Twinkl Plan It schemes of work to plan and execute lessons in the relevant year groups whilst also taking into account the need to continue to build on skills in other areas of the curriculum (e.g. while using iPads/computers in class lessons – outside of standalone computing sessions).
- Teachers have their own year group maps to ensure key concepts are covered during the year.
- Classes have their own set slots to go over to the computing suite in addition to using the existing iPads that we have in the classrooms to access computing.
- E-Safety is taught regularly to remind children of the importance of this and to extend their understanding at an age appropriate level.
- Pupils will participate in a range of computing lessons, not just restricted to working on a computer – e.g. iPads, e-safety sessions, conducting surveys, planning PowerPoints, coding floor robots etc.
- Pupils to regularly recap (especially in lower years) the terminology for computing and teachers to ensure children use their own logins (Years 2-6) to gain an appreciation for keeping their own data safe in addition to knowing how to log on/off and access programs.
- Children to work with an understanding of our Gresham learning superheroes and think about how they can apply these to their computing lessons, including collaboration, perseverance and resilience.
- Teachers to ensure pupils save their work in their correct year group folder on the school system to show and track pupils' progress in computing and for subject leaders to access work from a range of year groups across the school easily.
- Teachers to model the correct vocabulary when teaching computing to ensure pupils understand the difference between equipment
- Pupils to use the internet regularly as a basis for research and use search engines as a starting point
- Children to have access to floor robots or other coding apparatus to ensure they are confident using this.
- Regular reminders through displays and assemblies to promote the importance of e-safety so children have a good knowledge of how to communicate effectively online and what to do if they are upset by anything they see online.
- Teachers to allow pupils time to independently access a range of computing equipment to build confidence
- Teachers to ensure they are aware (through subject leaders) of the latest changes in technology with regards to school but also have a basic knowledge of changes in the wider world.
- Teachers to use a range of programs in computing lessons to help children create different content

Impact
Portfolio of work, pupil voice and displays to show the following:
- Pupils will have an enjoyment and confidence in computing with a clear progression seen through the year groups.
- Pupils will remain confident and knowledgeable about computing and how it can be used in daily life.
- Pupils will achieve the set learning objective either independently or with minimal support
- Pupils of all abilities will be catered for in computing lessons and be able to access equipment
- Pupils will know what to do if they see something upsetting online and how to ensure they are using equipment sensibly and responsibly.
- Pupils will be able to use and name equipment and programs and know what each program does/is used for, if asked
- Pupils will be able to demonstrate how to access and search on the internet and how it can be used effectively.
- Pupils will continue to learn new skills as they progress through the school
- Children will become confident in using a range of different software (both new and previously used) which they'll continue to consolidate throughout their school journey

The Essential Elements
Something, for someone, with some purpose

1. **Create** – children will design and create a wide range of their own content using the computing system in different ways that is personalised to them.

2. **Knowledge and understanding –** children will understand and gain regular knowledge as to how technology works and the uses for it in everyday life. Their knowledge and understanding of computing will evolve over time as they, in turn, learn how computing and technology are evolving on a regular basis. Their use of the internet and search engines will also increase their knowledge and understanding generally.

3. **Communication –** children will learn how computing can be used to communicate with people in different ways and how the different components working together create a beneficial system for the user (e.g. somebody who is hard of hearing can visually see a screen, whereas somebody who is blind can hear through speakers).

4. **Safety –** children will learn through regular e-safety sessions how useful computing is, but also how there are risks involved too. They will learn how to manage these risks and the importance of getting help/talking to somebody if something they see online upsets them. They will also know what to do if this happens to one of their peers and what they should encourage them to do. This will ensure children leave school with a secure knowledge of safety online as computer systems develop and progress over time.

5. **Independence** – children will become independent using computer systems/technology from an early age by being trusted with their own computer account which is password protected (Years 2 – 6). They will learn the importance of keeping this password to themselves as well as encouraging them to independently access documents/data associated with their own accounts and programs on the school system.

6. **Control –** children will learn, through coding, how things are controlled using computer systems and how they, in turn, are able to control a robot or on-screen character (e.g. in 'Scatch'). This will help them to understand how they can control things the computer does.

Key Concepts							
Big Ideas Revisited Across Units							
Coding	Communication	Data	Internet	Application	System	E-Safety	Device
The letters, numbers, words and symbols used for writing computer programs.	The imparting or exchanging of information by speaking, writing, or using some other medium.	Information in electronic form that can be stored and processed by a computer.	A global computer network providing a variety of information and communication facilities.	A program or piece of software designed to fulfil a particular purpose.	A group of related hardware units of programs or both, especially when denoted to a single application.	The safe and responsible use of technology.	A piece of portable equipment that can connect to the internet.

KEY STAGE 1

NC Statutory Programme of Study KS1

Key stage 1

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.

	Unit being taught…	Pupils will be learning…	Key Vocabulary	Knowledge, Skills and Understanding…
EYFS	**N/A (regular access to class computers)**	• The names for parts of a computer • The different things we can access on a computer • Finding letters on a keyboard	mouse, keyboard, screen/monitor, computer, laptop, program, right/left (click), letters, icon, desktop	Children will have regular reminders about the names of the parts of a computer (e.g. mouse, keyboard, screen) and how to use them safely. Children will experience a range of different programs and resources on the computer and be encouraged to use these independently with the available equipment (including 'Paint' for mouse control). Children will have access to Microsoft Word where they will be encouraged to write words or a simple sentence. Show resilience and perseverance in the face of a challenge. Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'. Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Explore, use and refine a variety of artistic effects to express their ideas and feelings. Be confident to try new activities and show independence, resilience, and perseverance in the face of challenge. Explain the reasons for rules, know right from wrong and try to behave accordingly. Safely use and explore a variety of materials, tools, and techniques, experimenting with colour, design, texture, form, and function.
Year 1	**Computer Skills**	• the basic computer skills needed to use a desktop or laptop computer • how to use a computer mouse or a trackpad • how to switch on and shut down a computer • how to apply their mouse or trackpad skills by launching applications, manipulating windows and opening and saving files and folders • how to drag objects, either using a mouse or trackpad	monitor, folder, open, mouse, minimise, trackpad, launch, keyboard, move, headphone, switch, save, window exit, size, system unit	Use technology purposefully to manipulate and retrieve digital content. Children will learn how to move the cursor and click using a trackpad. Use technology safely and respectfully. Children will learn to turn on and shutdown computing equipment safely and launch applications. Children will learn to save and open files in their folder. Use technology purposefully to manipulate and retrieve digital content. Children will learn to drag objects in a file from one location to another and identify and practise their computer skills.
Year 1	**Programming Toys**	• The principles of programming through unplugged tasks and the use of Bee-Bots (or similar programmable toys) • About algorithms as a set of step-by-step instructions given to a device • How to debug simple algorithms	algorithm, code, left, right, forward, backward, pause, clear, go, program, bee-bot, turn, sequence, quarter, half	Understand that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Use technology purposefully to create digital content. Children will work within the context of following picture instructions for building shapes

		• How to use logical reasoning to predict how a program will behave		Understand how [algorithms] are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions in the context of writing detailed instructions to build a face on a potato man toy

Understand what algorithms are and that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Children will work within the context of writing instructions to program a person.

Understand what algorithms are and that programs execute by following precise and unambiguous instructions; create and debug simple programs in the context of programming a Bee-Bot (or similar programmable toy) to reach a set marker.

Create and debug simple programs in the context of fixing incorrect Bee-Bot (or similar programmable toy) instructions

Understand what algorithms are and that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Children will work in the context of programming a Bee-Bot (or similar programmable toy) to reach set markers |
| | **Online Safety** | • To understand the potential dangers in the online world.
• The basic steps we can take to have positive digital experiences.
• Why it is important to name our work.
• How to use a search engine to find pictures.
• The SMART rules
• What information should be kept safe when using the internet.
• the positives and potential negatives of online communication, such as email.
• Developing the skills to recognise potential dangers and act accordingly to keep themselves and others safe. | online, safe, meet, accept, reliable, tell, device, keyboard, key, communicate, email, address, search engine, image, text, save, folder, name, date, copyright | Use technology purposefully to create, organise, store, manipulate and retrieve digital content in the context of naming and dating a digital self-portrait.

Use technology safely and respectfully in the context of searching for appropriate images online.

Use technology safely and respectfully in the context of learning about the SMART rules for Internet safety and knowing how to communicate safely online.

Use technology safely and respectfully in the context of keeping personal information safe.

Recognise common uses of information technology beyond school in the context of sending an email.

Use technology safely and respectfully in the context of guiding others to make the right choices online by applying their own online safety knowledge. |
| **Year 2** | **Presentation Skills** | • The computer skills needed for safe and effective computer use
• Further skills concerning the use of folders, searching for files and printing
• How to create a simple presentation | log off, search, shut down, folder, image, format, colour, black and white, photo, double sided, copy, windows, switch, monitor, insert, system unit, print, date | Use technology safely and respectfully. Children will revise skills from previous unit and learn to create folders.

Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Teachers may choose their own context for the content of the presentation, but it could relate to the current topic. Lessons focus on slides and adding text and what presentations are. Children can organise ideas for a presentation.

Use technology safely and respectfully. Children will learn simple searching and printing options. |

				Children will be able to create a simple presentation with text, add and format images, reorder slides and present a presentation in addition to searching and printing.

Using the Internet	• How to use the Internet safely and with a purpose • How to search the Internet using one word; how to make sense of the returned results; how to use "for kids" to return more suitable results; how to follow links and return to the search results • How to use a range of search engines, including Google, Bing and Yahoo, and Kidrex • To blog safely and responsibly	Internet, World Wide Web (WWW), search, search engine, results, Google, Bing, Yahoo, KidRed, browser, link, web page, back, reload, research, photo, camera, tablet, upload, blog	To use technology purposefully to retrieve digital content in the context of using a search engine online. Children will search the internet using one word. 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 in the context of using a search engine online. Children can search for information safely online. To use technology purposefully to retrieve digital content in the context of using links on the Internet. Children can follow links to another web page. 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 in the context of following links online. Use technology purposefully to create, organise, and store digital content in addition to keeping personal information private in the context of creating images for an online blog. Children use cameras to take safe photos to use online. Use technology purposefully to create, organise, store and retrieve digital content in addition to keeping personal information private in the context of adding images and text to an online blog. To use technology safely and respectfully and identify where to go for help and support when they have concerns about content or contact on the Internet in the context of posting comments on other people's blogs
Computer Art	• About reproducing the painting styles of great artists using computer programs • To master specific techniques within design-based software • To use a mixture of the styles and skills learnt within this topic to produce their own computer-painted masterpiece	Pointillism, program, tool, fill, straight lines, primary colours, weight, Cubism, manipulate, rotate, shade, Impressionism, harmonious, complementary, Pop Art, duplicate, copy and paste, selective, combination review	To use technology purposefully to create, organise, store, manipulate and retrieve digital content in the context of using a computer program to recreate an artistic style. Create computer art, reproduce a style of art, make and edit shapes, change the shade of colour for effect, retrieve a file to edit in a computer program, create a piece of art.

Key Stage 2

NC Statutory Programme of Study KS2

	Unit being taught…	Pupils will be learning…	Key Vocabulary	Knowledge, Skills and Understanding…
Year 3	**Drawing and Desktop Publishing**	• About graphic and presentation skills by introducing drawing About layouts using a desktop publishing application • To draw, order, group and manipulate objects to make a picture • To evaluate and create effective layouts, combining text and images	text, text box, format, image, photo, photograph, wrap text, square, aspect ratio, objects, layout, background, outline, font, size, colour	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. Teachers may choose their own context for the content of the drawing, but it could relate to the current topic or the artist Kandinsky. Lessons focus on drawing different shapes and lines. Use technology purposefully to create, organise, store, manipulate and retrieve digital content Draw with different shapes and lines, order and group objects, manipulate shapes and line, recognise effective layout, combine text and images, lay out objects.

	Online safety	• about email and other forms of online communication. • How to write and send emails • How to decide if an email is safe to open • How to deal with unkind behaviour online. • about the importance of privacy settings • about the types of information we should not share online. • How adverts they see online are targeted at them • To use knowledge they have gained to plan a party using online communication methods	online, internet, cyberbulling, email, password, device, digital, safety, technology, social media, website, advertisement, privacy settings, secure, digital citizen, digital footprint, community, inbox, forum, comments	Use technology safely, respectfully and responsibly; recognise acceptable and unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of recognising cyberbullying. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content in the context of identifying advertisements online. Children understand how websites use advertisements to promote products. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating passwords and using privacy settings. Children create strong passwords. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of sending and receiving emails safely. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of exploring the different ways we communicate online. 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 in the context of planning a party online.
	Programming Turtle, Logo and Scratch	• To create and debug algorithms • Use basic commands in Logo to move and draw using the turtle on screen • Further develop algorithms by using the "repeat" command • Work towards creating algorithms in Scratch using a selection of blocks	algorithm, instructions, commands, forward (fd), left (lt), right (rt), move, turn, clear screen (cs), variable, pen up, pen down	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 (using Turtle Logo). Children use the move, rotate and rotate commands, the penup/pendown, that draw regular polygons and shapes.
Year 4	**Scratch: questions and quizzes**	• To write quizzes by combining questions. • Specific skills in Scratch • The wider programming skills of solving problems, testing, debugging, improving and evaluating	Algorithm costume, quiz, effects, sprite, Scratch library sounds, Scratch library costumes, Scratch library backdrops, sound, backdrop,	Create content that accomplish given goals. Solve problems by decomposing them into smaller parts. In the context of analysing the difference between paper and online quizzes Write and debug programs that accomplish specific goals in the context of creating a quiz question. Use sequence and selection in programs by creating a sequence of commands and using the 'if…then…else…command' Write and debug programs that accomplish specific goals by creating visual effects as part of a quiz. Use sequence and repetition in programs by sequencing commands that run and using repetition to create effects

			variable, blocks, question	Work with variables by changing the colour, shape, size and adding extra features to the sprites used in the quiz. Write and debug programs that accomplish specific goals in the context of adding sound effects and changing backdrops. Use sequence and repetition in programs by adding blocks to existing programs and ensuring they run all the effects. Work with variables by changing the backdrop to the quiz. Write programs that accomplish specific goals in the context of creating a scoring system Work with variables by creating a scoring system for a quiz Design, write and debug programs that accomplish specific goals by creating a quiz on a topic of their choice. Use sequence, selection, and repetition in programs by creating a sequence of blocks and using the 'if…then…else' and 'repeat' commands. Work with variables by creating effects in their own quiz.
	Online Safety	• How to prevent and deal with cyberbullying • How to use search engines efficiently • How to avoid plagiarism online • How to be a good digitial citizen • Designing a character to promote online safety.	online, safety, cyberbullying, message, search, search engine, search results, plagiarism, citation, social media, profile, account, private, public, digital citizen, responsibility, community, personal information, share, permission	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of thinking about how online messages can be hurtful and how they should respond to hurtful messages. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content in the context of using search engines accurately. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of finding out about online plagiarism. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating their own sample online game account, highlighting information which is acceptable to include. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of giving examples of how to be a good digital citizen. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating an online safety character.
	Word Processing	• Basic of word processing and text formatting skills • About formatting images and organising content into and effective layout • Format images and making them suitable	hyperlink insert, toolbar, text, format, edit, font type, font colour, font size, align, paste, copy, bullet, text	Select, use and combine a variety of software on a range of digital devices to design a range of programs, systems and content that accomplish specific goals in the context of creating a poster for a purpose Select, use and combine a variety of software on a range of digital devices to design a range of programs, systems and content that accomplish specific goals in the context of creating a suitable layout for a poster.

		for a poster advertising a cake sale • New skills and techniques and apply them to creating a range of different word documents (posters, letters to parents, job rotas, recipe cards and e-vouchers) which they will use during the cake sale project	box, wrap, save, spellcheck, review, highlight, cursor	Select, use and combine a variety of software on a range of digital devices to design a range of programs, systems and content that accomplish specific goals in the context of using spellcheck to edit spellings in a letter to parents. Select, use and combine a variety of software on a range of digital devices to design a range of programs, systems and content that accomplish specific goals in the context of creating rotas for a cake sale. Select, use and combine a variety of software on a range of digital devices to design a range of programs, systems and content that accomplish specific goals in the context of creating simple cake recipe cards. Select, use and combine a variety of software on a range of digital devices to design a range of programs, systems and content that accomplish specific goals in the context of creating an e-voucher. Children format images for a purpose, use formatting tools to create an effective layout, insert and format a table, change a page layout for a purpose and create hyperlinks within a Word document.
Year 5	**Online safety**	• about email safety with a focus on preventing and dealing with spam • the importance of strong passwords and how to create them • about plagiarism and fair use of people's work by learning how to write citations and references for websites they may use • how to scrutinise photographs they see online and how people may manipulate pictures and present them as reality.	spam, email, link, attachment, junk, inbox, citation, cite, plagiarism, source, bibliography, research, password, secure, personal information, photo, edit, filter, social media, digital citizen	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying and avoiding spam emails. Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of citing the work of others. Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of following rules to help create strong passwords. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content in the context of finding out how photos can be altered presented as reality online. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of planning a story about the consequences of not following online safety rules. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating a comic strip about the consequences of not following online safety rules.
	Radio Station	• To use software and digital devices for recording sound • To interview, make adverts and use jingles • How to use software to write scripts and design additional advertising for their Radio Station • To present, listen, review and evaluate their own content as well as professional and commercial examples,	play, stop, record, skip, digital content, mute, gain, podcast, output, input, sound, download, voiceover, waveform, edit	Select, use and combine a variety of software on a range of digital devices to create content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. Children use Audacity software as an introduction to sound recording. Children create their own sounds by recording, editing and playing. Children combine existing sounds with their own unique voice content to create sounds in the style of a radio jingle Children research and plan appropriate digital content for presentation on a radio show podcast Children use sound recording software to create appropriate digital content for presentation on a radio show podcast. Children examine the features of advertisements and use the ideas to design their own advert to be recorded using audio software as part of their radio station or podcast.

				Children are given the opportunity to complete previous projects (podcast or radio advert) then present to their peers.
	Flowol	• To use flowcharts and how they are used to program and control devices • How to use Flowol software (version 4.0) • To build sequences of instructions, control multiple outputs and structure algorithms with decisions and inputs	Flowol, delay, output, stat, stop, subroutine, flowchart, decision, loop, symbol, input, mimic	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. Children are introduced to flowcharts and practise reading them as a sequence of instructions, then designing their own. Children draw and interpret a flowchart with the correct symbols. Children use the control software (Flowol) to create a simple flowchart for a zebra crossing, then learn how to edit, delete and insert new symbols. Children control a simulated pair of traffic lights in sequence, which must run simultaneously. Children deconstruct and then recreate a flowchart using a decision symbol, based on the input of the sunlight at a lighthouse. Children are introduced to the concept of subroutines by editing an already familiar flowchart (Lighthouse) Children are introduced to a new scenario (Robot toy) for which they must design and create their own programming solution. This should involve one or more inputs controlling one or more outputs. Some children will be able to include subroutines for clearer organisation.
Year 6	**Online safety**	• understanding online safety issues in more depth • understand the idea of the internet as a type of media and how it can shape our ideas about boys and girls through stereotypes • ways to deal with online content that they find worrying or even believe to be dangerous	cyberbullying, reporting, anonymous, victim, https, secure, site, domain, policy, private, personal, instant messaging, media, message, attachments, security, stereotype, gender, browser, SMART	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of comparing cyberbullying to bullying in person and developing strategies for dealing with online bullying. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying secure and unsecure websites. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying information that is safe and unsafe to share with online friends. Use technology safely, respectfully and responsibly. Be discerning in evaluating digital content. Children will work in the context of evaluating media aimed at boys and girls. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of identifying how to behave in a range of online scenarios. Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concerns about content and contact in the context of creating an online safety quiz.

	Animated Stories	• To develop their skills in writing their own algorithms • How to edit and debug existing code • To structure code and animate characters and scenes, gradually building to create a short animated story	animate, iteration, visible, invisible, show, hide, receive, broadcast, user, repeat, audio, debug, record	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. Children are provided with a single backdrop and main characters for a story scene (inside a castle). The task is to use coding to create suitable animations to fit the setting. Children are provided with a single backdrop and main characters for a story scene (inside a castle). The task is to use coding to create suitable animations to fit the setting. Children continue to develop their animation code by using the 'show' and 'hide' blocks, enabling sprites to only become visible in the scene when required. Children add further scenes and plot to their story to create a sequence of events with a beginning and ending. Children record and insert speech for characters to enhance their existing story projects. Children add extra functionality to existing code with interactive objects or characters, which can be triggered by a key press.
	Spreadsheets	• About spreadsheets and how they can be used • How to formatt and enter specific formulas • About investigative skills in using the spreadsheet to solve specific problems • Design their own spreadsheet, with ideas and direction provided for particular purposes	spreadsheet, cell, row, column, formula, formulas, calculate, format, average, percent, edit, inset, ascending, descending, sort, graph, budget, total, cumulative	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. Introduce and familiarise with spreadsheets using given templates. Enter and edit text and numbers in cells and use SUM formula; begin formatting cells. Begin to use the SUM function for a specific a purpose, such as calculating a League Table. Order data using the Sort function and produce a graph to present the data. Children will create totals and averages for existing data; sort according to either column then add or edit the data by following instructions. Begin to understand the benefit of automatic recalculation when editing. Children are given an investigation where the solution to a problem is best calculated using a spreadsheet. They must use prior knowledge and skills to find the best solution. Children are given a list of possible items and prices, along with a maximum spending budget. They must choose items for a party, calculate quantities and totals within the set budget for a given number of people. After a recap of the skills taught so far, and the potential use for a spreadsheet, pupils are given an open-ended challenge to design their own.

Curriculum Expectations and Guidance
What pupils should know, be able to do and understand

	Years 1 and 2	Years 3 and 4	Years 5 and 6
Multimedia Text and Images	Children begin to understand the particular purposes technology can be used for and that by adding text and images you can communicate with technology. Children develop their skills in typing, selecting tools and organising information. **KS1 Computing National Curriculum** Children use technology purposefully to create, organise, store, manipulate and retrieve digital content. Children can: a add text strings, text boxes and show and hide objects and images, manipulating the features; b use various tools, such as brushes, pens, eraser, stamps and shapes, and set the size, colour and shape; c use applications and devices in order to communicate ideas, work, messages and demonstrate control; d save, retrieve and organise work; use key vocabulary to demonstrate knowledge and understanding in this strand: paint, colour, brush, tools, settings, undo, redo, text, image, size, poster, launch, application, software, window, minimise, restore, size, move, screen, close, click, drag, log on, log off, keyboards, keys, mouse, click, button, double click, drag, present.	Children develop their skills of formatting using keyboard commands, organising their work to demonstrate effect. In LKS2, they will have the opportunity to express themselves more through digital technology, art, PowerPoint and posters. Children should continue to demonstrate control when operating tools as in KS1. **KS2 Computing National Curriculum** Children 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. They 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. Children can: a create different effects with different technological tools, demonstrating control; b use appropriate keyboard commands to amend text on a device; c use applications and devices in order to communicate ideas, work, and messages; d save, retrieve and evaluate work, making amendments; e insert a picture/text/graph/hyperlink from the internet or a personal file; use key vocabulary to demonstrate knowledge and understanding in this strand: draw, object, shape, line, line colour, fill colour, group, ungroup, font, size, text box, format, image, wrap text, plan, link, image, object, link, hyperlink, minimise, restore, size, move, screen, split, create, organise, file, folder, close, exit, search, print, password, screenshot, snipping tool, shift, undo, redo, menu, dictionary, highlight, cursor, toolbar, spellcheck.	Children begin to look at new software, creating 3D models and learning how to orbit, zoom and develop their editing skills further. They become more confident in inserting links, images and formatting text to create effect. **KS2 Computing National Curriculum** Children 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. Children can: a use the skills already developed to create content using unfamiliar technology; b select, use and combine the appropriate technology tools to create effect; c review and improve their own work and support others to improve their work; d save, retrieve and evaluate their work, making amendments; e insert a picture/text/graph/hyperlink from the internet or personal file; use key vocabulary to demonstrate knowledge and understanding in this strand: window, layout, text, font, colour, format, heading, hyperlink, 2D shape, 3D shape, orbit, pan, zoom, eraser, dimension, measurement, guide.
Multimedia Sound and Motion	Children begin to develop their creativity using technology through recording sound. Children will also begin to develop their editing skills and control of the tools. **KS1 Computing National Curriculum** Children use technology purposefully to create, organise,	Children develop their editing skills further by cropping, organising and arranging film clips. They are able to share work and offer feedback and ideas for improvement with animation and film, giving their opinion on which software to use. In LKS2, children also look at the history of animation and reflect upon the changes over time.	Children begin to look more into multimedia broadcasting, learning new skills including recording jingles, podcasts and narration. They become more confident in post-production with editing, trimming and refining their work based on plans they have made. **KS2 Computing National Curriculum**

store, manipulate and retrieve digital content.

Children can:

a   use software to record sounds;

b   change sounds recorded;

c   save, retrieve and organise work;

use key vocabulary to demonstrate knowledge and understanding in this strand: commands, add sound.

KS2 Computing National Curriculum

Children 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.

Children can:

a   use software to record, create and edit sounds and capture still images;

b   change recorded sounds, volume, duration and pauses;

c   use software to capture video for a purpose;

d   crop and arrange clips to create a short film;

e   plan an animation and move items within each animation for playback;

use key vocabulary to demonstrate knowledge and understanding in this strand: audio, sound, video, movie, embed, link, file format, animate, animation, still image, thaumatrope, zoetrope, zoopraxiscope, stereoscope, flip book, frame, onion skinning, loop, frame rate, record, stop, play, stop motion, stop frame.

Children 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.

Children can:

a   collect audio from a variety of resources including own recordings and internet clips;

b   use a digital device to record sounds and present audio;

c   trim, arrange and edit audio levels to improve quality;

d   publish their animation and use a movie editing package to edit/refine and add titles;

use key vocabulary to demonstrate knowledge and understanding in this strand: audio, record, edit, play stop, skip, waveform, input, output, record, edit, play podcast, digital content, downloadable, backing track, voiceover, mute, gain, production, post-production, documentary, project, evaluation, screening, ceremony, upload.

Handling Data

Children begin to explore expressing information in tables, sorting and organising information for others to be able to understand.

KS2 Computing National Curriculum

Children 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.

Children can:

a   talk about the different ways data can be organised;

b   sort and organize information to use in other ways;

c   search a ready-made database to answer questions;

use key vocabulary to demonstrate knowledge and understanding in this strand: Google Docs, insert, table.

Data Handling in UKS2 focuses on selecting the correct method to display data and using software such as spreadsheets. Children also learn how to check the accuracy of data and compare data for a specific purpose.

KS2 Computing National Curriculum

Children 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.

Children can:

d   construct data on the most appropriate application;

e   know how to interpret data, including spotting inaccurate data and comparing data;

f   use keyboard shortcuts and functions to input data on spreadsheets and create formulas for spreadsheets;

g   add data to an existing database;

use key vocabulary to demonstrate knowledge and understanding in this strand: Google Docs, insert, table, spreadsheet, cell, row, column, formula/formulas, calculate, format, edit, insert, ascending, descending.

Technology in Our Lives

Children begin to make links to how they use technology outside of the classroom. They begin to think about the benefits of using technology in their lives, making links to learning about online safety.

KS1 Computing National Curriculum

Children recognise common uses of technology beyond school. They use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

Children can:

a   recognise ways that technology is used in the home and community, e.g. taking photos, blogs, shopping;

b   use links to websites to find information;

c   recognise age-appropriate websites;

d   use safe search filters;

use key vocabulary to demonstrate knowledge and understanding in this strand: filter, Google, search engine, image, keyboard, email, internet, subject, address, communicate, sender, safe, secure.

Children refer to online safety rules when discussing technology in their lives. They are able to navigate between websites and use safe search terms on trusted search engines. They become more confident in using email for communication, including attaching and saving files from emails.

KS2 Computing National Curriculum

Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content.

Children can:

a   explain ways to communicate with others online;

b   describe the world wide web as the part of the internet that contains websites;

c   add websites to a favourites list;

d   use search tools to find and use an appropriate website and content;

e   use strategies to improve results when searching online;

use key vocabulary to demonstrate knowledge and understanding in this strand: filter, Google, search engine, image, keyboard, email, subject, address, communicate, sender, safe, secure, internet, world wide web, social media.

Children can use safe search terms on trusted search engines, and evaluate websites based on layout and information. They become more confident in understanding Google rankings, adverts and the reliability of websites.

KS2 Computing National Curriculum

Children 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. They use search technologies effectively, appreciate how results are selected and ranked, and are discerning in evaluating digital content.

Children can:

a   search for information using appropriate websites and advanced search functions within Google;

b   use strategies to check the reliability of information (cross-check with another source such as books);

c   talk about the way search results are selected and ranked;

d   check the reliability of a website, including the photos on site;

e   tell you about copyright and acknowledge the sources of information;

use key vocabulary to demonstrate knowledge and understanding in this strand: world wide web, search, search engine, advanced search, results, Google, browser, terms of use, bias, authority, citation, plagiarism, source, website, secure, https, site, domain, website, browser, address bar.

Coding and Programming

Children begin to understand their influence on technology by developing their programming skills to determine output. They begin to understand that an algorithm is a series of steps for solving problems and a code is a series of steps that machines can execute. They begin to explore debugging, predicting when codes may not work and changing them.

KS1 Computing National Curriculum

Children understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions. They create, debug and use logical reasoning to predict the behaviour of simple programs.

Children can:

a   give commands one at a time to control direction and movement, including straight, forwards, backwards, turn;

b   control the nature of events: repeat, loops, single

Children build on their programming skills by solving problems and programming commands to achieve a specific outcome. They begin to write programs, explain algorithms and identify errors in their work.

KS2 Computing National Curriculum

Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Children can:

a   use logical thinking to solve an open-ended problem by breaking it up into smaller parts;

b   write a program, putting commands into a sequence to achieve a specific outcome;

Children build on their programming skills by using new systems such as a flowchart. They continue to break down problems and create algorithms to solve them. They are able to explain the outcome of an algorithm with confidence and accuracy.

KS2 Computing National Curriculum

Children design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; they solve problems by decomposing them into smaller parts. They use sequence, selection, and repetition in programs and work with variables and various forms of input and output. They use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.

Children can:

a   use external triggers and infinite loops to demonstrate control;

b   follow a sequence of instructions, e.g. in a flowchart and modify a flowchart using symbols;

c   use conditional statements and edit variables;

	events and add and delete features; c give a set of instructions to follow and predict what will happen; d improve/change their sequence of commands by debugging; use key vocabulary to demonstrate knowledge and understanding in this strand: algorithm, instruction, order, debug, program, turn, left, right, clockwise, anticlockwise, blocks, sequence, project, repeat, repeat forever, invisible, grow, shrink.	c give a set of instructions to follow and predict what will happen; d keep testing a program and recognise when it needs to be debugged; e use variables to create an effect, e.g. repetition, if, when, loop; use key vocabulary to demonstrate knowledge and understanding in this strand: decompose, decomposing, logical sequence, flowchart, sprite, block, command, algorithm, answer, correct, errors, program, algorithm, instructions, commands, forward (fd), left (lt), right (rt), move, turn, clear screen (cs), variable.	d decompose a problem into smaller parts to design an algorithm for a specific outcome and use this to write a program; e keep testing a program and recognise when it needs to be debugged; use key vocabulary to demonstrate knowledge and understanding in this strand: flowchart, algorithm, control, output, symbol, start, stop, delay, process, decision, loop, backdrop, script, block, repeat, commentary, sequence, consequence, debug, program, Kodu, world, object, tool palette, program environment, smooth, flatten, raise.

Online Safety			
	Children begin to consider their activity on the internet and learn about ways to keep themselves safe and why it is important to do so. They also compare appropriate and inappropriate activity on the internet and decide what to do next. **KS1 Computing National Curriculum** Children can use technology safely and respectfully, keeping personal information private; they identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. Children can: a identify what things count as personal information; b identify what is appropriate and inappropriate behaviour on the internet; c agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; d seek help from an adult when they see something that is unexpected or worrying; e demonstrate how to safely open and close applications and log on and log off from websites; use key vocabulary to demonstrate knowledge and understanding in this strand: safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, key, question, tell, safe, share, stranger, danger, internet.	Children become more aware of their digital footprint by reflecting on their experience on the internet. They are able to understand more about age-appropriate websites and adverts and how adverts are used by companies. Children are also introduced to the concept of plagiarism and citation. **KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: a reflect on their own digital footprint and behaviour online; b identify what is appropriate and inappropriate behaviour on the internet, recognising the term cyberbullying; c agree and follow sensible online safety rules, e.g. taking pictures, sharing information, storing passwords; d seek help from an adult when they see something that is unexpected or worrying; e demonstrate understanding of age-appropriate websites and adverts; use key vocabulary to demonstrate knowledge and understanding in this strand: safe, meet, accept, reliable, tell, online, trusted, adult, information, safety, personal, internet, world wide web, communicate, message, social media, email, password, cyberbullying/bullying, plagiarism, profiles, account, private, public.	Children are encouraged to identify online risks and share their knowledge of the risks and consequences for people online. They begin to think more critically about what they see online and look at the concept of fake news and false photographs. **KS2 Computing National Curriculum** Children use technology safely, respectfully and responsibly. They recognise acceptable/unacceptable behaviour and identify a range of ways to report concerns about content and contact. Children can: a protect their password and other personal information; b be a good online citizen and friend; c judge what sort of privacy settings might be relevant to reducing different risks; d seek help from an adult when they see something that is unexpected or worrying; e discuss scenarios involving online risk; use key vocabulary to demonstrate knowledge and understanding in this strand: spam, link, privacy, virus, scam, phishing, inbox, junk, sender, subject, secure, safe, account, online, private, social media, adverts, cyberbullying, reporting, anonymous, victim, fraud/fraudulent, policy, private/personal.

Cultural Capital Opportunities

General	Use of computers at after school club to assist with home learning.					
Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Jam coding	Jam coding	Coding club Computing club (free flow) at lunch times	Whitgift project Coding club	Coding club