Guilden Sutton Church of England Primary School

*Love and Justice for All*

# Computing Whole School Curriculum Progression Map

***Our Christian Values:*** **WISDOM, JUSTICE, COMPASSION, LOVE, FORGIVENESS, FRIENDSHIP**

| Year Group | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
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| **Reception**<br>Kapow Primary | • The children learn to recognise and discuss common uses of information technology in school and outside of school<br>• Children sequence a series of events and explain the importance of sequencing<br>• Discuss sensible screen time as part of Health Week<br>• Demonstrate the use of a search engine to find further information<br>• Children engage in age appropriate IWB games and activities, knowing how to pause, play and exit | | • The children explore types of technology both in and outside of school. They learn how to use classroom technology safely and responsibly, including the basic use of an iPad camera.<br>• Support the children when using a search engine to find relevant information.<br>• Children participate in E Safety Week, learning about ways to keep safe when using technology.<br>• Children engage in physical algorithms to sequence a series of movements following directional instructions.<br>• Children recognise icons and symbols e.g. Google, YouTube and know how to access them.<br>• The children learn that there are many different types of media content including; sound, images, books, audiobooks and video via the web. | | • Children type key words in a search engine to find relevant information.<br>• The children learn that an algorithm is a list of instructions that solves a problem and use Daisy, Beebot and BBC apps to apply their coding skills on an iPad.<br>• Children use an iPad to video an activity or event and know how to retrieve photographs and video playback. | |
| **1** | **Online safety** | | **Programming 1 – Algorithms unplugged** | | **Programming 2 – Bee-bot** | |

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| | • To know that the internet is many devices connected to one another.<br>• To know that you should tell a trusted adult if you feel unsafe or worried online.<br>• To know that people you do not know on the internet (online) are strangers and are not always who they say they are.<br>• To know that to stay safe online it is important to keep personal information safe.<br>• To know that 'sharing online means giving something specific to someone else via the internet and 'posting' online means placing information on the internet.<br><br>**Computer systems and networks – Improving mouse skills**<br><br>• To know that "log in and log out" means to begin and end a connection with a computer.<br>• To know that a computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art.<br>• To know that passwords are important for security.<br>• To know that when we create something on a computer it can be more easily saved and shared than a paper version.<br>• To know some of the simple graphic design features of a piece of online software. | • To understand that an algorithm is when instructions are put in an exact order.<br>• To understand that decomposition means breaking a problem into manageable chunks and that it is important in computing.<br>• To know that you can use a camera/tablet to make simple videos.<br><br>**Creating media – Digital imagery**<br><br>• To understand that holding the camera still and considering angles and light are important to take good pictures.<br>• To know that you can edit, crop and filter photographs.<br>• To know how to search safely for images online.<br><br>**Safer Internet Day** | • To understand the basic functions of a Bee-Bot.<br>• To know that algorithms move a bee-bot accurately to a chosen destination.<br>• To know that we call errors in an algorithm 'bugs' and fixing these 'debugging'. |
| | **<u>Key Vocabulary</u>**<br><br>**Online safety -** connect, console, digital footprint, emotion, feelings, internet safety, laptop, mood, personal information, phone, posting, respect, sharing, smart device, smartphone, smart TV, smartwatch, strangers, trust, wired, wireless<br>**Computer systems and networks – Improving mouse skills -** account, ctrl, cursor, digital photograph, duplicate, layers, tool | | |

<table>
<tr><td></td><td colspan="3">Programming 1 – Algorithms unplugged - automatic, chunks, clear, code, decompose, decomposition, input, manageable, motion, order, organise, output, precise, robot, sensor, solution, specific, steps, tasks, virtual assistant<br>Creating media – Digital imagery - Background, blurred, camera, crop, device, digital camera, download, edit, editing software, filter, image, import, internet, keyword, online, photograph, resize, save as, search engine, storage space, visual effects<br>Programming 2 – Bee-bot - artificial intelligence, Bee-Bot, demonstration, filming, pause, predict, program, tinker, video, video recording</td></tr>
<tr><td>2<br><br>Kapow Primary</td><td>Online safety<br><br>• To understand the difference between online and offline.<br>• To understand what information I should not post online.<br>• To know what the techniques are for creating a strong password.<br>• To know that you should ask permission from others before sharing about them online and that they have the right to say 'no.'<br>• To understand that not everything I see or read online is true.<br><br>Computer systems and networks – What is a computer?<br><br>• To know the difference between a desktop and laptop computer.<br>• To know that people control technology.<br>• To know that buttons are a form of input that give a computer an instruction about what to do (output).<br>• To know that computers often work together.</td><td>Programming 1 – Algorithms and debugging<br><br>• To understand what machine learning is and how that enables computers to make predictions.<br>• To know that abstraction is the removing of unnecessary detail to help solve a problem.<br>• To know that coding is writing in a special language so that the computer understands what to do.<br><br>Data Handling – International Space Station<br><br>• To understand that you can enter simple data into a spreadsheet.<br>• To understand what steps you need to take to create an algorithm.<br>• To know what data to use to answer certain questions.<br>• To know that computers can be used to monitor supplies.<br><br>Safer Internet Day</td><td>Programming 2 – Scratch Jr<br><br>• To understand that the character in Scratch Jr is controlled by the programming blocks.<br>• To know that you can write a program to create a musical instrument or tell a joke.</td></tr>
<tr><td></td><td colspan="3"><u>Key Vocabulary</u><br><br>Online safety - accept, comment, consent, content, deny, emojis, offline, permission, pop-ups, pressure, reliable, terms and conditions, trusted adult<br>Computer systems and networks – What is a computer? - battery, desktop, digital, digital recorder, electricity, function, laptop, monitor, paying till, scanner, screen, system, technology, video<br>Programming 1 – Algorithms and debugging - abstraction, key features, loop, unnecessary</td></tr>
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<tr><td></td><td colspan="3">Data Handling – International Space Station - astronaut, experiment, galaxy, insulation, interactive map, International Space Centre, International Space Station, interpret, laboratory, planet, satellite, space, temperature, thermometer, water reservoir<br><br>Programming 2 – Scratch Jr - blocks, CGI, computer code, fluid, icon, imitate, ‘on tap’, Scratch JR</td></tr>
<tr><td>3<br><br>Kapow Primary</td><td>Online safety<br><br>• To know that not everything on the internet is true: people share facts, beliefs and opinions online.<br>• To understand that the internet can affect your moods and feelings.<br>• To know that privacy settings limit who can access your important personal information, such as your name, age, gender etc.<br>• To know what social media is and that age restrictions apply.<br><br>Computer systems and networks – Networks and the internet<br><br>• To know what a tablet is and how it is different from a laptop/desktop computer.<br>• To understand what a network is and how a school network might be organised.<br>• To know how the internet uses networks to share files.</td><td>Computer systems and networks – Journey inside a computer<br><br>• To know what a packet is and why it is important for website data transfer.<br>• To know the roles that inputs and outputs play on computers.<br>• To know what some of the different components inside a computer are e.g. CPU, RAM, hard drive, and how they work together.<br><br>Creating media – Video trailers<br><br>• To know that different types of camera shots can make my photos or videos look more effective.<br>• To know that I can edit photos and videos using film editing software.<br>• To understand that I can add transitions and text to my video.<br><br>Safer Internet Day</td><td>Programming – Programming Scratch<br><br>• To know that Scratch is a programming language and some of its basic functions.<br>• To understand how to use loops to improve programming.<br>• To understand how decomposition is used in programming.<br>• To understand that you can remix and adapt existing code.</td></tr>
<tr><td></td><td colspan="3"><u>Key Vocabulary</u><br><br>Online safety - age restricted, autocomplete, beliefs, block, fact, fake news, opinion, privacy settings, report, requests, security questions, social media platforms, social networking, wellbeing<br>Computer systems and networks – Networks and the internet - corrupted, DSL (digital subscriber line), fibre, network, network map, network switch, packets, radio waves, router, server, submarine cables, text map, The Cloud, web server, website, website trackers, WiFi, Wireless Access Points, World Wide Web<br>Computer systems and networks – Journey inside a computer - assemble, CPU (central processing unit), disassemble, GPU (graphics processing unit), hard drive, HDD (hard disk drive), memory, microphone, QR code, RAM (random access memory), ROM (read only memory), storage, touchscreen, touchpad</td></tr>
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<tr><td></td><td colspan="3">Creating media – Video trailers - clip, film editing software, graphics, sound effects, time code, trailer, transition, voiceover<br>Programming – Programming Scratch - application, coding application, interface, Scratch</td></tr>
<tr><td>4<br><br>Kapow Primary</td><td>Online safety<br><br>• To understand some of the methods used to encourage people to buy things online.<br>• To understand that technology can be designed to act like or impersonate living things.<br>• To understand that technology can be a distraction and identify when someone might need to limit the amount of time spent using technology.<br>• To understand what behaviours are appropriate in order to stay safe and be respectful online.<br><br>Computer systems and networks – Collaborative learning<br><br>• To understand that software can be used collaboratively online to work as a team.<br>• To know that you can use images, text, transitions and animation in presentation slides</td><td>Programming 1 – Further coding with Scratch<br><br>• To understand that a variable is a value that can change (depending on conditions) and know that you can create them in Scratch.<br>• To know what a conditional statement is in programming.<br><br>Programming 2- Computational thinking<br><br>• To understand that pattern recognition means identifying patterns to help them work out how the code works.<br>• To understand that algorithms can be used for a number of purposes e.g. animation, games design etc.<br><br>Safer Internet Day</td><td>Data Handling – Investigating weather<br><br>• To know that computers can use different forms of input to sense the world around them so that they can record and respond to data. This is called ‘sensor data’.<br>• To know that a weather machine is an automated machine that responds to sensor data.<br>• To understand that weather forecasters use specific language, expression and pre-prepared scripts to help create weather forecast films.</td></tr>
<tr><td></td><td colspan="3"><u>Key Vocabulary</u><br><br>Online safety - accuracy, advantages, advertisements, belief, bot, chatbot, distractions, hashtag, implications, in-app purchases, influencer, recommendations, risks, screen time, search results, snippets, sponsored, trustworthy<br>Computer systems and networks – Collaborative learning - average, collaboration, conditional formatting, contribution, edited, format, freeze, insert, multiple choice, numerical data, presentations, resolved, reviewing comments, slides, spreadsheets, suggestions, survey, teamwork, themes, transitions<br>Programming 1 – Further coding with Scratch - broadcast block, conditional, coordinates, features, negative numbers, orientation, parameters, position, script, stage, variables<br>Data Handling – Investigating weather - backdrop, climate zone, cold, condensation, cylinder, degrees, evaporation, extreme weather, forecast, heat sensor, lightning, measurement, pinwheel, presenter, rain, script, sensitive, sensor data, solar panel, tornado, warm, weather, weather forecast, wind<br>Programming 2- Computational thinking - computational thinking, logical reasoning, pattern recognition</td></tr>
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| 5 | **Online safety**<br><br>• To know different ways we can communicate online.<br>• To understand how online information can be used to form judgements.<br>• To understand some ways to deal with online bullying.<br>• To know that apps require permission to access private information and that you can alter the permissions.<br>• To know where I can go for support if I am being bullied online or feel that my health is being affected by time online.<br><br>**Computer systems and networks – Search engines**<br><br>• To know how search engines work.<br>• To understand that anyone can create a website and therefore we should take steps to check the validity of websites.<br>• To understand what copyright is.<br>• To know the difference between ROM and RAM. | **Data Handling – Mars Rover 1**<br><br>• To know that Mars Rover is a motor vehicle that collects data from space by taking photos and examining samples of rock.<br>• To know what numbers using binary code look like and be able to identify how messages can be sent in this format.<br>• To know what simple operations can be used to calculate bit patterns.<br><br>**Creating media – Stop motion animation**<br><br>• To understand that stop motion animation is an animation filmed one frame at a time using models, and with tiny changes between each photograph.<br>• To know that decomposition of an idea is important when creating stop-motion animations.<br>• To know that editing is an important feature of making and improving a stop motion animation.<br><br>**Safer Internet Day** | **Programming – Programming music**<br><br>• To know that a soundtrack is music for a film/video and that one way of composing these is on programming software.<br>• To understand that using loops can make the process of writing music simpler and more effective. |
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| | **<u>Key Vocabulary</u>**<br><br>**Online safety -** accurate information, advice, app permissions, apps, bullying, communication, health, judgement, memes, mental health, mindfulness, mini-biography, online communication, organisation, positive contributions, real world, strong password, summarise, support<br>**Computer systems and networks – Search engines -** appropriate, credit, data leak, deceive, fair, inappropriate, incorrect, index, keywords, privacy, rank, real, TASK, web crawler<br>**Data Handling – Mars Rover 1 -** 8-bit binary, addition, ASCII, binary code, boolean, byte, construction, CPU, data transmission, decimal numbers, discovery, distance, hexadecimal, Mars Rover, moon, radio signal, RAM, research, scientist, signal, simulation, subtraction, transmit<br>**Creating media – Stop motion animation -** animator, character, flip book, fluid movement, frame, model, still image, thaumatrope, zoetrope<br>**Programming – Programming music -** beat, bugs, coding, command, melody, mindmap, performance, pitch, play, rhythm, tempo, timbre, tutorials | | |

| 6 | **Online safety** | **Data Handling – Big data 1** | **Programming – Intro to Python** |
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| | • To know that a 'digital footprint' means the information that exists on the internet as a result of a person's online activity.<br>• To know what steps are required to capture bullying content as evidence.<br>• To understand that it is important to manage personal passwords effectively.<br>• To understand what it means to have a positive online reputation.<br>• To know some common online scams.<br><br>**Computer systems and networks – Bletchley Park**<br><br>• To understand the importance of having a secure password and what "brute force hacking" is.<br>• To know that the first computers were created at Bletchley Park to crack the Enigma code to help the war effort in World War 2 | • To know that data contained within barcodes and QR codes can be used by computers.<br>• To know that Radio Frequency Identification (RFID) is a more private way of transmitting data.<br>• To know that data is often encrypted so that even if it is stolen it is not useful to the thief.<br><br>**Creating media – History of computers**<br><br>• To understand how computers have changed and the impact this has had on the modern world<br>• To research one of the computers that changed the world and present information about it to the class<br>• To design a computer of the future<br><br>**Safer Internet Day** | • To know that there are text-based programming languages such as Logo and Python.<br>• To know that nested loops are loops inside of loops. |
| | **<u>Key Vocabulary</u>**<br><br>**Online safety -** anonymity, antivirus, biometrics, block and report, digital personality, financial information, malware, personality, phishing, reliable source, reputation, scammers, screengrab, software updates, two factor authentication<br>**Computer systems and networks – Bletchley Park -** acrostic code, brute force hacking, caesar cipher, chip and pin system, cipher, combination, contribute, convince, date shift cipher, hero, Nth Letter Cipher, Pig Latin, Pigpen cipher, present, scrambled, secret, technological advancement, trial and error<br>**Data Handling – Big data 1 -** barcode, brand, chips, commuter, contactless, encrypted, infrared, MagicBand, proximity, QR scanner, RFID, systems/data analyst, transmission<br>**Creating media – History of computers -** background noise, FX, gigabyte, hardware, kilobytes, megabyte, memory storage, overlay, processor, radio play, Raspberry Pi, reverb, sound, terrabytes, touch screen, track, trackpad<br>**Programming – Intro to Python -** indentation, random, remix, shape | | |