Mytchett Primary Academy - Computing Knowledge and Skills Progression

Computer Systems & Networks

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Technology around us Understand that if you push a button on device it will respond e.g. remote control toy. Recognise basic parts of a computer e.g. mouse, screen, keyboard. Recognise basic parts of a keyboard e.g. spacebar, numbers and letters. Use a mouse to move the pointer on a screen.	**Technology around us** Identify technology Identify a computer and its main parts Use a mouse in different ways Use a keyboard to type Use the keyboard to edit text Create rules for using technology responsibly	**Information technology around us** Recognise the uses and features of information technology Identify information technology in the home Identify information technology beyond school Explain how information technology benefits us Show how to use information technology safely Recognise that choices are made when using information technology	**Connecting computers** Explain how digital devices function Identify input and output devices Recognise how digital devices can change the way we work Explain how a computer network can be used to share information Explore how digital devices can be connected Recognise the physical components of a network	**The internet** Describe how networks physically connect to other networks Recognise how networked devices make up the internet Outline how websites can be shared via the World Wide Web Describe how content can be added and accessed on the World Wide Web Recognise how the content of the WWW is created by people Evaluate the consequences of unreliable content	**Sharing information** Explain that computers can be connected together to form systems Recognise the role of computer systems in our lives Recognise how information is transferred over the internet Explain how sharing information online lets people in different places work together Contribute to a shared project online Evaluate different ways of working together online	**Communication** Identify how to use a search engine Describe how search engines select results Describe how search engines select results Explain how search results are ranked Recognise why the order of results is important, and to whom Recognise how we communicate using technology Evaluate different methods of online communication
Vocabulary: Technology, computer, mouse/trackpad, keyboard, screen, click, drag, input device, shift, space bar, capital letter, full stop,	**Vocabulary:** Technology, computer, mouse/trackpad, keyboard, screen, click, drag, input device, shift, space bar, capital letter, full stop, safely, responsibly.	**Vocabulary:** Information technology (IT), computer, barcode, scan.	**Vocabulary:** Digital device, input, output, process, program, connection, network, network switch, server, wireless access point (WAP).	**Vocabulary:** Internet, network, router, network security, network switch, server, wireless access point (WAP), website, web page, web address, routing, route tracing, browser, World Wide Web, content, links, files, download, sharing, ownership, permission, information, sharing, accurate, honest, content, adverts.	**Vocabulary:** System, connection, digital, input, process, output, protocol, address, packet, chat, explore, slide deck, reuse, remix, collaboration	**Vocabulary:** Search, search engine, refine, index, crawler, bot, search engine, ranking, optimisation, links, content creator, selection, communication, internet, one-way, two-way, one-to-one, one-tp-many.

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Creating Media

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use simple programs on a computer or tablet. Recognise that a range of technology is used in places such as homes and schools. Show an interest in technological toys with knobs and pulleys, or real objects such as cameras, or mobile devices.	**Digital painting** Describe what different freehand tools do Use the shape tool and the line tools Make careful choices when painting a digital picture Explain why I chose the tools I used Use a computer on my own to paint a picture Compare painting a picture on a computer and on paper **Digital writing** Use a computer to write Add and remove text on a computer Identify that the look of text can be changed on a computer Make careful choices when changing text Explain why I used the tools that I chose	**Digital photography** Know what devices can be used to take photographs Use a digital device to take a photograph Describe what makes a good photograph Decide how photographs can be improved Use tools to change an image Recognise that images can be changed **Making music** Say how music can make us feel Identify that there are patterns in music Describe how music can be used in different ways Show how music is made from a series of notes Create music for a purpose Review and refine our computer work	**Stop-frame animation** Explain that animation is a sequence of drawings or photographs Relate animated movement with a sequence of images Plan an animation Identify the need to work consistently and carefully Review and improve an animation Evaluate the impact of adding other media to an animation **Desktop publishing** Recognise how text and images convey information Recognise that text and layout can be edited Choose appropriate page settings Add content to a desktop publishing publication	**Audio editing** Identify that sound can be digitally recorded Use a digital device to record sound Explain that a digital recording is stored as a file Explain that audio can be changed through editing Show that different types of audio can be combined and played together Evaluate editing choices made **Photo editing** Explain that digital images can be changed Change the composition of an image Describe how images can be changed for different uses Make good choices when selecting different tools Recognise that not all images are real	**Video editing** Recognise video as moving pictures, which can include audio Identify digital devices that can record video Capture video using a digital device Recognise the features of an effective video Identify that video can be improved through reshooting and editing Consider the impact of the choices made when making and sharing a video **Vector drawing** Identify that drawing tools can be used to produce different outcomes Create a vector drawing by combining shapes Use tools to achieve a desired effect Recognise that vector drawings consist of layers	**Web page creation** Review an existing website and consider its structure Plan the features of a web page Consider the ownership and use of images (copyright) Recognise the need to preview pages Outline the need for a navigation path Recognise the implications of linking to content owned by other people **3D modelling** Use a computer to create and manipulate three-dimensional (3D) digital objects Compare working digitally with 2D and 3D graphics Construct a digital 3D model of a physical object Identify that physical objects can be broken

	Compare writing on a computer with writing on paper		Consider how different layouts can suit different purposes Consider the benefits of desktop publishing	Evaluate how changes can improve an image	Group objects to make them easier to work with Evaluate my vector drawing	down into a collection of 3D shapes Design a digital model by combining 3D objects Develop and improve a digital 3D model
Vocabulary: Program, app.	**Vocabulary:** Paint program, tool, paintbrush, erase, fill, undo, primary colours, shape tools, line tool, fill tools, undo tool, brush style, brush size, like, prefer, dislike, word processor, keyboard, keys, letters, numbers, space, backspace, text cursor, toolbar, bold, italic, underline.	**Vocabulary:** Device, camera, photograph, capture, image, digital, landscape, portrait, horizontal, vertical, field of view, narrow, wide, format, framing, focal point, subject matter, compose, natural lighting, artificial lighting, flash, focus, background, foreground, editing, tools, colour, filter, format, changed, real, open, edit.	**Vocabulary:** Animation, flip book, stop frame animation, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition, test, images, advantages, disadvantages, communicate, font, style, template, landscape, portrait, orientation, placeholder, copy, paste, layout, purpose, benefits.	**Vocabulary:** Audio, record, playback, microphone, speaker, headphones, input, output, sound, playback, start, pause, podcast, sound, playback, start, pause, stop, podcast, save, file, edit, selection, open, mixing, time shift, export, evaluate, feedback, image, arrange, select, digital, crop, undo, save, copyright, composition, pixels, crop, rotate, flip, adjustments, effects, colours, hue/saturation, sepia, adjust, sharpen, brighten, composite, publication, elements, layer.	**Vocabulary:** Video, audio, recording, storyboard, script, soundtrack, dialogue, capture, zoom, storage, digital, tape, AV (audiovisual), videographer, recording, zoom, pan, tilt, angle, lighting, setting, content, export, split, trim/clip, titles, end credits, timeline, transitions, audio soundtrack, retake, special effects, vector, drawing tools, shapes, object, icons, toolbar, duplicate, organise, rotate, alignment, grid, resize, handles, modify, consistency, layers, order, group, ungroup, reuse.	**Vocabulary:** Website, webpage, browse, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, device, navigation, hyperlink, subpage, implication, external link, embed, 2D, 3D, view, resize, colour, lift, rotate, position, select, duplicate, dimensions, placeholder, hole, group, ungroup.

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Data & Information

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Grouping data Label objects Identify that objects can be counted Describe objects in different ways Count objects with the same properties Compare groups of objects Answer questions about groups of objects	**Pictograms** Recognise that we can count and compare objects using tally charts Recognise that objects can be represented as pictures Create a pictogram Select objects by attribute and make comparisons Recognise that people can be described by attributes Explain that we can present information using a computer	**Branching databases** Create questions with yes/no answers Identify the object attributes needed to collect relevant data Create a branching database Identify objects using a branching database Explain why it is helpful for a database to be well structured Compare the information shown in a pictogram with a branching database	**Data logging** Explain that data gathered over time can be used to answer questions Use a digital device to collect data automatically Explain that a data logger collects 'data points' from sensors over time Use data collected over a long duration to find information Identify the data needed to answer questions Use collected data to answer questions	**Flat-file databases** Use a form to record information Compare paper and computer-based databases Outline how grouping and then sorting data allows us to answer questions Explain that tools can be used to select specific data Explain that computer programs can be used to compare data visually Apply my knowledge of a database to ask and answer real-world questions	**Spreadsheets** Identify questions which can be answered using data Explain that objects can be described using data Explain that formula can be used to produce calculated data Apply formulas to data, including duplicating Create a spreadsheet to plan an event Choose suitable ways to present data
Vocabulary:	**Vocabulary:** Object, label, group, search, image, property, colour, size, shape, value, label, data set, more, less, most, fewest, same.	**Vocabulary:** More than, less than, most, least, organise, data, object, tally chart, votes, total, pictogram, enter, tally char, compare, count, explain, more common, least common, attribute, group, same, different, conclusion, sharing.	**Vocabulary:** Attribute, value, questions, table, objects, branching database, database, equal, even, separate, structure, compare, order, organise, information, selecting, decision tree.	**Vocabulary:** Data, table, input device, sensor, data logger, logging, data point, interval, analyse, data set, import, export, collection, review, conclusion.	**Vocabulary:** Data, information, record, field, sort, order, group, search, criteria, graph, chart, axis, compare, filter	**Vocabulary:** Spreadsheet, data, data heading, data set, cells, columns, rows, format, common attribute, calculation, input, output, cell reference, formula, range, supplicate, sigma,

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Programming

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Understand that many everyday devices respond to commands. Begin to follow simple instructions.	**Moving a robot** Explain what a given command will do Act out a given word Combine forwards and backwards commands to make a sequence Combine four direction commands to make sequences Plan a simple program Find more than one solution to a problem **Introduction to animation** Choose a command for a given purpose Show that a series of commands can be joined together Identify the effect of changing a value Explain that each sprite has its own instructions Design the parts of a project Use my algorithm to create a program	**Robot algorithms** Describe a series of instructions as a sequence Explain what happens when we change the order of instructions Use logical reasoning to predict the outcome of a program (series of commands) Explain that programming projects can have code and artwork Design an algorithm Create and debug a program that I have written **Introduction to quizzes** Explain that a sequence of commands has a start Explain that a sequence of commands has an outcome Create a program using a given design Change a given design Create a program using my own design	**Sequence in music** Explore a new programming environment Identify that each sprite is controlled by the commands I choose Explain that a program has a start Recognise that a sequence of commands can have an order Change the appearance of my project Create a project from a task description **Events and actions** Explain how a sprite moves in an existing project Create a program to move a sprite in four directions Adapt a program to a new context Develop my program by adding features Identify and fix bugs in a program	**Repetition in shapes** Identify that accuracy in programming is important Create a program in a text-based language Explain what 'repeat' means Modify a count-controlled loop to produce a given outcome Decompose a program into parts Create a program that uses count-controlled loops to produce a given outcome **Repetition in games** Develop the use of count-controlled loops in a different programming environment Explain that in programming there are infinite loops and count controlled loops Develop a design which includes two or more loops which run at the same time	**Selection in physical computing** Control a simple circuit connected to a computer Write a program that includes count-controlled loops Explain that a loop can stop when a condition is met, eg number of times Conclude that a loop can be used to repeatedly check whether a condition has been met Design a physical project that includes selection Create a controllable system that includes selection **Selection in games** Explain how selection is used in computer programs Relate that a conditional statement connects a condition to an outcome Explain how selection directs the flow of a program	**Variables in games** Define a 'variable' as something that is changeable Explain why a variable is used in a program Choose how to improve a game by using variables Design a project that builds on a given example Use my design to create a project Evaluate my project **Sensing** Create a program to run on a controllable device Explain that selection can control the flow of a program Update a variable with a user input Use a conditional statement to compare a variable to a value Design a project that uses inputs and outputs on a controllable device

		Decide how my project can be improved	Design and create a maze-based challenge	Modify an infinite loop in a given program Design a project that includes repetition Create a project that includes repetition	Design a program which uses selection Create a program which uses selection Evaluate my program	Develop a program to use inputs and outputs on a controllable device
Vocabulary: Equipment, buttons, movement, device.	**Vocabulary:** Forwards, backwards, turn, clear, go, commands, instructions, directions, plan, algorithm, program, route, sprite, compare, programming, block, joining, start block, run, background, delete, reset, predict, effect, change, value	**Vocabulary:** Instruction, sequence, clear, unambiguous, algorithm, program, order, commands, prediction, design, route, mat, debugging, run, start, blocks, sprite, modify, change, match, features, evaluate.	**Vocabulary:** Programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, event, task, design, run the code, sequence, order, algorithm, bug, debug, motion, event, logic, move, resize, extension block, pen up, set up, action, errors, test.	**Vocabulary:** Program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, algorithm, value, trace, value, decompose, procedure, sprite, loop, forever, infinite, loop, duplicate, modify, evaluate.	**Vocabulary:** Microcontroller, components, LED, crocodile clips, connect, battery box, program, repetition, infinite, loop, count-controlled loop, switch, motor, condition, output devices, selection, action, conditional statement, algorithm, program, debug, input, outcomes, implement, design, test	**Vocabulary:** Variable, change, name, value, set, design, event, algorithm, code, task, design, artwork, project, test, debug, improve, evaluate, share, input, process, output, selection, condition, if… then…, else, variable, random, sensing.

Digital Literacy – E-Safety

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Say when I am on the internet and when I am not.	Log in and out and save work on their own account. Understand the importance of a password. When using the internet to search for images, learning what to do if they come across something online that worries them or makes them feel uncomfortable. Explain what personal information is. Talk about why it is important to be kind online.	Understand how to stay safe when talking to people online. Understand not to share personal information and what to do if they see or hear something online that makes them feel upset or uncomfortable. Explain why you should go online for a short amount of time. Recognise that not everyone who is who they say they are on the internet.	Articulate how to be a responsible digital citizen; understand their responsibilities to treat others respectfully and recognise when digital behaviour is unkind. Understand and articulate cyberbullying. Understand that not all emails are genuine, and how to recognise when an email might be fake and what to do about it.	Recognise what appropriate behaviour is when collaborating with others online. Recognise that information on the Internet might not be true or correct and that some sources are more trustworthy than other.	Identify possible dangers online and learning how to stay safe. Create an animation about digital safety. Recognise that information on the Internet might not be true or correct and learning ways of checking validity. Demonstrate the use of an online community safely.	Understand the importance of secure passwords and how to create them. Understand the consequences of sharing too much personal information. Use search engines safely and effectively. Recognise that updated software can help to prevent data corruption and hacking. Explain the consequences of spending too much time online or on a game. Explain how and why it is important to protect a computer or device from harm on the internet.
Vocabulary: Choices Internet Website	**Vocabulary:** Rules Online Private information Email	**Vocabulary:** Appropriate/inappropriate sites Cyber-bullying Digital footprint Keyword searching	**Vocabulary:** E-safety rules Secure passwords Report abuse button Gaming Blogs	**Vocabulary:** E-safety rules Secure passwords Report abuse button Gaming Blogs	**Vocabulary:** Responsible online communication Informed choices Virus threats Blogs Messaging	**Vocabulary:** Responsible online communication Informed choices Virus threats Blogs Messaging