# Whole School Computing Topic Overview

| | | EYFS | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|---|---|
| Autumn | Computing systems and networks | Understanding that information can be retrieved from a computer, iPad or laptop | **Technology around us** ★<br>Recognising technology in school and using it responsibly | **Information technology around us** ★<br>Identifying IT and how its responsible use improves our world in school and beyond | **Connecting computers**<br>Identifying that digital devices have inputs, processes and outputs, and how devices can be connected to make networks | **The internet** ★<br>Recognising that the internet is a network of networks including the WWW, and why we should evaluate online content | **Systems and searching** ★<br>Recognising IT systems in the world and how some can enable searching on the internet | **Communication and collaboration** ★<br>Exploring how data is transferred by working collaboratively online |
| | Creating media | Using an iPad or VTech Kidzoom' camera independently to take photos of their learning environment | **Digital painting**<br>Choosing appropriate tools in a program to create art, and making comparisons with working nondigitally | **Digital photography**<br>Capturing and changing digital photographs for different purposes | **Stop-frame animation** ★<br>Capturing and editing digital still images to produce a stop frame animation that tells a story | **Audio production** ★<br>Capturing and editing audio to produce a podcast, ensuring that copyright is considered | **Video production** ★<br>Planning, capturing, and editing video to produce a short film | **Webpage creation** ★<br>Designing and creating webpages, giving consideration to copyright, aesthetics and navigation |
| Spring | Programming (A) | Exploring basic uses of an iPad/tablet- such as clicking a button to turn on, swiping to unlock or tapping to select an app | **Moving a robot**<br>Writing short algorithms and programs for floor robots, and predicting program outcomes | **Robot algorithms**<br>Creating and debugging programs, and using logical reasoning to make predictions | **Sequencing sounds**<br>Creating sequences in a block-based programming language to make music | **Repetition in shapes**<br>Using a text-based programming language to explore count-controlled loops when drawing shapes | **Selection in physical computing**<br>Exploring conditions and selection using a programmable microcontroller | **Variables in games**<br>Exploring variables when designing and coding a game |
| | Data and information | Using tally charts and manipulatives to determine amounts, e.g. quantities of children when voting for their favourite book | **Grouping Data** ★<br>Exploring object labels, then using them to sort and group objects by properties | **Pictograms** ★<br>Collecting data in tally charts and using attributes to organise and present data on a computer | **Branching databases**<br>Building and using branching databases to group objects using yes/no questions | **Data logging**<br>Recognising how and why data is collected over time, before using data loggers to carry out an investigation | **Flat-file databases**<br>Using a database to order data and create charts to answer questions | **Introduction to spreadsheets**<br>Answering questions by using spreadsheets to organise and calculate data |
| Summer | Creating media | Understanding the use of a keyboard, whether that be with a computer or tablet. Identifiying that letters and sounds are shown on the keys | **Digital writing** ★<br>Using a computer to create and format text, before comparing to writing non-digitally | **Digital music** ★<br>Using a computer as a tool to explore rhythms and melodies, before creating a musical composition | **Desktop publishing** ★<br>Creating documents and modifying text, images and page layouts for a specific purpose | **Photo editing** ★<br>Manipulating digital images, and reflecting on the impact of the changes and whether the required purpose is fulfilled | **Vector graphics** ★<br>Creating images in a drawing program by using layers and groups of objects | **3D modelling** ★<br>Planning, developing, and evaluation 3D computer models of physical objects |
| | Programming (B) | Applying knowledge of using an iPad to new learning, such as searching for a picture or video on child age-appropriate apps | **Programming animations**<br>Designing and programming the movement of a character on screen to tell stories | **Programming quizzes**<br>Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz | **Events and actions in programs**<br>Writing algorithms and programs that use a range of events to trigger sequences of actions | **Repetition in games**<br>Using a block-based programming language to explore count-controlled and infinite loops when creating a game | **Selection in quizzes**<br>Exploring selection in programming to design and code an interactive quiz | **Sensing movement**<br>Designing and coding a project that captures inputs from physical devices |

★ - Online safety

Although Computing is not a part of the EYFS framework, the foundations for computational thinking are vitally important. Living in a digital world full of technology that is integrated into the lives of young children, having access to computing skills from an early age ensures they develop listening skills, problem-solving abilities and thoughtful questioning. This progression of skills combines a personalised approach for children at Wren's Nest with statements from Development Matters.

Optional Year 6 – Using the micro:bit for primary to secondary transition

# Computing National Curriculum Coverage

| Years 1 and 2 | 1.1 Technology around us | 1.2 Digital painting | 1.3 Moving a robot | 1.4 Grouping data | 1.5 Digital writing | 1.6 Programming animations | 2.1 Information technology around us | 2.2 Digital photography | 2.3 Robot algorithms | 2.4 Pictograms | 2.5 Digital music | 2.6 Programming quizzes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions. | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Create and debug simple programs | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Use logical reasoning to predict the behaviour of simple programs | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Use technology purposefully to create, organise, store, manipulate, and retrieve digital content | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | | ✓ | ✓ | ✓ |
| Recognise common uses of information technology beyond school | ✓ | | ✓ | | | | ✓ | ✓ | | | | |
| Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. | ✓ | | | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ | | |

# Computing National Curriculum Coverage

| Years 3 and 4 | 3.1 Connecting computers | 3.2 Stop-frame animation | 3.3 Sequencing sounds | 3.4 Branching databases | 3.5 Desktop publishing | 3.6 Events and actions in programs | 4.1 The internet | 4.2 Audio production | 4.3 Repetition in shapes | 4.4 Data logging | 4.5 Photo editing | 4.6 Repetition in games |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Use sequence, selection, and repetition in programs; work with variables and various forms of input and output | ✓ | | ✓ | | | ✓ | | | ✓ | ✓ | | ✓ |
| Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration | ✓ | | | | | | ✓ | | | | | |
| Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content | | | | | ✓ | | ✓ | ✓ | | | ✓ | |
| 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 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | | ✓ | | ✓ | | | ✓ | ✓ | | | ✓ | |

# Computing National Curriculum Coverage

| Years 5 and 6 | 5.1 systems and searching | 5.2 Video production | 5.3 Selection in physical computing | 5.4 Flat-file database | 5.5 Introduction to vector graphics | 5,6 Selection in quizzes | 6.1 Communication and collaboration | 6.2 Webpage creation | 6.3 Variables in games | 6.4 Introduction to spreadsheets | 6.5 3D modelling | 6.6 Sensing movement |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts | | | ✓ | | | ✓ | ✓ | | ✓ | | | ✓ |
| Use sequence, selection, and repetition in programs; work with variables and various forms of input and output | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs | | | ✓ | | | ✓ | | | ✓ | | | ✓ |
| Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration | ✓ | | | | | | ✓ | | | | | |
| Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content | | ✓ | | ✓ | | | | ✓ | | | | |
| 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 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | ✓ | ✓ | | | | | | ✓ | ✓ | | ✓ | |

# Computing Vocabulary Overview

| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|---|---|---|---|---|---|---|---|
| Autumn | Computing systems and networks | **Technology around us**<br>technology, computer, mouse, trackpad, keyboard, screen, double-click, typing | **Information technology around us**<br>Information technology (IT), computer, barcode, scanner/scan | **Connecting computers**<br>digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets | **The internet**<br>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 | **Systems and searching**<br>system, 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 | **Communication and collaboration**<br>communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, oneway, two-way, one-to-one, one-to-many |
| | Creating media | **Digital painting**<br>paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers | **Digital photography**<br>device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting | **Stop-frame animation**<br>animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition | **Audio production**<br>audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback | **Video production**<br>video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share | **Webpage creation**<br>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 |
| Spring | Programming (A) | **Moving a robot**<br>Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program | **Robot algorithms**<br>instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition | **Sequencing sounds**<br>Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code | **Repetition in shapes**<br>Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure | **Selection in physical computing**<br>microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer | **Variables in games**<br>variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare |
| | Data and information | **Grouping Data**<br>object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same | **Pictograms**<br>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, block diagram, sharing | **Branching databases**<br>attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree | **Data logging**<br>data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion | **Flat-file databases**<br>database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation | **Introduction to spreadsheets**<br>data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools |
| Summer | Creating media | **Digital writing**<br>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 | **Digital music**<br>music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit. | **Desktop publishing**<br>text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits | **Photo editing**<br>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 | **Vector graphics**<br>vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection | **3D modelling**<br>TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify |
| | Programming (B) | **Programming animations**<br>ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design | **Programming quizzes**<br>sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code | **Events and actions in programs**<br>motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions | **Repetition in games**<br>Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate | **Selection in quizzes**<br>Selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator | **Sensing movement**<br>Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug |

# Teach Computing Curriculum

## Primary Journey