Dovecote Primary Computing Progression Map
Substantive Knowledge, Procedural Knowledge, Key Vocabulary

EYFS	Nursery	Reception

Substantive knowledge

Procedural Knowledge

Key Vocab

Understanding of The World:
Guiding children to make sense of their physical world and their community through opportunities to explore, observe and find out about people, places, technology and the environment.

Classrooms could contain a role play area with a range of technology, both functioning and model / broken devices, or a variety of electronic toys, such as remote controlled cars, walkie-talkies and interactive pets, as part of continuous provision. Further technology could be included in conjunction with other activities, such as digital cameras for pupils to photograph their own learning, although children should ideally be given the opportunity to **select and use technology for a certain purpose**, rather than simply being given a device. The pedagogical approaches used in this age group should also be carefully considered, which includes the need to tinker, or play, with a device, in order to discover how it functions.

Literacy:
Bee Bots continue to be extremely popular in both EYFS and Key Stage 1, and provide a number of opportunities to develop pupils' computing knowledge within literacy sessions. Children could create a story about the Bee Bot's journey, such as around a local area or a country being studied, or they could **sequence events** within a story being studied. For example, children could guide the Bee Bot between different locations, characters and locations within Little Red Riding Hood. Should devices not be available, the Barefoot website has Fake Bots available, which children can use instead of a digital device. In addition to this, programming devices suitable for young children are being developed by a range of manufacturers, such as the Code-a-pillar by Fisher-Price.

Physical development:
Many children entering Early Years settings are already familiar with tablet devices, although their ability to use a keyboard and mouse is often limited. This has recently become a more significant issue, due to the prevalence of tablet devices in the home. It is therefore important that children are given opportunities to **become familiar with a range of input devices, including the keyboard and mouse, in order to develop the required fine motor skills**. Usage could be linked to phonics sessions, such as through the use of drill and practice games, including Dance Mat Typing or the Animal Typing app, or more creative outcomes, as described when examining the areas below.

Communication and language:
Unplugged activities, or those away from the machine, give children an opportunity to develop their understanding of technology without the need for expensive devices. Children could be asked to **give precise instructions verbally, such as through giving instructions to a sandwich making robot, with links made to the importance of using the correct vocabulary, along with speaking clearly and precisely.** Giving instructions could also form part of sessions linked to physical development activities, such as determining rules for certain playground games.

Personal, social and emotional development:
Voice recorders, or the microphone built into a tablet device, could be used to record how pupils are feeling, or to discuss their relationships with others. This could be extended through pupils creating their own videos, which could also link to **children giving online safety guidance to their peers on appropriate use of technology** and what to do if they feel worried or concerned when using a device. A range of age-appropriate books are now available for young children to examine online safety, such as Chicken Clicking, Goldilocks (A hashtag cautionary tale) and the free Smartie the Penguin. Using voice and video recorders also allows children to self evaluate their own speaking.

Expressive arts and design:
The **use of painting and graphics applications can further develop pupils' keyboard and mouse skills**, whilst a range of tablet based apps are also available, such as the free Doodle Buddy. Creative outcomes can be produced, which allows pupils to take ownership of their work and could even be part of an extended project. Outputs produced could be linked to other uses of technology, such as producing mats for Bee Beets to travel around, whilst other physical computing devices, such as Spheros, can even be put into paint and controlled using a tablet device to produce images. Outfits for a device to wear, such as Bee Bot head dresses or Sphero paper cup people, could also be developed.

	Mathematics **Controlling devices provides an excellent opportunity to develop pupils' understanding of left and right, along with directional language**. Pupils could be asked to guide a device around a shape, or even use activities from computing related websites, such as code.org, to develop their understanding further. However, whilst such activities can effectively engage pupils in programming tasks, their usage should be carefully considered to ensure they have a purpose.

Computing Systems – Autumn 1

Year 1

Technology Around Us

To know what technology looks like
I can explain how technology helps us
I can locate examples of technology in the classroom

To know the parts of a computer
I can name the main parts of the computer

To know a mouse can be used in different ways
I can click and drag objects
I can open programs
I can draw

To know the purpose of a keyboard
I can type my name on the computer

To know how text is created and edited
I can use arrow keys to move the cursor
I can delete letters

To know why it is important to use computers sensibly
I can give examples of rules
I can discuss how we benefit from these rules

Technology, Computer, Laptop, Tablet, Keyboard, Mouse, Touchpad, Monitor, Screen, CPU, Cursor, Delete, Edit, Responsible.

Year 2

IT Around Us

To know the uses and features of different types of Information Technology.
I can find and sort uses and examples of IT

To know how Information Technology helps us.
I can list different uses of IT
I can explain the need to use IT in different ways

To know the different rules for using Information Technology.
I can talk about the different rules for using IT

Information, technology, device, connected, communication, network, responsibility, choice, safely

Year 3

Connecting Computers

To know the difference between an input and output device
I can explain that digital devices accept inputs
I can explain that digital devices produce outputs
I can classify input and output devices

To know how digital devices have changed the way that we work
I can explain how I use digital devices for different activities
I can compare digital devices and non-digital tools

To know that information is shared through a network
I can explain why we need a network switch
I can explain how messages are passed through multiple connections

To know how digital devices connect to each other
I can recognise that a computer network is made up of a number of devices
I can demonstrate how information can be passed between devices
I can explain the role a switch, server, and wireless access point in a network

To know the physical components of a network
I can identify how devices in a network are connected together

Year 4

The Internet

To know that networks physically connect to other networks
I can demonstrate how information is shared across a network of networks
I can discuss why a network needs protecting

To know that the internet is made up of networked devices
I can describe networked devices and how they connect
I can explain that the World Wide Web contains websites and web pages

To know that information is shared on websites in the World Wide Web (WWW)
I can access websites
I can explain what media can be found on websites

To know that the content of the WWW is created by people
I can explain that there are rules to protect content
I can explain that website and their content are created by people

To know the consequences of unreliable content
I can explain that not everything on the WWW is true or legal
I can explain why I need to think carefully before I share or reshare content

Year 5

Systems and Searching

To know that computers can be connected together to form systems
I can explain that systems are built using a number of parts
I can describe the input, process, and output of a digital system
I can explain that computer systems communicate with other devices

To know the role of computer systems in our lives
I can identify tasks that are managed by computer systems
I can identify the human elements of a computer system
I can explain the benefits of a given computer system

To know how to use a variety of search engines
I can make use of a web search to find specific information
I can refine my web search
I can compare results from different search engines

To know how search engines select results
I can explain why we need tools to find things online
I can recognise the role of web crawlers in creating an index
I can relate a search term to the search engine's index

To know how search results are ranked
I can order a list by rank
I can explain that a search engine follows rules to rank results

Year 6

Communication and Collaboration

To know the importance of internet addresses
I can recognise that data is transferred using agreed methods
I can explain that internet devices have addresses
I can describe how computers use addresses to access websites

To know how data is transferred across the internet
I can identify and explain the main parts of a data packet
I can explain that data is transferred over networks in packets
I can explain that all data transferred over the internet is in packets

To know how sharing information online can help people to work together
I can recognise how to access shared files stored online
I can send information over the internet in different ways
I can explain that the internet allows different media to be shared

To know the merits of different ways of working together online
I can identify different ways of working together online
I can recognise that working together on the internet can be public or private
I can explain how the internet enables effective collaboration

To know how we communicate using technology

		I can identify networked devices around me I can identify the benefits of computer networks	**Network, device, connect, router, content, information, website, web page, ownership, sharing, unreliable, ambiguous**	I can give examples of criteria used by search engines to rank results **To know why the order of results is important, and to whom** I can describe some of the ways that search results can be influenced I can recognise some of the limitations of search engines I can explain how search engines make money **Information, transfer, system, device, search engine, input, output, ranking, criteria, influence**	I can explain the different ways in which people communicate I can identify that there are a variety of ways to communicate over the internet I can choose methods of communication to suit particular purposes **To know about different methods of online communication** I can compare different methods of communicating on the internet I can decide when I should and should not share information online I can explain that communication on the internet may not be private **Data, transfer, addressing, data pockets, communication, collaboration, responsible, sharing**

Information Technology – Autumn 2

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Painting **To know what freehand tools are and the shapes and lines they can make** I can use shape and line tools effectively I can change colour and brush sizes **To know that a computer can be used to create a picture** I can make a picture in the style of an artist **Freehand, tools, paint, fill, change, click, select, drag, edit, compare.**	**Digital Photography** **To know that different devices can be used to capture photographs.** I can capture a photograph using a digital device I can discuss the process of taking a good photograph I can explain the difference between portrait and landscape **To know that photographs can be edited and improved.** I can identify what is wrong with a photograph I can improve a photograph by retaking it I can use a tool to create a desired effect **To know that not all images are real.** I can identify which photos are real and which have been changed **Capture, image, portrait, landscape, improve, edit, light source, effect, fake.**	**Stop Frame Animation** **To know that animation is a sequence of drawings or photographs** I can create an effective flip-book style animation I can create an effective stop-frame animation **To know that an animation plan requires settings, characters and events** I can predict what an animation will look like I can create a storyboard I can describe an animation that is achievable on screen **To know that onion skinning allows small changes between frames** I can review a sequence of frames I can use onion skinning **To know how adding additional media impacts an animation** I can explain ways to improve my animation I can add other media to my animation **Animation, sequence, stop-frame, effective, storyboard, characters, settings, events, consistent, onion skinning, media, evaluate**	**Audio Production** **To know that sound can be recorded** I can identify the input and output devices used to record and play sound I can use a computer to record audio **To know that sound recordings can be edited** I can discuss what sounds can be added to a podcast I can inspect the soundwave view to know where to trim my recording **To know the phases of a podcast project** I can plan appropriate content for a podcast I can record and save content I can improve my voice recordings **To know that multiple audio samples can be combined** I can arrange multiple sounds to create the effect I want I can explain the difference between saving a project and exporting an audio file I can choose appropriate edits to improve my podcast **Input, output, audio, recording, microphone, podcast, voice track, edit, trim, align, sound effects, background music, layering, export**	**Video Production** **To know that drawing tools can be used to produce different outcomes** I can recognise that vector drawings are made using shapes I can experiment with the shape and line tools I can discuss how vector drawings are different from paper-based drawings **To know that a vector drawing is created by combining shapes** I can identify the shapes used to make a vector drawing I can explain that each element added to a vector drawing is an object I can move, resize, and rotate objects I have duplicated **To know how different tools are used to achieve a desired effect** I can use the zoom tool to help me add detail to my drawings I can explain how alignment grids and resize handles can be used to improve consistency I can modify objects to create a new image **To know that vector drawings consist of layers** I can identify that each added object creates a new layer in the drawing I can change the order of layers in a vector drawing I can use layering to create an image **To know that grouping objects makes them easier to work with**	**Web Page Creation** **To know how websites are structured** I can explore a website I can discuss the different types of media used on websites I know that websites are written in HTML **To know the common features of a web page** I can recognise the common features of a web page I can suggest media to include on my page I can draw a web page layout that suits my purpose **To know the importance of copyright in selecting and using images** I can say why I should use copyright-free images I can find copyright-free images I can describe what is meant by the term 'fair use' **To know the function of page preview** I can add content to my own web page I can preview what my web page looks like I can evaluate what my web page looks like on different devices and suggest/make edits. **To know the need for a navigation path** I can explain what a navigation path is I can describe why navigation paths are useful I can make multiple web pages and link them using hyperlinks

				I can copy part of a drawing by duplicating several objects I can recognise when I need to group and ungroup objects I can reuse a group of objects to further develop my vector drawing **Image, vector, shape, line, object, layering, duplicating, grouping**	**To know the implications of linking to content owned by other people** I can explain the implication of linking to content owned by others I can create hyperlinks to link to other people's work I can evaluate the user experience of a website **Copyright, media, aesthetics, navigation path, content, layout, fair-use, source, preview, structure, user experience, hyperlinks, evaluation**

Computing Systems – Spring 1

Year 1

Programming - Moving a Robot

To know what a command is
I can match a command to an outcome
I can run a command on a device

To know that combined commands create a sequence
I can start a sequence from the same place
I can combine up to 4 commands to move a robot

To know that problem solving requires a solution
I can identify different solutions
I can debug my program

Command, outcome, predict, sequence, instruction, directions, solution, debug

Year 2

Programming – Robot Algorithms

To know that a series of instructions is a sequence
I can give clear instructions
I can follow instructions given by someone else
I can compare outcomes

To know that an algorithm is used to program a sequence and achieve a goal
I can use an algorithm to program a sequence on a floor robot
I can predict the outcome of a sequence

To know that the process of testing and correcting an algorithm is called debugging
I can plan algorithms for different parts of a task
I can test and debug each part of the program

Sequence, outcome, instruction, algorithm, route, program, goal, debug.

Year 3

Programming – Sequencing Sounds

To know and identify objects in Scratch
I can explain that objects in Scratch have attributes
I can recognise that commands in Scratch are represented as blocks

To know that commands have an outcome
I can create a program following a design
I can identify that each sprite is controlled by the commands I choose

To know that a sequence of commands can have an order
I can create a sequence of connected sound commands
I can make design choices for my artwork

To know that an algorithm is implemented as code
I can identify and name the objects I will need for a project

Programming environment, project, sprite, backdrop, attribute, command, code, outcome, block, sequence

Year 4

Programming – Repetition in Shapes

To know that accuracy in programming is important
I can create a code snippet for a given purpose
I can explain the effect of changing the value of a command

To know that programs are created with a text-based language
I can write and test an algorithm to produce a given outcome

To know what 'repeat' means
I can identify patterns in a sequence

To know what a count-controlled loop is
I can choose which values to change in a loop
I can identify the effect of changing the number of times a task is repeated

To know that a programming task needs to be decomposed into small steps
I can use a procedure in a program
I can design a program that includes count-controlled loops
I can develop my program by debugging it

Command, code, algorithm, debug, patterns, repetition, count-controlled loop, decomposition, snippets

Year 5

Programming – Selection in Physical Computing

To know that a simple circuit can be controlled when connected to a computer
I can create a simple circuit and connect it to a microcontroller
I can program a microcontroller to make an LED switch on
I can explain what an infinite loop does

To know that multiple components can be controlled using count-controlled loops
I can connect more than one output component to a microcontroller
I can use a count-controlled loop to control outputs
I can design sequences that use count-controlled loops

To know that a loop can stop when a condition is met
I can explain that a condition is either true or false
I can design a conditional loop
I can program a microcontroller to respond to an input

To know that a loop can be used to repeatedly check whether a condition has been met
I can explain that a condition being met can start an action
I can identify a condition and an action in my project
I can use selection (an 'if…then…' statement) to direct the flow of a program

To know that setting a condition aids selection

Year 6

Programming – Variables in Games

To know that a 'variable' is something that is changeable
I can identify examples of information that is variable
I can explain that the way a variable changes can be defined
I can identify that variables can hold numbers or letters

To explain why a variable is used in a program
I can identify a program variable as a placeholder in memory for a single value
I can explain that a variable has a name and a value
I can recognise that the value of a variable can be changed

To know how that a game can be improved by using variables
I can decide where in a program to change a variable
I can make use of an event in a program to set a variable
I can recognise that the value of a variable can be used by a program

To know the design process of a gaming project
I can choose the artwork for my project
I can create algorithms for my project
I can explain my design choices

To know the creation process of a gaming project
I can create the artwork for my project

				I can identify a real-world example of a condition starting an action I can describe what my project will do I can create a detailed drawing of my project **To know how to create a program that controls a physical computing project** I can write an algorithm that describes what my model will do I can use selection to produce an intended outcome I can test and debug my project **Selection, microcontroller, algorithm, connect, component, conditions, repetition, selection, evaluation**	I can choose a name that identifies the role of a variable I can test the code that I have written **To know what makes a gaming project effective** I can identify ways that my game could be improved I can use variables to extend my game I can share my game with others **Variables, relatable, real-world, scenario, simulation, scoreboard, modify, prediction, abstract, algorithm**

Information Technology – Spring 2

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Grouping Data **To know that objects can be labelled** I can match objects to groups I can count a group of objects **To know that objects with similar properties can be grouped together** I can describe the properties of an object I can find objects with similar properties **To know that data has to be put into a computer** I can record the number of objects in a group I can compare groups of objects **Object, data, group, label, identify, describe, features, property, record, database, spreadsheet**	**Pictograms** **To know that data can be counted and compared.** I can record data in a tally chart I can compare totals **To know that data can be represented using pictures on a computer.** I can enter data onto a computer I can use a computer to view data in a different format **To know that objects can be selected by attribute and compared.** I can create a pictogram to arrange objects by an attribute I can use my pictograms to draw conclusions I can explain when information should not be shared **Data, information, tally chart, attribute, collection, pictogram, spreadsheet, database, total, compare, more than, less than, sharing**	**Branching Databases** **To know that objects can be separated by attribute** I can create two groups of objects separated by one attribute I can make up a yes/no question about a collection of objects **To know that data about an object is collected by identifying attributes** I can arrange objects into a tree structure I can select an attribute to separate objects into groups **To know why databases need to be well structured** I can compare two branching database structures I can create questions that will allow objects to be uniquely identified I can explain that questions need to be ordered carefully **To know real-world uses of branching databases** I can create an identification tool **Branching database, attribute, object, yes/no question, database, testing, efficiency, review.**	**Data Logging** **To know that data gathered over time can be used to answer questions** I can choose a data set to answer a given question I can suggest questions that can be answered using a given data set **To know that digital devices can be used to collect data automatically** I can explain what data can be collected and recorded using sensors **To know that a data logger collects data points from sensors over time** I can identify the intervals used to collect data **To know that a computer can be used to help analyse data** I can sort data to find information I can plan how to collect data using a data logger I can draw conclusions from the data I have collected **Input, sensor, monitor, environment, data points, data set, logging points, review, analyse**	**Flat File Databases** **To know that a form can be used to record information** I can create a database using cards I can explain how information can be recorded I can order, sort, and group my data cards **To know the difference between paper and computer-based databases** I can explain what a field and a record is in a database I can navigate a flat-file database to compare different views of information I can choose which field to sort data by to answer a given question **To know that questions can be answered by grouping and then sorting data** I can explain that data can be grouped using chosen values I can group information using a database I can combine grouping and sorting to answer specific questions **To know that tools can be used to select specific data** I can choose which field and value are required to answer a given question I can outline how 'AND' and 'OR' can be used to refine data selection I can choose multiple criteria to answer a given question **To know that computer programs can be used to compare data visually** I can select an appropriate chart to visually compare data	**Introduction to Spreadsheets** **To know what a data set in a spreadsheet is** I can collect data I can suggest how to structure my data I can enter data into a spreadsheet **To know how a data set is built in a spreadsheet** I can explain what an item of data is I can choose an appropriate format for a cell I can apply an appropriate format to a cell **To know that formulas can be used to produce calculated data** I can explain which data types can be used in calculations I can construct a formula in a spreadsheet I can identify that changing inputs changes outputs **To know that formulas can be applied to data** I can calculate data using different operations I can create a formula which includes a range of cells I can apply a formula to multiple cells by duplicating it **To know that a spreadsheet can be created to plan an event** I can use a spreadsheet to answer questions I can explain why data should be organised

				I can refine a chart by selecting a particular filter I can explain the benefits of using a computer to create charts **To know how to use a real-world database to answer questions** I can ask questions that will need more than one field to answer I can refine a search in a real-world context I can present my findings to a group **Flat-file, database, data, organise, graph, chart, solve, field, record, grouping, sorting, combine, value, refine, unplugged.**	I can apply a formula to calculate the data I need to answer questions To know that there are multiple ways to present data I can produce a chart I can use a chart to show the answer to a question I can suggest when to use a table or chart **Spreadsheet, column, row, data set, formatting, calculations, formula, cells, duplication, charts**

Information Technology – Summer 1

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Writing **To know that a word processor is used to create text** I can enter and remove text using a keyboard **To know what tools are used to create and edit text** I can use bold, italic and underline I can type capital letters I can change font **Toolbar, keys, double-clicking, undo, font, edit, select, compare.**	**Digital Music** **To know that there are patterns within music** I can identify and follow rhythm patterns in different pieces of music **To know that pitch can be altered using a computer** I can use a computer to experiment with pitch **To know that computers can be used to create and refine musical patterns** I can connect images with sound I can create and refine a musical pattern on the computer **Rhythm, pattern, sequence, pitch, refine, emotions**	**Desktop Publishing** **To know that information can be conveyed through text and image** I can explain the difference between text and image I can identify the advantages and disadvantages of using text and images **To know that text and images can be edited** I can change font style, size and colours for a given purpose. I can edit text **To know that page settings can be changed** I can create a template I can choose the best locations for my content I can use paste to create a magazine cover **To know that different layouts can be used for different purposes** I can choose a suitable layout for a given purpose I can identify the uses of desktop publishing in the real world **Desktop publishing, text, image, font, template, orientation, placeholder, layout, content, purpose**	**Photo Editing** **To know that the composition of digital phots can be changed** I can rotate an image I can use editing software to crop an image **To know that colours can be changed in digital images** I can experiment with different colour effects **To know that cloning can be used to add to and remove parts of an image** I can add to the composition of an image by cloning I can remove parts of an image by using cloning **To know that images can be combined** I can experiment with tools to select and copy part of an image **To know the difference between real and made up images** I can explain why images might be edited I can create a project that is a combination of other images **Digital image, edited, rotate, crop, filters, clone, duplicate, retouching, composition, combined**	**Introduction to Vector Grpahics** **To know what makes a video effective** I can explain that video is a visual media format I can identify features of videos I can compare features in different videos **To know that a digital device can be used to record video** I can identify and find features on a digital video recording device I can experiment with different camera angles I can make use of a microphone **To know that video can be captured using a range of techniques** I can suggest filming techniques for a given purpose I can capture video using a range of filming techniques I can review how effective my video is **To know that a storyboard is used to plan a video project** I can outline the scenes of my video I can decide which filming techniques I will use I can create and save video content **To know that video can be improved through reshooting and editing** I can store, retrieve, and export my recording to a computer I can explain how to improve a video by reshooting and editing	**3D Modelling** **To know that you can work in three dimensions on a computer** I can add 3D shapes to a project I can view 3D shapes from different perspectives I can move 3D shapes relative to one another **To know that digital 3D objects can be modified** I can resize an object in three dimensions I can lift/lower 3D objects I can recolour a 3D object **To know that objects can be combined in a 3D model** I can rotate objects in three dimensions I can duplicate 3D objects I can group 3D objects **To know that a 3D model can be created for a given purpose** I can accurately size 3D objects I can show that placeholders can create holes in 3D objects I can combine a number of 3D objects **To know the process of planning a 3D model** I can analyse a 3D model I can choose objects to use in a 3D model I can combine objects in a design To know the process of creating my own digital 3D model I can construct a 3D model based on a design

				I can select the correct tools to make edits to my video **To know the impact of the choices made when making and sharing a video** I can make edits to my video and improve the final outcome I can recognise that my choices when making a video will impact the quality of the final outcome I can evaluate my video and share my opinions **Device, video, capture, edit, manipulate, concept, completion, evaluation**	I can explain how my 3D model could be improved I can modify my 3D model to improve it **3-dimensional, move, re-size, duplicate, hollow, placeholder, combine, multiple, group, ungroup, plan, develop, evaluate**

Computing Systems – Summer 2

Year 1

Programming - Animations

To know that commands are required to move a sprite.
I can use commands to move a sprite
I can use a Start block

To know that changing the value has an effect on the sprite.
I can say what happens when I change the value
I can add blocks to my Sprites
To know that an effective project has a design.
I can create and test a project

Command, sprite, block, design, value, scratch

Year 2

Programming - Quizzes

To know that a sequence of commands has an outcome
I can identify the start of a sequence
I can change the outcome of a sequence

To know that different sequences can reach the same outcome
I can predict the outcome of a sequence of commands
I can build the sequence of blocks I need
I can determine the actions of a sprite in an algorithm

To know that successful projects have design and improvement stages
I can build sequences of blocks to match a design
I can create an algorithm
I can debug my program

Sequence, outcome, instruction, algorithm, route, program, goal, debug, improve.

Year 3

Programming – Events and Actions in Programmes

To know the commands used for moving a sprite within a project
I can explain the relationship between an event and an action
I can program movement

To know that code can be duplicated and modified
I can choose a suitable size for a character in a maze
I can program movement

To know that programs can be adapted and extended
I can use a programming extension
I can choose blocks to set up my program

To know that a program is developed through adding features
I can identify additional features (from a given set of blocks)
I can choose suitable keys to turn on additional features

To know that debugging is the process of finding and fixing errors
I can test a program against a given design
I can match a piece of code to an outcome
I can implement my design

Year 4

Programming – Events and Repetition in Games

To know that count-controlled loops are used for repetition in programming
I can predict the outcome of a snippet of code
I can modify a snippet of code to create a given outcome

To know the difference between count controlled and infinite loops
I can choose when to use a count-controlled and an infinite loop
I can recognise that some programming languages enable more than one process to be run at once

To know that repetition can be used to change the appearance of a sprite
I can explain what the outcome of a repeated action should be

To know that an infinite loop can be modified by modifying the code blocks
I can identify which parts of a loop can be changed
I can explain the effect of my changes

To know that computer games are made by producing designs and creating algorithms
I can select key parts of a given project to use in my own design

Year 5

Programming – Events and Selection in Quizzes

To know how selection is used in computer programs
I can recall how conditions are used in selection
I can identify conditions in a program
I can modify a condition in a program

To know that a conditional statement connects a condition to an outcome
I can use selection in an infinite loop to check a condition
I can identify the condition and outcomes in an 'if… then… else…' statement
I can create a program that uses selection to produce different outcomes

To know how selection directs the flow of a program
I can explain that program flow can branch according to a condition
I can design the flow of a program that contains 'if… then… else…'
I can show that a condition can direct program flow in one of two ways

To know the role of selection within a program
I can outline a given task
I can use a design format to outline my project
I can identify the outcome of user input in an algorithm

To know the role selection within a program

Year 6

Programming – Sensing Movement

To know what a controllable device is
I can apply my knowledge of programming to a new environment
I can test my program on an emulator
I can transfer my program to a controllable device

To know that selection can control the flow of a program
I can identify examples of conditions in the real world
I can use a variable in an if, then, else statement to select the flow of a program
I can determine the flow of a program using selection

To know that a variable can be updated with a user input
I can use a condition to change a variable
I can experiment with different physical inputs
I can explain that checking a variable doesn't change its value

To know that a conditional statement can compare a variable to a value
I can use an operand (e.g. <>=) in an if, then statement
I can explain the importance of the order of conditions in else, if statements
I can modify a program to achieve a different outcome

		Event, action, direction, sequencing, movement, extension, blocks, debugging	I can develop my own design explaining what my project will do I can refine the algorithm in my design **Repetition, environment, loop, count-controlled loop, infinite loop, appearance, block, implement, modify, select, refine, evaluate.**	I can implement my algorithm to create the first section of my program I can test my program I can share my program with others **To know what makes an effective program** I can identify ways the program could be improved I can identify the setup code I need in my program I can extend my program further **Selection, conditions, outcome, blocks, environment, algorithm, structure, binary, branching structure, control, interactive, flow, test, implement, evaluate**	**To know that a design project can use inputs and outputs on a controllable device** I can decide what variables to include in a project I can design the algorithm for my project I can design the program flow for my project **To know the process of developing a program to use inputs and outputs on a controllable device** I can create a program based on my design I can test my program against my design I can use a range of approaches to find and fix bugs **Controllable, input, output, sequence, repetition, micro:bit**