Hudson Road Primary School

Computing and Information Technology

Progression of Knowledge, Vocabulary and Skills Document

	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Unit One Computing systems and networks	Computational Thinking	Technology all around us	Information technology all around us	Connecting computers	The internet	Systems and searching	Communication and collaboration
Unit Two Creating media	Computational Thinking	Digital painting	Digital photography	Stop-frame animation	Audio production	Video production	Webpage creation
Unit Three Programming A	Computational Thinking	Making a robot	Robot algorithms	Sequencing sounds	Repetition in shapes	Selection in physical computing	Variables in games
Unit Four Data and information	Computational Thinking	Grouping data	Pictograms	Branching data-bases	Data logging	Flat file databases	Introduction to spreadsheets
Unit Five Creating media	Computational Thinking	Digital writing	Digital music	Desktop publishing	Photo editing	Introduction to vector graphics	3D modelling
Unit Six Programming B	Computational Thinking	Programming animations	Programming quizzes	Events and actions in programs	Repetition in games	Selection in quizzes	Sensing movement
Unit Seven Online Safety	See separate overview	See separate overview	See separate overview	See separate overview	See separate overview	See separate overview	See separate overview

Year 1			
	Unit 1 Computing systems and networks Technology around us	Unit 2 Creating media Digital painting	Unit 3 Programming A Moving a robot
Knowledge and Skills	- To identify technology - To identify a computer and its main parts - To use a mouse in different ways - To use a keyboard to type on a computer - To use the keyboard to edit text - To create rules for using technology responsibly	- To describe what different freehand tools do - To use the shape tool and the line tools - To make careful choices when painting a digital picture - To explain why I chose the tools I used - To use a computer on my own to paint a picture - To compare painting a picture on a computer and on paper	- To explain what a given command will do - To act out a given word - To combine 'forwards' and 'backwards' commands to make a sequence - To combine four direction commands to make sequences - To plan a simple program - To find more than one solution to a problem
Apps and Resources	Laptop or desktop paintz.app	Laptop or desktop Microsoft paint or similar	Bee-bot

	Unit 4 Data and information Grouping data	Unit 5 Creating media Digital writing	Unit 6 Programming B Programming animations
Knowledge and Skills	- To label objects - To identify that objects can be counted - To describe objects in different ways - To count objects with the same properties - To compare groups of objects - To answer questions about groups of objects	- 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	- To choose a command for a given purpose - To show that a series of commands can be joined together - To identify the effect of changing a value - To explain that each sprite has its own instructions - To design the parts of a project - To use my algorithm to create a program
Apps and Resources	Google Slides or Microsoft Powerpoint	Google Docs or Microsoft Word	Scratch Jr

Year 2			
	Unit 1 Computing systems and networks IT around us	Unit 2 Creating media Digital photography	Unit 3 Programming A Robot algorithms
Knowledge and Skills	- To recognise the uses and features of information technology - To identify the uses of information technology in the school - To identify information technology beyond school - To explain how information technology helps us - To explain how to use information technology safely - To recognise that choices are made when using information technology	- To use a digital device to take a photograph - To make choices when taking a 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	- 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
Apps and Resources	Desktop or Laptop Google Slides or Microsoft Powerpoint	Desktop, laptop or iPad Digital cameras	Bee-Bot

	Unit 4 Data and information Pictograms	Unit 5 Creating media Digital music	Unit 6 Programming B Programming quizzes
Knowledge and Skills	- 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	- 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	- 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

Year 3			
	Unit 1 Computing systems and networks Connecting computers	Unit 2 Creating media Stop-frame animation	Unit 3 Programming A Sequencing sounds (Learning Loops 2023)
Knowledge and Skills	- To explain how digital devices function - To identify input and output devices - To recognise how digital devices can change the way that we work - To explain how a computer network can be used to share information - To explore how digital devices can be connected - To recognise the physical components of a network	- To explain that animation is a sequence of drawings or photographs - To relate animated movement with a sequence of images - To plan an animation - To identify the need to work consistently and carefully - To review and improve an animation - To evaluate the impact of adding other media to an animation	- To explore a new programming environment - To identify that commands, have an outcome - To explain that a program has a start - To recognise that a sequence of commands can have an order - To change the appearance of my project - To create a project from a task description
Apps and Resources	Desktop or laptop Painting program	iPad iMotion (app for iOS)	Desktop or laptop Scratch

	Unit 4 Data and information Branching databases	Unit 5 Creating media Desktop publishing	Unit 6 Programming B
Knowledge and Skills	- To create questions with yes/no answers - To identify the attributes needed to collect data about an object - To create a branching database - To explain why it is helpful for a database to be well structured - To plan the structure of a branching database - To independently create an identification tool	- To recognise how text and images convey information - To recognise that text and layout can be edited - To choose appropriate page settings - To add content to a desktop publishing publication - To consider how different layouts can suit different purposes - To consider the benefits of desktop publishing -	- To explain how a sprite moves in an existing project - To create a program to move a sprite in four directions - To adapt a program to a new context - To develop my program by adding features - To identify and fix bugs in a program - To design and create a maze-based challenge -

Year 4			
	Unit 1 Computing systems and networks The internet	Unit 2 Creating media Audio production	Unit 3 Programming A Repetition in shapes (Quizzes 2023)
Knowledge and Skills	- To describe how networks physically connect to other networks - To recognise how networked devices make up the internet - To outline how websites can be shared via the World Wide Web (WWW) - To describe how content can be added and accessed on the World Wide Web (WWW) - To recognise how the content of the WWW is created by people - To evaluate the consequences of unreliable content	- To identify that sound can be recorded - To explain that audio recordings can be edited - To recognise the different parts of creating a podcast project - To apply audio editing skills independently - To combine audio to enhance my podcast project - To combine audio to enhance my podcast project - To evaluate the effective use of audio	- To identify that accuracy in programming is important - To create a program in a text-based language - To explain what 'repeat' means - To modify a count-controlled loop to produce a given outcome - To decompose a task into small steps - To create a program that uses count-controlled loops to produce a given outcome
Apps and Resources	Desktop or laptop, iPad, various websites	Desktop or laptop, Audacity, microphone, speaker or headphones	Desktop or laptop, FMSLogo

	Unit 4 Data and information Data logging	Unit 5 Creating media Photo editing	Unit 6 Programming B Repetition in games
Knowledge and Skills	- To explain that data gathered over time can be used to answer questions - To use a digital device to collect data automatically - To explain that a data logger collects 'data points' from sensors over time - To recognise how a computer can help us analyse data - To identify the data needed to answer questions - To use data from sensors to answer questions	- 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 explain that images can be combined - To combine images for a purpose - To evaluate how changes can improve an image	- To develop the use of count-controlled loops in a different programming environment - To explain that in programming there are infinite loops and count-controlled loops - To develop a design that includes two or more loops which run at the same time - To modify an infinite loop in a given program - To design a project that includes repetition - To create a project that includes repetition

Year 5			
	Unit 1 Computing systems and networks Systems and searching	Unit 2 Creating media Video production	Unit 3 Programming A Selection in physical computing (Create a maze game 2023)
Knowledge and Skills	- To explain that computers can be connected together to form systems - To recognise the role of computer systems in our lives - To identify how to use a search engine - To describe how search engines select results - To explain how search results are ranked - To recognise why the order of results is important, and to whom	- To explain what makes a video effective - To use a digital device to record video - To capture video using a range of techniques - To create a storyboard - To identify that video can be improved through reshooting and editing - To consider the impact of the choices made when making and sharing a video	- To control a simple circuit connected to a computer - To write a program that includes count-controlled loops - To explain that a loop can stop when a condition is met - To explain that a loop can be used to repeatedly check whether a condition has been met - To design a physical project that includes selection - To create a program that controls a physical computing project
Apps and Resources	Desktop or laptop, Google Slides	Desktop or laptop, Microsoft Photos, Microsoft Video Editor	Desktop or laptop, Crumble controller + starter kit + motor

	Unit 4 Data and information Flat-file database	Unit 5 Creating media Vector drawing	Unit 6 Programming B Selection in quizzes
Knowledge and Skills	- To use a form to record information - To compare paper and computer-based databases - To outline how you can answer questions by grouping and then sorting data - To explain that tools can be used to select specific data - To explain that computer programs can be used to compare data visually - To use a real-world database to answer questions	- To identify that drawing tools can be used to produce different outcomes - To create a vector drawing by combining shapes - To use tools to achieve a desired effect - To recognise that vector drawings consist of layers - To group objects to make them easier to work with - To apply what I have learned about vector drawings	- To explain how selection is used in computer programs - To relate that a conditional statement connects a condition to an outcome - To explain how selection directs the flow of a program - To design a program that uses selection - To create a program that uses selection - To evaluate my program
Apps and Resources	Desktop or laptop, j2data Database	Desktop or laptop, Google drawings	Desktop or laptop, Scratch

Year 6			
	Unit 1 Computing systems and networks Communication and collaboration	Unit 2 Creating media Web page creation	Unit 3 Programming A Variables in games Animated story (2023)
Knowledge and Skills	- 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 - To evaluate different ways of working together online - To recognise how we communicate using technology - To evaluate different methods of online communication	- To review an existing website and consider its structure - To plan the features of a web page - To consider the ownership and use of images (copyright) - To recognise the need to preview pages - To outline the need for a navigation path - To recognise the implications of linking to content owned by other people	- To define a 'variable' as something that is changeable - To explain why a variable is used in a program - To choose how to improve a game by using variables - To design a project that builds on a given example - To use my design to create a project - To evaluate my project
Apps and Resources	Desktop or laptop, Google Slides	Desktop or laptop, Google Slides	Desktop or laptop, Scratch

	Unit 4 Data and information Introduction to spreadsheets	Unit 5 Creating media 3D modelling	Unit 6 Programming B Sensing
Knowledge and Skills	- To create a data set in a spreadsheet - To build a data set in a spreadsheet - To explain that formulas can be used to produce calculated data - To apply formulas to data - To create a spreadsheet to plan an event - To choose suitable ways to present data	- To recognise that you can work in three dimensions on a computer - To identify that digital 3D objects can be modified - To recognise that objects can be combined in a 3D model - To create a 3D model for a given purpose - To plan my own 3D model - To create my own digital 3D model	- To create a program to run on a controllable device - To explain that selection can control the flow of a program - To update a variable with a user input - To use an conditional statement to compare a variable to a value - To design a project that uses inputs and outputs on a controllable device - To develop a program to use inputs and outputs on a controllable device
Apps and Resources	Desktop or laptop, Google Sheets	Desktop or laptop, Tinkercad	Desktop or laptop, micro:bit and Microsoft MakeCode

Teach Computing Vocab Y1-6

Computing Vocabulary suggested for EYFS – algorithm, backwards, camera, choice, computer, count, create, digital camera, email, equipment, forwards, information, instruction, interactive whiteboard, internet, iPad, keyboard, keys, laptop, left, monitor, mouse, moving, off, on, online, phone, photos, print, printer, remote, right, safety, screen, share, sound, switch, technology, typing, website.

Computing Vocabulary

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Computer Systems and Networks	**Creative Media**	**Programming 1**	**Data and Info**	**Creating Media**	**Programming 2**
Year 1	**Technology Around Us Online (Y1)** Base unit, click, computer, device, drag, desktop, double-click, file, full stop, iPad, input device, keyboard, laptop, mouse, monitor, responsibly, open, password, program, save, safely, screen, spacebar, text, technology, typing, trackpad.	**Digital Painting** Brush style, colour, computers, erase, fill tool, fill line tool, paint program, paintbrush, painting, pictures, shape tools, tool, undo.	**Moving a Robot** Algorithm, backwards, Bee-bots, clear, commands, directions, forwards, go, instructions, left, plan, program, right, robot, route, turn.	**Grouping Data** Colour, data, fewest, group, image, label, least, less, more, most, object, property, same, search, shape, size, value.	**Digital Writing** Backspace, bold, capital letters, compare, font, format, italic, keyboard, keys, letters, letters, Microsoft Word, mouse, numbers, redo, select, space, text cursor, toolbar, toolbar, type, underline, undo, word processor.	**Programming Animation** Algorithm, appropriate, background, Bee-Bot, block, change, command, compare, delete, effect, instruction, joining, predict, program, programming area, programming blocks, programming, reset, run, Scratch Jn, sprite, start block, value.
Year 2	**Information Technology Around Us** Barcode, computer, devices, games console, handles, information technology (IT), memory stick, password, projector, release, resize, safety, scan, scanner, social media, USB.	**Digital Photography** Background, camera, capture, compose, device, digital, editing, filter, flash, focal point, focus, foreground, format, framing, horizontal, image, landscape, light sources, lighting, photograph, pixel, portrait, subject, vertical.	**Robot Algorithms** Algorithm, backwards, clear, debugging, decomposition, fixing, forwards, go, Instruction, left, mat, order, prediction, program, programmers, right, route, sequence, turn, unambiguous.	**Pictograms** Attribute, block diagram, compare, conclusion, count, data, explain, least common, least popular, least, less than, more common, more than, most popular, most, object, organise, sharing, tally chart.	**Digital Music** Rhythms, patterns, notes, tempo, digital, music, review, edit, images, experiment, pitch, create	**Programming Quizzes** Actions, algorithm, blocks, build, change, command, compare, debug, design, evaluate, features, match, modify, outcome, predict, program, project, run, Sequence, sprite, start.

Year 3	**Connecting Computers** Connection, digital device, digital, input, network cables, network sockets, network switch, network, non-digital, output, process, program, server, wireless access point (WAP).	**Stop Frame Animation** Animation, animation, character, consistency, delete, evaluation, events, flip book, frame, frame, import, media, onion skinning, sequence, setting, stop frame, transition.	**Sequence in Music** Algorithm, backdrop, blocks, bug, chord, code, code, commands, costume, debug, design, event, glide, go to, motion, note, order, point in direction, programming blocks, programming, run the code, Scratch, sequence, sprite, stage, task, turn.	**Branching Databases** Attribute, branching databases, compare, database, decision tree, equal, even, information, objects, order, organise, questions, selecting, separate, structure, table, value.	**Desktop Publishing** Advantages, benefits, communicate, content, copy, desktop publishing, disadvantages, font style, font, images, landscape, layout, layout, orientation, paste, placeholder, portrait, purpose, template, template, Text.	**Events and Actions** Action, algorithm, **code,** debugging, design, errors, event, extension block, logic, motion, move, pen up, pen, resize, set up, sprite, test.
Year 4	**The Internet** Accurate, adverts, content, download, files, Information, internet, links, network, network security, network switch, ownership, permission, router, routing, server, sharing, use, web address router, web browser, web page, website, Wireless Access Point (WAP), World Wide Web (WWW)	**Audio Editing** Align, audio, edit, export, headphones, import, input device, layer, load, microphone, MP3, output device, playback, podcast, record, save, selection, sound, speaker, trim	**Repetition in Shapes** Code snippet, commands, count-controlled loop, debug, decompose, design, logo, pattern, procedure, program, repeat, repetition, trace, turtle, value. .	**Data Logging** Analyse, collection, conclusion, data logger, data point, data set, data, export, import, input device, interval, layout, logged, logging, review, sensor, table.	**Photo Editing** Adjustments, alter, background, clone, combine, composite, copy, crop, cut, digital, edit, effects, font, foreground, hue, Image, made up, paste, retouch, rotate, saturation, save, select, sepia, undo, vignette, zoom.	**Repetition in games** Algorithm, animate, block, code, costume, count-controlled loop, debug, design, duplicate, evaluate, event block, forever, infinite loop, loop, modify, programming, refine, repeat, repetition, Scratch, sprite, value.
Year 5	**Sharing Information** Algorithm, connection, content creator, crawler, digital, index, input, links, ordering, output, process, ranking, refine, search, search engine, search engine optimisation (SEO), selection,	**Video Production** Audio, camera, clip, close, delete, edit, evaluate, export, filming, high angle, import, lens, long shot, low angle, microphone, mid-range, moving subject, normal angle, pan, panning, reorder,	**Selection in Physical Computing** Action, components, condition, connect, connection, controller, count-controller, crocodile clips, crumble, debug, infinite, input, LED, loop, microcontroller, motor,	**Flat-file Databases** Axis, chart, compare, criteria, data, database, field, filter, graph, group, information, order, presentation, record, search, sort, value.	**Vector Drawing** Align, colour, copy, duplicate, group, layers, modify, move, object, order, paste, reflection, resize, reuse, rotate, select, toolbar, tools, ungroup, vector drawing, zoom.	**Selection in Quizzes** Algorithm, answers, condition, conditional statement, count-control loop, debug, design, false, implement, input, outcomes, program, questions, run, selection, task, test,

	system, web crawler.	reshoot, share, side by side, split, static camera, talking head, trim, video camera, video, zoom.	output, repetition, selection, sparkle, switch.			true.

Year 6	**Communication** Address, chat, communication, data payload, data, address, digital footprint, domain Name Server (DNS), explore, header, internet, Internet Protocol (IP), one-to-many, one-to-one, one-way, packet, private, protocol, public, slide deck, two-way.	**Web Page Creation** Breadcrumb troll, browser, copyright, device, embed, evaluate, external, Google Sites, header, homepage, hyperlink, Hypertext Markup Language (HTML), layout, link, logo, media, navigate, preview, purpose, subpage, web page, website.	**Variables in Games** Algorithm, change, code, debug, design, evaluate, event, improve, name, output, program, project, set, share, test, value, variable.	**Spreadsheets** Ascending, calculation, calculate, cell reference, cells, chart, collecting, columns, data, descending, Excel, formula, graph, input, labels, operation, output, results, rows, sigma, spreadsheet, structure, table, total.	**3D Modelling** 2D, 3D, combine, construct, cylinder, duplicate, evaluate, group, handle, hollow, lift, lower, modify, move, perspective, placeholder, recolour, resize, rotate, select, shapes, view.	**Sensing** Accelerometer, algorithms, code, compass, condition, create, debug, design, direction, else, flashing, if, input, Makecode, Micro:bit, navigation, output, plan, process, random, selection, sensing, step counter, task, test, then, trace, USB, value, variable.

Whole School Plan for Teaching Digital Safety (Computing/ RSE)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Self- Image and Identity						
Online Bullying		Anti-Bullying Week in November				
Managing Online Information						
Online Relationships			Safer Internet Day in Feb.			
Health, Well-being and Lifestyle			Children's Mental Health Week in Feb.			
Online Reputation						
Privacy and Security						
Copyright and Ownership						

Education for a Connect World 2020: Project Evolve

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