Curriculum Narrative: Computing (North Elmham)

CS = Computer Science, IT = Information Technology, DL = Digital Literacy

		Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Summer 2
EYFS - Nursery		**Understanding the World:** Provide mechanical equipment for children to play with and investigate. Suggestions: wind-up toys, pulleys, sets of cogs with pegs and boards.					
EYFS - Reception		**Understanding the World:** Through continuous provision, children continue to have access to a variety of technology (ipads, Chromebooks, IWB, Beebots, battery-operated toys, remote control) to learn to take good pictures, use paint programs and use a simple programmable toy.					
Year 1		**IT & DL** Online safety/ Multimedia How do I stay safe online? Why do we keep personal information private? How can I communicate through email? How can I log onto a an ipad? How do I open apps? How do I sign into Seesaw? How do I scan a QR code? https://projectevolve.co.uk/toolkit/years/year-one/privacy-and-security/ **VOCAB:** safe, online, personal, private, information, email, communicate, login, password,	**DL** Data & Information: Grouping Data This unit introduces pupils to data and information. They will begin by using labels to put objects into groups, and labelling these groups. Pupils will demonstrate that they can count a small number of objects, before and after the objects are grouped. They will then begin to demonstrate their ability to sort objects into different groups, based on the properties they choose. Finally, pupils will use their ability to sort objects into different groups to answer questions about data.	**DL** Creating Media - Digital Painting Explore the world of digital art and its exciting range of creative tools with your learners. Empower them to create their own paintings, while getting inspiration from a range of other artists. Conclude by asking them to consider their preferences when painting with, and without, the use of digital devices. **VOCAB:** tools, lines, shapes, colour, size, freehand. **See Federation Curriculum Drive: Analytical Team:**	**IT** Computer Systems & Networks: Technology Around Us Develop your learners' understanding of technology and how it can help them. They will become more familiar with the different components of a computer by developing their keyboard and mouse skills, and also start to consider how to use technology responsibly. **VOCAB:** technology, computer, log on, mouse, click, drag, keyboard, icon, save, file, textbox,	**CS** Programming - Moving a Robot This unit introduces learners to early programming concepts. Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each floor robot command does and use that knowledge to start predicting the outcome of programs. The unit is paced to ensure time is spent on all aspects of programming and builds knowledge in a structured manner. Learners are also introduced	**CS** Programming - Programming an Animation This unit introduces learners to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms. **VOCAB:** commands, Sprite, tools, blocks, algorithm, start,

		programme, space bar.	**VOCAB:** group, label, count, properties, describe, classify, compare, record, answer. **See Federation Curriculum Drive: Analytical Team: Computing: Y1: Grouping Data**	**Computing: Y1: Creating Media - Paint**	cursor, rules. **See Federation Curriculum Drive: Analytical Team: Computing: Y1: Technology Around Us**	to the early stages of program design through the introduction of algorithms. **VOCAB:** clear, run, command, predict, directions, left/right, forwards/backwards, sequence, turn, move, order, debug, route. **See Federation Curriculum Drive: Analytical Team: Computing: Y1: Programming - Moving a Robot**	value, add, delete. **See Federation Curriculum Drive: Analytical Team: Computing: Y1: Programming - Animation**
Year 2/3/4	**Year A (23/24)**	**DL** <u>Creating Media: Digital Writing</u> Promote your learners' understanding of the various aspects of using a computer to create and change text. Learners will familiarise themselves with typing on a keyboard and begin using tools to change the look of their writing, and then they will consider the differences between using a computer	**DL** <u>Data & Information: Pictograms</u> This unit introduces the learners to the term 'data'. Learners will begin to understand what data means and how this can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data in the form of pictograms and finally block	**CS** <u>Programming - Robot Algorithms</u> This unit develops learners' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Learners will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design in programming. They will develop artwork	**IT** <u>Computing Systems & Networks - IT around us</u> How is information technology (IT) being used for good in our lives? With an initial focus on IT in the home, learners explore how IT benefits society in places such as shops, libraries, and hospitals. Whilst discussing the responsible use of technology, and how to make smart choices when using it.	**DL** <u>Creating Media - Digital Photography</u> Learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real. **VOCAB:** digital photo, photography, landscape / portrait,	**CS** <u>Programming - Programming Quizzes</u> This unit initially recaps on learning from the Year 1 Scratch Junior unit 'Programming B - Programming animations'. Learners begin to understand that sequences of commands have an outcome and make predictions based on their learning. They use and modify designs to create their own

		and writing on paper to create text. **VOCAB:** keyboard, keys, letter, number, space / backspace, toolbar, bold / italic / underline, font, clicking, dragging, double-clicking, **See Federation Curriculum Drive: Analytical Team: Computing: Y2: Digital Writing**	diagrams. Learners will use the data presented to answer questions. **VOCAB:** counting, comparing, organising, record, represent, tally, pictogram, enter data, format, attribute, most/least, more/less than, presenting, concluding. **See Federation Curriculum Drive: Analytical Team: Computing: Y2: Data & Information - Pictograms**	and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them. **VOCAB:** instructions, sequence, predictions, logic, design/create/test, routes, algorithms, chunks, debug. **See Federation Curriculum Drive: Analytical Team: Computing: Y2: Programming - Robot Algorithms**	**VOCAB:** information technology (IT), safety, rules, choices, responsibility. **See Federation Curriculum Drive: Analytical Team: Computing: Y2: IT Around Us**	composition, lighting, tools, effects, adjust. **See Federation Curriculum Drive: Analytical Team: Computing: Y2: Digital Photography**	quiz questions in ScratchJr and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects. **VOCAB:** sequences, start, run, outcome, predict, command, background, design, algorithm, compare, improve, debug. **See Federation Curriculum Drive: Analytical Team: Computing: Y2: Programming - Quizzes**
Year 2/3/4	**Year B (24/25)**	**DL** **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,**	**IT** Computer Systems & Networks Challenge your learners to develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. Start by comparing digital and non-digital devices, before introducing them to	**DL & CS** Online Safety & Sequencing From Code.org Course C (2023) lessons 1-6 https://studio.code.org/s/coursec-2023 What to do if something online makes you feel angry, sad or scared. How passwords protect	**CS** Loops From Code.org Course C (2023) lessons 7-10 https://studio.code.org/s/coursec-2023 Program your classmates using loops to solve problems. Help sprites through mazes using loops and collect items.	**IT & DL** Online Safety: online relationships Describe online friendships, online / offline behaviour, explore trust, people's feelings can be affected by online behaviour, giving / gaining permission. https://projectevolve.co.uk/toolkit/resourc	**CS, DL, IT** Events & Data From Code.org Course C (2023) lessons 11-15 https://studio.code.org/s/coursec-2023 Play a game to learn about events. Build a Flappy Bird game and share it. Make a game in Play Lab. Collect data from

		analysing, evaluating and presenting data and information A Google Classroom (setting up for the year ahead - link to Aut 1 topic) Google Drive (3 lessons) - learning to create, retrieve, edit and share files. Organise using folders. https://applieddigitalskills.withgoogle.com/c/college-and-continuing-education/en/g-suite-certification-drive/overview.html https://applieddigitalskills.withgoogle.com/c/middle-and-high-school/en/organize-files-in-drive/overview.html Google Docs (3 lessons) - retrieve files and edit (including retrieving versions of the files). Change font, colour, size efficiently. Insert: images from the web (within Docs), tables and drawings. Use other tools and functions	computer networks that include network infrastructure devices like routers and switches. Use unit from Teach Computing: https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-connecting-computers **(found in Curriculum Drive: Analytical: Computing: Y3)**	your information. Program your classmates to build stacked cups. Learn about sequences and algorithms. Find problems in puzzles and practise debugging. Write algorithms for a sprite to collect objects. Create images with code. **VOCAB:** cyberbullying, online, password, protect, secure, algorithm, bug, debugging, program, sequencing.	Learn about conditionals. Use loops to make cool art. **VOCAB:** loop, repeat, condition(al).	es/years/year-three/online-relationships/ **VOCAB:** interests, likes / dislikes, online / offline behaviour, trust, feelings, permission, sharing.	Play Lab and visualise it using different graphs. End of course project: build your own project with coding. **VOCAB:** event, data, graphs

		such as bullet points, bold, italics and underlining. https://teachcomputing.org/curriculum/key-stage-2/creating-media-desktop-publishing **(found in Curriculum Drive: Analytical: Computing: Year 3 - only use first few lessons that relate to using Google Docs / Word)** **VOCAB:** create, retrieve, edit, share, organise, versions, tools, tables, drawings.					
Year 2/3/4	**Year C (25/26)**	**DL** **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**	**CS** Sequencing & Events From Code.org Course D (2023) lessons 2-8 https://studio.code.org/s/coursed-2023 Program your classmates to draw pictures. Online puzzles. Debugging and fixing problems in your code. Make your own video games. Build a Star Wars game.	**IT** 'Computing Systems & Networks - The Internet Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to	**CS** Loops & Conditionals From Code.org Course D (2023) lessons 9-13 https://studio.code.org/s/coursed-2023 Use repeat blocks to reach a destination efficiently. Use loops to make cool images. Loops inside a loop - what happens when you create a nested loop?	**IT & DL** Online Safety: Privacy and Security (4 lessons) & Copyright and Ownership (2 lessons) Keeping personal information private, internet use, consent, right to reuse information online, online permission. https://projectevolve.co.uk/toolkit/resources/years/4/	**IT & DL** Stop-Motion Animation Learners will use a range of techniques to create a stop-frame animation using tablets. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.

		A Google Classroom (setting up for the year ahead - link to Aut 1 topic) Email - composing, writing and sending an email. Replying to single and multiple recipients. Attaching a file/image. Google Slides - inserting multiple slides, text, images and selecting a theme/background. Using transitions for separate lines of text. https://applieddigitalskills.withgoogle.com/c/middle-and-high-school/en/show-appreciation-with-google-slides/overview.html **VOCAB:** email, compose, recipient, reply, attach, slides, theme, transition/ animation.	**VOCAB:** algorithm, program, bug, debugging, loop, event.	explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information. Use unit from Teach Computing: https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-the-internet **(found in Curriculum Drive: Analytical: Computing: Year 4)** **VOCAB:** network, internet, routers, connect, world wide web, device, upload, storage, truth, legal.	Play a game, earning points under certain conditions. Program Bee to collect items using conditionals. Using the 'while' loop in coding. **VOCAB:** loop, repeat, command, conditional, while loop.	**VOCAB:** personal / private information, monitoring, consent, online services, digital age, ownership, permission, copyright.	Use unit from Teach Computing: https://teachcomputing.org/curriculum/key-stage-2/creating-media-animation **(found in Curriculum Drive: Analytical: Computing: Year 4)** **NOTE:** use an app on ipads called 'Stop Motion' (not the program mentioned in the plans). **VOCAB:** stop-frame / stop-motion, animation, flip book, frame, storyboard, media.
Year 5/6	**Year A (23/24)**	**DL** **Select, use and combine a variety of software (including internet services) on a**	**CS, DL** Sprites & Digital Citizenship From Code.org Course E (2023) lessons 1-5	**CS** Nested Loops & Functions From Code.org Course E (2023) lessons 6-11	**IT & DL** Online Safety: online relationships Explore communication in	**IT & DL** Flat-File Databases This unit looks at how a flat-file database can be used to organise	**CS** Data & Simulations From Code.org Course F (2023) lessons 12-14 https://studio.code.o

		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 A Google Classroom (setting up for the year ahead - link to Aut 1 topic) Google Sites - make a front cover for your website (include themes, pictures and text). Learn about pages - add pages to your site. Embed URLs and HTML code to your site. **VOCAB:** website, title, theme, page, tab, embed, URL, HTML **See Federation Curriculum Drive: Analytical Team: Computing: Y6: Web page creation**	Play a game and think about what commands are needed to get the right result. Learn how to create and edit sprites. Create an interactive project that can be shared with classmates. This lesson teaches you the difference between information that is safe to share and information that is private. By creating an interactive poster with SpriteLab, students will apply their understanding of sharing personal and private information on the web. **VOCAB:** behaviour, command, sprite, event, identity theft, personal/private information, register, accessibility.	What happens when you place a loop inside another loop? Drawing with nested loops. Functions using lyrics from songs. Use functions for the most efficient code. More complex drawings. **VOCAB:** loop, nested loop, repeat, function.	technology (GIFS, memes, emojis), ways people may cause harm online, online communities, how people can get help online, how to support others. https://projectevolve.co.uk/toolkit/resources/years/5/online-relationships/ **VOCAB:** communication, GIFS, emojis, memes, harm, online communities, trusted adult, report, support.	data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems. They use a real-life database to answer a question, and present their work to others. **VOCAB:** flat-file database, organise, store, category, grouping, sorting, search tool, field. **See Federation Curriculum Drive: Analytical Team: Computing: Y6: Flat-file Databases**	rg/s/coursef-2023 Children run and collect data from simulations, predicting how changing a variable will impact the outcome. Other opportunities in this unit involve children training a computer to classify objects, and running a mini project to see how quickly a virus can spread (through a simulation). **VOCAB:** models, simulation, event, machine learning.
Year 5/6	**Year B**	**DL** **Select, use and**	**CS4, IT3, DL5** 'Earth & Space'	**DL & IT** Computer Systems	**IT & DL** Online Safety:	**CS** 'Programming -	**IT2, IT3, DL5** 'Grand Designs'

	(24/25)	**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** <u>A Google Classroom</u> (setting up for the year ahead - link to Aut 1 topic) <u>Google Sheets</u> - insert multiple sets of data and select an appropriate chart to convert the data into. Using simple formulae to give totals to cells. **VOCAB:** spreadsheet, cell, row, column, data, chart, function, sum, survey, questions, options, responses, analyse, export. **See Federation Curriculum Drive: Analytical Team:**	<u>Scratch project</u> (Link to Science: Earth & Space) Children will use Scratch and story sequencing to create a fact game about the planets of the solar system. **VOCAB:** Sprite, stage, backdrop, coding, bug, debug, sequence, story, block, command. **See Federation Curriculum Drive: Analytical Team: Computing: Y5: Space Animation Story**	<u>& Networks: communication and collaboration</u> Learners develop their understanding of computer systems and how information is transferred between systems and devices. Learners consider small-scale systems as well as large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines. **VOCAB:** components, connections, input, output, process, search engine, address bar, World Wide Web, web crawler, index,	<u>Health, Wellbeing and Lifestyle (4 lessons) & Self-image and Identity (2/3 lessons)</u> Explore age-related content regulations (PEGI etc.), pressures of technology, persuasive design and content, ways to limit the impact of technology on health. Evaluate content relating to gender, race, religion etc. <u>https://projectevolve.co.uk/toolkit/resources/years/6/</u> **VOCAB**: age-related content, regulation, PEGI, technology, pressure, persuasive design, health, stress, gender, race, religion, stereotype, prejudice.	<u>Variables' (Scratch)</u> This unit explores the concept of variables in programming through games in Scratch. First, pupils will learn what variables are, and relate them to real-world examples of values that can be set and changed. Pupils will then use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, pupils will experiment with variables in an existing project, then modify them, then they will create their own project. In Lesson 4, pupils will focus on design. Finally, in Lesson 6, pupils will apply their knowledge of variables and design to improve their game in Scratch. **VOCAB:** variable, information, change, improve, prediction, artwork, algorithm, code.	Learning about our built environment can help us understand so much about our history, culture and how buildings have shaped our society. Children will explore drawings representing both 2D and 3D worlds. They need to think about who they are designing their building for and other elements such as what materials they might use. **VOCAB:** design. line, modelling, outer shell, arc, components, style, view, CAD (computer-aided design), environment. **See Federation Curriculum Drive: Analytical Team: Computing: Y5: Grand Designs**

		Computing: Y5: Spreadsheets		webpage, rank, rank results. **See Federation Curriculum Drive: Analytical Team: Computing: Y6: Searching and communicating**		**See Federation Curriculum Drive: Analytical Team: Computing: Y6: Programming - variables**	

For more support with teaching Google Tools visit Google's Applied Skills Lessons: https://applieddigitalskills.withgoogle.com/c/en/curriculum.html

For more support with planning **Computer Science** units visit http://code-it.co.uk/csplanning.html
https://code.org/educate/curriculum/elementary-school
For teaching **Non-Computer Science** units (**Digital Literacy** & **Information Technology**) visit http://code-it.co.uk/dlplanning

For further (and more up-to-date) schemes on e-safety, including Reception: https://projectevolve.co.uk/toolkit/years/

How the internet works: http://code-it.co.uk/netintsearch

KS1 useful resources:

- **Programmable Toys** - Beebot/Roamer - *plan, test, discuss, carry out, debug and improve programs.*
- **Light Bot** https://lightbot.com/flash.html - create sequences of instructions to manoeuvre a robot around a level and get to each blue square.
- **Magic Pen** http://www.bubblebox.com/play/puzzle/975.htm - develop computer skills and computational thinking to solve problems by drawing objects to make a ball reach a flag. (ALLOW GAME TO LOAD FULLY, DO NOT CLICK ON ADVERTS).
- **Fantastic Contraption** http://www.fantasticcontraption.net/) - build virtual contraptions from simple instructional components to learn the benefits of predicting, testing and improving design.

Skills Progression

	IT = Information Technology	DL = Digital Literacy	CS = Computer Science
EYFS	Pupil can; make marks using technology; explore and interact with their environment using a range of equipment; (e.g. using a camera to take photos, using an iPad to record videos) recognize simple icons, buttons or shortcuts;	Can act if they find something they are unsure of (including identifying people who can help)	Can explore the functions of a simple programming tool? (e.g. beebot)

	turn equipment on/off		
Year 1	Pupils use names for ICT components – e.g. mouse; record their own voice and that of others; use a simple art program.	Know that personal information should not be shared online. Can act if they find something they are unsure of (including identifying people who can help; minimising screen; online reporting using school system etc.	Can create a simple series of instructions - left and right. Can record their routes. Understand forwards, backwards, up and down. Can put two instructions together to control a programmable device Can begin to plan and test their instructions Can move objects around on a screen.
Year 2	Pupils can: understand the importance of ICT; recognise different ways of using ICT and decide which to use; use shape tools to draw; resize a picture; generate a chart; Experiment with drawing tools, text, pictures and animation to create content (e.g. presentation, eBook)	Can recognise advertising on websites and learn to ignore it. Can begin to evaluate websites and know that everything on the internet is not true.	Can predict the outcomes of a set of instructions. Can program using sequences of instructions to implement an algorithm. Can create an algorithm to debug. Can test and amend a set of instructions.
Year 3	Pupils can recognise the importance of ICT in the real world; use ICT to organise and present their work; create and position text, alter font and align text; use editing software to manipulate media (e.g. crop, add effects, manipulate audio) combine text and images and show awareness of audience; know how to manipulate text; (e.g. underline text, centre text, change font and size) save files (e.g. word doc, pictures) to an appropriate folder	Recognise that cyber bullying is unacceptable and will be sanctioned in line with the school's policy. Understand the need for caution when using an internet search for images. Understand different ways to send a message Recognise an email address. Use @ in emails. Send an email and reply to one. Navigate a website by clicking on links Use the back button to return to a previous website page Understand the importance of email safety.	Understand the importance of clear and precise instructions Use algorithms to control movement Create and debug simple programs Give an on-screen robot directional instructions (e.g. 90/45 degree turns) Use commands to draw a shape (e.g. square, rectangle and other regular shapes on screen)
Year 4	Format text towards a specific purpose Use word count, bullets, numbering Present information using a range of software Use ICT across a range of subjects Order and organise text using a word processing	Recognise immediately when online safety is compromised and know how to get support Use a search program	Design and write simple programs Debug programs when they go wrong Use control commands to draw shapes Use repeat instructions to draw regular shapes on screen, using commands

	program Record using video and sound, and amend what they have recorded Insert media into a presentation (image, video, audio) Know how to manipulate text, underline text, centre text, change font and size and save text to a folder Create a presentation that is aimed at a specific audience		Make turns specifying the degrees Make accurate predictions about the outcome of a program they have written.
Year 5	fill in a data collection sheet Understand that poor input equals unreliable results Add special effects to work Using a CAD, can design and make a given object fit for a purpose, adding correct components and sizing the dimensions.	Understand that some malicious adults may use various techniques to make contact and elicit personal information Understand they should not publish other people's pictures or tag them on the internet without permission Know that content put online is extremely difficult to remove Recognise the difference between the work of others which has been copied (plagiarism) and restructuring and re-presenting materials in ways which are unique and new Can create and use strong and secure passwords.	Adapt and modify programs and add refinements Use simulations to explore patterns and relationships Make predictions about what might happen in a game program Use sequencing skills to animate a conversation between 2 characters. Can use broadcasting to send messages for sprites. Can use functions and loops (nested loops) to give instructions and make code more efficient. Explore what-if scenarios Explain how an algorithm works Detect errors in a program and correct them
Year 6	Gain an understanding of how the internet works. Can represent how 'packets' of data travel. Can make wise decisions about when using other people's work - when is it copyright?	Can they make a home page for a website that contains links to other pages. Embed URLs, images and videos. Can describe issues online that might make me or others feel sad, worried, uncomfortable or frightened. Know and can give examples of how I might get help, both on and offline. Can use a flat-file database to organise / sort various types of data. Can create charts / graphs to represent this data so that it is visually pleasing.	Can use variables to create a simple game of pong - to control a sprite, to change something in the game, to add / subtract a score. Can debug and appraise own and others' work. Can use variables and events to run a simulation. Develop a robot to build machine learning skills so that it can classify objects.