Computing Medium Term Plan

Intent	Computing will equip children to develop their computational thinking and creativity to understand and influence the world around them. They will develop an understanding of how technology is used in the world around them including within their home and school environment. Computer science forms a key part of the computing curriculum and allows children to develop their resilience, curiosity and problem solving skills through the use of programming and reading code. In addition to this, children will improve their digital literacy skills to be able to use, express themselves and develop ideas through information and communication technology at a level suitable for them to be active participants in an ever-changing digital world. Finally, children will explore what makes a good digital citizen in order for them to act in a safe and responsible way whilst online enabling them to reflect upon the digital footprint they create as well as both the positives and risks associated with being online. *Throughout both the academic year and across the different year groups, children will cover but also repeat key skills. Repetition of skills will allow for children to be introduced to them within the first units before developing their confidence and independence of the skills when repeated. Children in Years 1 – 5 will repeat the skills further by apply them to different formats, programs and physical outputs to ensure the skills are further explored, consolidated and embedded enabling them to leave Wellington with appropriate skills to use in the forever growing and changing digital world. In addition to this, throughout the online safety modules, children will experience more challenging and age related issues the further they go through the school.*					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1	**Programming – Moving a robot move** Key Vocabulary: *Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program* LOs: • To follow commands carefully and explain what makes a set of good instructions • To create and follow a set of commands to get from a to b • To explore the programming and controlling of Beebots • To understand that programs need clear and simple commands to work • To follow a set of instructions when programming BeeBots	**Programming - BeeBots** LOs: • To plan a sequence of programming inputs • To understand what debugging is and to overcome problems • I can plan a course for a Beebot to navigate • I can debug and evalulate my programming • I can use two different programs to get to the same place GDS Indicator: • Can demonstrate a high level of understanding of using a BeeBot • Is able to have a good understanding of directions • Looks for further challenge from getting from A to B. • Is able to debug a issue effecitvely	**Online Safety** Key Vocabulary: LOs: • To begin to understand the importance of staying safe online • To identify what is being safe online and what is not • To understand how to stay safe online • To begin to understand what personal information is • To learn what I should and shouldn't share with a stanger online • To understand what is acceptable behaviour online GDS indicators: • Can demonstrate an enhanced understanding of online safety, making links to own knowledge	**Creating media – Digital writing** Key Vocabulary: *Word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing.* LOs: • To explore the key parts of a laptop and how to treat it with care • To use a computer to write • To add and remove text on a computer • To identify that the look of text can be changed on a computer • To make careful choices when changing text • To explain why I used the tools that I chose • To compare typing on a computer to writing on paper GDS Indicators: • Can use a laptop with confidence • Is able to navigate folders with speed	**Creating media – Digital painting** Key Vocabulary: *Paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush, style, brush size, pictures, painting, computers.* LOs: • I can explore a new application on an iPad • I can make different marks using a range of different tools • I can save a screen shot on the iPads • I can recreate an object on the Application using the tools • I can add colour to my picture to highlight certain areas. GDS Indicators: • Is able to use a range of different features on both paint applications • Can produce a piece of artwork at a good quality	**Creating media - Talking Books** Key Vocabulary: LOs: • I can listen to an audio book and describe what I like and don't like • I can label the features of an iPad • I can use an app on an iPad to record audio • I can use expression and intonation when recording a voice memo • I can explain why it is important to speak clearly when reading for a talking book • I can plan my own story to record • I can record my own story using some sound effects. GDS Indicators: • Can produce a good talking book potentially using features not discussed • Shows confidence when recording using the iPad

Declarative Knowledge: Facts
Procedural Knowledge: How to
Conditional Knowledge: Why

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Year 2	**Online Safety** Key Vocabulary: LOs: • To recap on the importance of staying safe online • To understand the information I put online leavse a digital footprint • I understand how to be respectful and kind to people online • To demonstrate how to respond to different internet safety situations GDS indicators: • Can demonstrate an enhanced understanding of online safety, making links to own knowledge • To be able to apply understanding to different contexts	**Creating media - Digital Photography** Key Vocabulary: *Device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting.* **LOs:** • To use a digital device to take a photograph • To make choices to process of taking a good photograph • To describe what makes a good photograph • To decide how photographs can be improved • To use tools to change an image • To recognise that photos can be changed GDS indicators: • To show confidence when using a range of different functions on a camera • To consider external factors when taking photographs	**Programming A – Robot Algorithms** Key Vocabulary: *Instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition.* LOs: • To describe a series of instructions as a sequence • To explain what happens when we change the order of instructions • To use logical reasoning to predict the outcome of a program • To explain that programming projects can have code and artwork • To design an algorithm • To create and debug a program that I have written GDS indicators: • To show confidence and resilience at debugging codes • To experiment with different coding that hasn't been taught discritly.	**Data and information – Pictograms** Key Vocabulary: *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, black diagram, sharing.* **LOs:** • To recognise that we can count and compare objects using tally charts • To recognise that objects can be represented as pictures • To create a pictogram • To select objects by attribute and make comparisons • To recognise that people can be described by attributes • To explain that we can present information using a computer GDS indicators: • Can explain when pictograms are not a good method of representing data • Use technical vocabulary appropriately most of the time	**Creating media – Digital music** Key Vocabulary: *Music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit.* LOs: • To say how music can make us feel • To identify that there are patterns in music • To experiment with sound using a computer • To use a computer to create a musical pattern • To create music for a purpose • To review and refine our computer work GDS indicators: • Create a musical pattern which follows rhythm, pulse and pitch. • Experiment with a range of different music instruments • Identify areas for improvement and make changes that advance work	**Programming B – Programming quizzes** Key Vocabulary: *Sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code.* LOs: • To explain that a sequence of commands has a start • To explain that a sequence of commands has an outcome • To create a program using a given design • To change a given design • To create a program using my own design • To decide how my project can be improved

Declarative Knowledge: Facts
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Year 3	**Programming – Sequencing motion and sound blocks** **See progression of skills** **Scratch – Sequencing sounds** *Key Vocabulary: Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, algorithm, event, task, design, run the code, order, note, chord* LOs: • To recognise that commands in Scratch are represented as blocks • To begin to use the objects in a Scratch project (code, sprites and backdrops) • To explain why objects in Scratch have linked attributes • To predict and match coding blocks to their actions • To create a program following a design and understand that each sprite is controlled by the command you use • To start a program in different ways • To create a sequence of connected commands • To explain that the objects in my project will respond exactly to the code • To explain what a sequence is • To combine sound commands • To order notes into a sequence GDS indicators: • Can independently follow instructions to create code to fulfil a given criteria • Can make independent decisions about what they would like to their program to achieve and code it successfully	**Computing systems and networks – Connecting computers** Key Vocabulary: *Digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets.* LOs: • To identify inputs and outputs • To explore how digital devices work and how they help us • I can explore similarities and differences of digital devices • I can explore how digital devices can be connected • To recognise the physical components of a network GDS Indicator: • Can explore more complex functions Can reason as to the importance of non-digital devices	**Creating media – Desktop publishing** Key Vocbulary: *Text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop, publishing, copy, paste, purpose, benefits.* LOs: • To edit text and layout • To understand and use keyboard buttons while typing • To beging to touch type using the correct positon • To publish a piece of work that includes text and images GDS Indicator • Can independently explore additional tooks and formatting options • Can use the arrow keys to navigate around a document without using the trackpad or mouse Can idependently locate puncation keys without guidance	**Data and Information – Branching Databases** Key vocabulary: *Arritbute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.* LOs: • To create closed questions • To identify attributes for branching database questions • To create a branching database • To plan the structure of a branching database • To create an identification tool GDS Indicator: • Can extrapolate understanding to provide more examples without support • Can reason as to the efficiency of different branching databases • Can reason as to the importance of branching databases	**Creating media – Stop-frame Animation** *Key Vocabulary:* *Animation, flip book, stop-frame, frame, sequence, image, photograph, setting, character,* LOs: • To explore stop-frame animation • To plan and design an animation using a storyboard • To make a setting and characters for a stop-frame animation • To create a stop-frame animation GDS Indicator: • Can consider the importance of camera angles • Can make independent decisions on how to improve animation	**Online safety** (Sessions to be spaced out throughout the year - Finish off sessions from rest of year in Summer 2. *Key Vocabulary:* Online, identity, avatar, unique, share, online, profiles, communicate, offline, friends, safe, like, trust, search engines, digital footprint, sharing, permission, post, share, bully, bullying, cyberbullying, search bar, autocomplete, fact, opinion, digital devices, balance, socialise, healthy lifestyle, PEGI rating, responsible, content, password, protect, smart devices, digital assistant, keywords, listening, understanding, recording LOs: Full breakdown of expected knowledge in Online Safety Breakdown document • To begin to understand our online identity • To understand who we can trust and communicate with online • To understand how to search for information online and explain the importance of giving and gaining permission before sharing things online • To know what online bullying is and what to do if we see it • To understand how search engines use autocomplete and to evaluate whether it can always be trusted • To understand how to use devices as part of a balanced lifestyle • To explain why some activities have age restrictions • To describe simple strategies for creating and keeping passwords private GDS indicators: • Can demonstrate an enhanced understanding of online safety, making links to own knowledge

Declarative Knowledge: Facts
Procedural Knowledge: How to
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Year 4	**Online Safety** *Key Vocabulary:* *Internet, permission, consent, apps, age restrictions, terms of use, privacy policy, citizen, identity, online, offline, bullying, cyberbullying, content, behaviour, screen time, limit, technology, password, strong, weak, private, public, profile* LOs: Full breakdown in Online Safety Breakdown document • To understand what the age of digital consent is and what impact it has • To explain how online and offline identities can differ and suggest why • To understand the impact of cyberbullying • To identify situations when someone might need to limit screen time • To describe strategies for keeping personal information private online • To describe how connected devices can collect and share anyone's information with others GDS indicators: • Can demonstrate an enhanced understanding of online safety, making links to own knowledge	**Creating media - PowerPoint** *Key Vocabulary:* Los: • To plan a story with alternative endings • To evaluate the purpose and features of a PowerPoint	**Computer systems and networks – The internet** *Key Vocabulary:* *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* LOs: • To understand the structure of a network • To recognise how networked devices make up the internet • To outline how information can be shared via the World Wide Web (WWW) • To describe how content can be added and accessed on the WWW GDS indicator: • Can invent own questions and answers for a given route • Can give reasoned justifications for key features of different websites	**Data and Information – Data Logging** Key Vocabulary: Data, table, layout, inout, device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion. LOs: • To navigate around a spreadsheet • To use formulae in a spreadsheet • To use formulae to find out information • To edit and improve graphs • To represent data in a spreadsheet using a graph GDS indicators: • Can indendently format a spreadsheet, making mature and effective formatting choices and reasoning about their choices • Can independently adapt formulae for different purposes • Can independently apply knowledge of formulae, using it in different contexts • Can change the stype of a graph to suit the context.	**Programming - Forever and count controlled loops** **See progression of skills** **Scratch – Repetition in Games** *Key Vocabulary: Scratch, repeat, loop, code, forever, counted, program, modify, edit, infinite* LOs: • To use loops in code • To understand different types of loop • To program different types of loop • To modify existing code • To plan a program GDS indicator: • Can independently edit code to produce a prescribed outcome	**Creating media – Photo Editing** *Key Vocabulary:* *Image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia,vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.* **LOs:** • To explain that the composition of digital images can be changed • To explain that colours can be changed in digital images • To explain how cloning can be used in photo editing • To take and edit your own photographs GDS indicator: • Can explain why it is difficult to tell if images have been edited • Can explain choices for chosen editis articulately.

Declarative Knowledge: Facts
Procedural Knowledge: How to
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Year 5	**Online Safety** *Key Vocabulary: Technology, health, well-being, sleep, sceptical, reliable, unreliable, bias, exaggeration, alarmism, AI, bullying, cyberbullying, consent, content, behaviour, banter, harm, indentity, social media, sharing, consent, followers.* LOs: • To recognise the relationship between technology and well-being • To evaluate digital content and make choices about what is trustworthy • To understand the difference between online bullying and banter • To understand that some people we communicate with online may not be safe • To begin to understanding the addictive nature of social media GDS indicators: • Can demonstrate an enhanced understanding of online safety, making links to own knowledge.	**Programming - If, else statements** **See progression of skills** **Scratch – Selection in quizzes** *Key Vocabulary:* *Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator.* LOs: • To design a program that uses selection • To research questions for a quiz • To create your own Scratch quiz • To test and evaluate your program GDS indicator: • Can understand the limitations of programming languages • Can independently explore additional features of Scratch – making reasoned choices	**Programming - Micro:bits** *Key Vocabulary:* LOs: • To investigate and use a range of inputs to control an output • To develop an understanding of input and output including logic code • To transfer data using radio signal and modify existing code • To create and use functions and variables in code GDS Indicator • Can begin to understand other coding languages (JavaScript) and make simple edits • Can apply aquired knowledge to independently tackle more complex problems.	**Data and Information – Flat File Databases** *Key Vocabulary:* *Database, information, data, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation.* LOs: See flip for success criteria • To use a form to record information • To compare paper and computer-based databases	**Computing systems and networks – systems and searching** *Key Vocabulary:* *Systems, 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.* LOs: • To understand what a computer system is • To experiment with search engines • To understand how search results are indexed and ranked. GDS Indicator: • Can provide reasoned conditional understanding	**Creating media - Website Creation** *Key Vocabulary:* *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, implication, external link, embed.* LOs: • To review an existing web page and consider its structure • To explore the audience and purpose of a website • To consider the ownership and use of images (copyright) • To recongise the need to preview pages • To outline the need for a navigation path • To recognise the implications of linking content owned by other people GDS Indicators • Can ask informed questions on the subject • Can idependently edit webpage based on changes to audience • Can apply moral understanding to task

Declarative Knowledge: Facts
Procedural Knowledge: How to
Conditional Knowledge: Why

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Year 6	**Online Safety** *Key Vocabulary: Mental health, well-being, self-esteem, content, social media, gambling, pop-ups, ads, scams, financial information, harm, digital age of consent, social media, private, public, content, cyberbulling, trolling.* LOs: Full breakdown in Online Safety Breakdown document • To suggest strategies for counteracting the negative impact the internet can have on our mental health • To understand the risk of spending money online • To understand what content I should not share online • To understand that people may behave differently online including showing bullying behaviour and know how to apply friendship principles online GDS indicators: • Can demonstrate an enhanced understanding of online safety, making links to own knowledge	**Programming – Creating variables and blocks** **See progression of skills** **Scratch – Variables in games** *Key Vocabulary:* *Variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare.* LOs: • To revise and practise our existing programming skills • To explore the concept of procesures • To use, investigate and modify code that uses procedures • To investigate an modify code that uses variables GDS indicator: • Can independently create code to solve more complex problems • Can independently explore additional features of Scratch – making reasoned choices	**Computing Systems and Networks – Communication and Collaboration** *Key Vocabulary: Internet, data, communicate, protocol, address, IP address, Domain Name Server, packets, header, data payload, message, sending, receiving, network, collaboration, online, project, public, private, one-to-one, one-to-many, one-way, two-way* LOs: • To explain the importance of internet addresses • To recognise how data is transferred across the internet • To explain how sharing information online can help people to work together and use a computing network to work collaboratively on a project • To evaluate different methods of online communication GDS indicators: • Can apply their knowledge of websites to reason about the origin specific of IP addresses • Can demonstrate an enhanced understanding of how and why data is transferred over a network • Can demonstrate an enhanced understanding of how to share data safely online	**Creating media – Stop Motion Video** (Topic day after SATs) *Key Vocabulary: program, code, block, repeat, forever, sprite, backdrop, motion, animation* LOs: • To understand and use coding in Scratch to create a stop motion video GDS indicators: • Can independently program video to include sound without explicit instruction • Can independently retrieve and explore additional features of the program and make mature and effective choices of which features to use	**Data and Information – Introduction to Spreadsheets** (Excel) *Key Vocabulary: Data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, input, output, function, operation, range, duplicate, sigma, chart, evaluate, results, comparison, questions, software, tools* LOs: • To collect data, suggest how it should be structured and enter it into a spreadsheet • To explain what an item of data is and to choose and apply appropriate formatting to cells • To understand and construct formulae in a spreadsheet • To understand and use functions • To use spreadsheets to analyse and evaluate data • To use charts to present data and information GDS indicators: • Can independently format a spreadsheet, making mature and effective formatting choices and reasoning about their choices • Can use keyboard shortcuts to increase efficiency • Can use the keyboard (rather than the trackpad) to quickly select and edit data • Can independently apply knowledge of formulae, using it in different contexts • When guided, can understand and use more complex formulae • Can independently explore other features of the program

Declarative Knowledge: Facts
Procedural Knowledge: How to
Conditional Knowledge: Why