Long Term Progression in Computing Overview 2021-2022

To see how Computing will be taught to each year group at Lindow Community Primary School in 2021/22 please click on the appropriate button.

Reception   **Year 1**   **Year 2**

Year 3   **Year 4**   **Year 5**   **Year 6**

Computing Reception			
ELGs	**PSED – Building Relationships:** Work and play cooperatively and take turns with others. **Understanding of the world – Past and Present:** Know some similarities and differences between things in the past and now, drawing on their experiences and what has been read in class. **PSED – Managing Self:** Explain the reasons for rules, know right from wrong and try to behave accordingly. **Communication and Language – Listening, Attention and Understanding:** Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. **Literacy – Comprehension:** Use and understand recently introduced vocabulary during discussions about stories, non-fiction, rhymes and poems and during role play. **Expressive Arts and Design – Being Imaginative and Expressive:** Perform songs, rhymes, poems and stories with others, and (when appropriate) try to move in time with music.		
Term & theme	Autumn	Spring	Summer
Key vocabulary	photo, capture, angle, distance react, opinion, video clip, website	typewriter, cable, telephone, call, dial, beebot, left, right, up, down, direction	Google, search, results, apps, download
Skills covered	Throughout the year, computing opportunities are offered to the children in Reception. These consist of: • taking photos during Welly Wednesday on an iPad - **Autumn** • googling information with adult support on an iPad - **Summer** • playing maths and phonics games on the interactive whiteboard and iPad **– Summer** • exploring technology from the past, such as a plug-in phone and a typewriter - **Spring** • using a beebot to set instructions to follow (using beebots or the beebot app on iPads) - **Spring** • watching and reacting to/discussing video clips- **Autumn** • listening to music and learning through our online music scheme – Charanga – **Throughout the year – see music planning**		
End Point	Children are able to capture photos using an iPad and know how to view them. children are able to watch a video clip and discuss what they have seen.	Children are able to explain what technological items, such as a typewriter, were used for in the past. children are able to give sets of instructions for a Beebot to follow – practically or using the iPad.	children can use Google to ask a question with support. children can use an iPad with support to take use maths and phonics apps, such as Aliens and Numbers for maths and Hairy Letters for phonics/ knowing the alphabet.

	Year One		
Term & theme	Autumn Computing systems and networks – Technology around us Creating media – Digital painting	Spring Creating media – Digital writing Data and information – Grouping data	Summer Programming A – Moving a robot Programming B – Programming animations
Big question/key concept	To explain that technology is something that can help us Identify examples of technology Recognise that a computer is an example of technology Recognise that choices are made when using technology To explain why rules are needed when using technology Recognise tools can be changed to produce different outcomes To choose options to achieve a desired effect	To recognise that the shift key changes the output of a key Recognise that text can be changed Recognise that the appearance of text can be changed Recognise that text can be edited To consider the impact of choices made Identify that objects can be counted Recognise that information can be presented Recognise that information can be presented in different ways	Predict the outcome of a demand on a device To list match a command to an outcome To choose a command for a purpose Build a sequence of commands in steps Understand that a program is a set of commands that a computer can run To combine commands in a program List that commands can be used on a given device Recall that a series of instructions can be issued before they are enacted
Prior knowledge	Children are able to capture photos using an iPad and know how to view them. Children are able to explain what technological items, such as a typewriter, were used for in the past.		using a Beebot to set instructions to follow (using Beebots or the Beebot app on iPads)
Prior Skills	watching and reacting to/discussing video clips taking photos on an iPad playing maths and phonics games on the interactive whiteboard and iPad		directing a Beebot using the language of left, right, up and down
Key vocabulary	Computer, mouse, keyboard, cursor, screen, typing Freehand tools, shape and line tools, digital picture, brush tools	Keyboard, word processor, space and enter keys, click and drag, bold, italic, underline, caps lock Label, objects, question, username, password	Command, action, sequence, forwards, backwards, program, solution Programming, sprite, start lock, value, algorithm, design, program
Statutory Requirements	Technology around us: Recognise common uses of IT beyond school Use technology purposefully to create, organise, story, manipulate and retrieve digital content. Use technology safely and respectfully, keeping personal information private. Digital painting: Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Digital writing: Use technology purposefully to create, organise, story, manipulate and retrieve digital content. Use technology safely and respectfully, keeping personal information private. Grouping data: Use technology purposefully to create, organise, story, manipulate and retrieve digital content.	Moving a robot: 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 safely and respectfully, keeping personal information private.	Recognise common uses of IT beyond school. Programming animations: 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.
Skills covered	Identify the main parts of the computer. Use a mouse in different ways. Use a keyboard to type and edit text. Show how to use technology safely Recognise that some technology can be used in different ways. Choose a piece of technology to do a job. Use a computer to paint a picture. Digitally make marks on the screen. Use basic tools to create an image. Use a wider variety of tools to create images.	Use letters, numbers and space keys to enter text into a computer. Use punctuation and special characters. Select text and choose options to achieve a desired effect. Change the appearance of text on a computer. Use backspace key to remove text. Position the text cursor into a chosen position. Use the undo key. Identify some attributes of an object. To collect simple data. Show that collected data can be counted. Describe properties of an object. Choose an attribute to group objects by. To explain that objects can be grouped by similarities. To describe a group of objects.	Choose a series of words that can be enacted as a program. Choose a series of commands that can be run as a program. To run a program on a device. Chose a series of words that can be enacted as a program. Choose a series of commands that can be run as a program. To run a program on a device.
End Point	Technology around us: I can… explain what a keyboard and a mouse is for. I can also identify technology used in my everyday life. I know… how computing can help me. I understand… how to use technology safely. Digital painting: I can… use the Paint program for digital paining. I know… how to make marks on the screen and select different tools, such as brushes and lines.	Digital writing: I can… log on, open and save my documents. I know… how to change text I can also explain why I make changes to the size and font of my text. I understand… how to use a keyboard and a mouse to enter and remove text. Grouping data: I can… use labels to search for data. I can also count small amounts of objects before and after they're grouped.	Moving a robot: I can… identify what different commands are on Scratch and can predict outcomes. I know… that the four different directions can change where a command will move a robot. I understand… how to plan a simple program. Programming animations: I can… use commands to make a sprite move.

	I understand… a range of different tools used for digital painting.	I know… how to use labels to group items. I understand… that I can sort objects into groups, which helps me to answer questions about them.	I know… how to create an algorithm to make a sprite move. I understand… that changing the order and value will change how the sprite responds.

	Year Two		
Term & theme	Autumn Computing systems – IT around us Creating media – Digital photography	Spring Creating media – Making music Data and information - Pictograms	Summer Programming A – Robot algorithms Programming B – Programming quizzes
Big question/key concept	Recognise uses and features of IT Identify uses of IT in school and beyond Explain how IT helps us and how to use it safely Recognise that choices are made when using IT Use a digital device and make choices when taking a photograph Describe what makes a good photo and decide how they can be improved Use tools to change an image Recognise that photos can be changed	Identify patterns in music and explain how music can make us feel Show how music is made from a series of notes Create, review and refine computer work (music) for a purpose Recognise that we can count and compare objects using tally charts and can be represented as pictures Create pictograms Select objects by attribute and make comparisons Recognise that people can be described by attributes Explain that we can present information using a computer	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 Explain that programming projects can have code and artwork Design an algorithm Create and debug a program that I have written Explain that a sequence of commands has a start and an outcome Create a program using a given design and be able to change it Create a program using my own design and decide how it could be improved
Prior knowledge	Year 1: Children understand what IT is and where it is used within school. They should also be familiar with the technology available in their own school setting. Children need to understand how to hold technology safely and responsibly. They should also know how to turn the devices on and access the camera.	Year 1: Children need to know how to save their work and access it again. They must also know how to log in and type usernames and passwords accurately. Children need to be able to label objects and groups them as they did in the Data and Information unit in Year 1.	Year 1: Children should understand how to create a short program and a basic understanding of what an algorithm is. Children should have experience of using Scratch Jr and should be able to explain what commands are and how we can make predictions of outcomes when we alter sequences of commands.
Prior Skills	Year 1: Identify the main parts of the computer. Use a mouse in different ways. Use a keyboard to type and edit text. Show how to use technology safely. Children need to have experience of digitally make marks on the screen. They should be able to use a wider variety of tools to create images.	Year 1: Children need experience of making choices on a tablet/computer and be able to navigate a home page or application. They also need to have experience of music in terms of patterns and rhythm. Children need to be able to understand place value of number and be able to access an application or home page and find previously saved work.	Year 1: They need to be familiar with how to open up the software needed for this unit of work (Scratch) Children need to be able to use Scratch Jr and create their own sequences of commands. They also need to know how to open and save their work.

Key vocabulary	Information technology, resize, connection Digital photos, landscape, portrait, light sources, object, edited	Instrument, musical pattern, experiment, pitch, duration, notes Algorithm, debug, tally chart, questions, format, pictogram, attribute, compare, presenting information	Sequence, outcomes, commands, algorithm, program, debug Program, sequence, backgrounds, design, algorithm, project, features, run software
Statutory Requirements	Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses for IT beyond school. Use technology safely and respectfully, keeping personal information private; identify where to go for support and help when they have concerns about content or contact on the internet or other online technologies. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Recognise common uses for IT beyond school. Use technology safely and respectfully, keeping personal information private; identify where to go for support and help when they have concerns about content or contact on the internet or other online technologies.	Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Use technology purposefully to create, organise, store, manipulate and retrieve digital content. Use technology safely and respectfully, keeping personal information private; identify where to go for support and help when they have concerns about content or contact on the internet or other online technologies.	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 safely and respectfully, keeping personal information private; identify where to go for support and help when they have concerns about content or contact on the internet or other online technologies. 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.
Skills covered	Describe some uses of computers Identify IT around school and beyond Show how to use IT safely To know what to press or tap to take a picture To know how to hold a device safely and responsibly To capture a digital image and to review the photos taken To zoom in and out and be able to delete poor quality images To edit, recolour and crop a photo	Recognise that some information on a computer can be stored and saved Explain how to retrieve stored work to edit and resave. Show that I can enter data on a computer Use a computer to view data in different forms Recognise that people, animals and objects can be described by attributes Use a computer to answer comparison questions (graphs, tables)	Choose a series of words that can be enacted as a sequence Explain what happens when we change the order of a sequence Choose a series of commands that can be run as a program Trace a sequence to make a prediction Test a prediction by running a sequence Create and debug a program that I have written Run a program on a device Choose a series of words that can be enacted as a sequence

			Explain what happens when we change the order of a sequence Choose a series of commands that can be run as a program Trace a sequence to make a prediction Test a prediction by running a sequence Create and debug a program that I have written Run a program on a device
End Point	IT around us: I can… identify IT used at school and beyond in places such as libraries and shops. I know…how IT improves our world. I understand… how to use IT responsibly. Digital photography: I can… recognise different devices that can be used to take photos. I know… how to capture, edit and improve photos. I understand… that not all images we see online are real.	Making music: I can… use the computer to make music I know… how to compare creating music digitally and non-digitally. I understand…how to look for patterns and purposely create music. Pictograms: I can… use data that I have collected to answer questions. I know… what the term 'data' means and can collect it in the form of a tally chart. I understand… how to present data as a pictogram and as block diagrams.	Robot algorithms: I can… follow instructions in sequence and use this to predict an outcome. I know… that the different order I give commands in will effect an outcome I understand… how to design algorithms and test them as programs to debug. Programming quizzes: I can… design my own quizzes in Scratch Jr and use blocks of code to make the quizzes accessible to play. I know… how to evaluate and make improvements to my programming projects I understand… that a sequence of commands have an outcome and I can make predictions based on my prior learning.

Year Three			
Term & theme	Autumn	Spring	Summer
	Computing systems and networks – Connecting computers Creating media – Animation	Creating media – Desktop publishing Data and information – Branching databases	Programming A – Sequence in music Programming B – Events and actions
Big question/key concept	Explain how digital devices function and input / output devices Recognise how digital devices change the way we work Explain how a computer network can be used to share information Explore how digital devices can be connected Recognise physical components of a computer Explain that animation is a sequence of drawings or photos Relate animated movement with a sequence of images Plan an animation and identify the need to work consistently and carefully Review and improve an animation Evaluate the impact of adding other media to an animation	Recognise how text and images convey information Recognise text and layout can be edited Choose appropriate page settings and add content to a desktop publication Consider how different layouts can suit different purposes Consider the benefits to desktop publishing Create questions with yes/no answers Identify object attributes needed to collect relevant data Create a branching database Explain why it is helpful for a database to be well structured Identify objects using a branching database Compare the information show in a pictogram with a branching database	Explore a new programming environment Identify that commands have an outcome and programs have 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 Explain how a sprite moves in an existing project Create and adapt a program to move a sprite in four directions and add new context Develop my program by adding features and identify/fix bugs in a program Create and design a maze-based challenge
Prior knowledge	Year 2: Recognise that some information on a computer can be stored and saved Explain how to retrieve stored work to edit and resave. Show that I can enter data on a computer Use a computer to view data in different forms	Year 2: Show that I can enter data on a computer Use a computer to view data in different forms Recognise that people, animals and objects can be described by attributes Use a computer to answer comparison questions (graphs, tables)	Year 2: Choose a series of commands that can be run as a program Trace a sequence to make a prediction Test a prediction by running a sequence Create and debug a program that I have written Run a program on a device
Prior Skills	Year 2: I can… identify IT used at school and beyond in places such as libraries and shops. I know…how IT improves our world. I understand… how to use IT responsibly.	Year 2: I can… use data that I have collected to answer questions. I know… what the term 'data' means and can collect it in the form of a tally chart. I understand… how to present data as a pictogram and as block diagrams.	Year 2: I can… follow instructions in sequence and use this to predict an outcome. I know… that the different order I give commands in will affect an outcome I understand… how to design algorithms and test them as programs to debug.

Key vocabulary	Digital devices, input, process, output, digital and non-digital tools and devices, server, network devices Amination, stop-frame, onion skinning, evaluate, storyboard, review	Advantages, disadvantages, edit text, page orientation, desktop publishing, layout, place holders, communicate, font, template Attributes, arrange, objects, theme, questions, branching database, pictogram	Scratch Jr, on-screen, program, design, sprite, sequence, algorithm Keys, actions, commands, justify project, evaluate, design, choices, character, movement, program
Statutory Requirements	Use sequence, selection and repetition in programs; work with variables and various forms of input and output Understand computer networks including the internet; how they can provide multiple services, such as the WWW; and the opportunities they offer for communication and collaboration. Select, use and combine a variety of software 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	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating a range digital content. Select, use and systems and content that accomplish given goals, including collecting, analysing, evaluating and combine a variety of software on a range of digital devices to design and create a range of programs, presenting data information. Select, use and combine a variety of software 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 information. Use technology safely, respectfully and responsibly.	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. Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, presenting data information. 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. Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, presenting data information.

Skills covered	Identify input and output devices Explain that a computer system accepts and input and processes it to produce an output Explain how a computer network can be used to share information Explain the role of a switch, server and wireless access point in a network Identify network devices around me Explain how networks can connect to each other To use a computer to create an animation To set up a device to capture stop frame photos To capture a series of images To use tools (onion skinning) to review subject position To move a subject between captures To play a sequence of images back to review Remove images to improve an animation To add text and sound effects to play back and then review and export a film	To show that page orientation can be changed To organise text and image placeholders in a page layout To add and remove images to and from place holders To move, rotate and resize images To add text and edit text in a place holder To choose fonts and apply effects to text To review a document To retrieve information from different levels of the branching database To create questions with yes/no answers	To build a sequence of commands To combine commands in a program To order commands in a program To create a sequence of commands to produce a given outcome To build a sequence of commands To combine commands in a program To order commands in a program To create a sequence of commands to produce a given outcome
End Point	Connecting computers: I can… compare digital and non-digital devices. I know…the benefits of connecting devices in a network and understand the components of a computer network and the make-up of a network's infrastructure. I understand… digital devices, with a focus on inputs, processes and outputs. Animation: I can… use a range of techniques to create stop-frame animations using a tablet. I know… how to use skills from stop-frame animation to create a story-based animation. I understand… how to add media to my animations, such as text and audio.	Desktop publishing: I can… explain the terms 'templates', 'orientation' and 'placeholders'. I know… how to use desktop publishing software and how to select font size, colour and type to edit and improve work. I understand… how to add text and images to a piece of work and evaluate what I have produced. Branching databases: I can… create physical and on-screen branching databases. I know… what attributes are and how to use them to sort groups of objects by using yes/no questions. I understand… what a branching database is and how to create one.	Sequence in music: I can… create my own program featuring a sequence. I know… how to select motion, sound and event blocks to make a program. I understand… how to use programming to sequence sounds. Events and actions: I can… draw lines with sprites and change the size and colour of lines. I know… how to choose appropriate sprites for my designs. I understand… how to design and code my own maze-tracing program.

Year Four			
Term & theme	Autumn Computing systems and networks – The Internet Creating media – Audio editing	Spring Creating media – Photo editing Data and information – Data logging	Summer Programming A – Repetition in shapes Programming B – Repetition in games
Big question/key concept	Describe how networks physically connect to other networks Recognise how networked devices make up the internet Outline how websites can be shared using the WWW Describe how content can be added and accessed on the WWW Recognise how content on the WWW is created by people Evaluate consequences of unreliable content Identify that sound can be digitally recorded Use a digital device to record sound Explain that a digital recording is stored as a file and can be changed through editing Show that different types of audio can be combined and played together Evaluate editing choices made	Explain that digital images can be changed Change the composition of an image Describe how images can he changed for different uses Make good choices when selection different tools Recognise that not all images are real Evaluate how changes can improve an image 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	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 task into small steps Create a program that uses count-controlled loops to produce a given outcome Develop 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 that includes two or more loops which run at the same time Modify an infinite loop in a given program Design a project that includes repetition Create a project that includes repetition
Prior knowledge	Year 3: I understand… how to add media to my animations, such as text and audio. I know… how to select motion, sound and event blocks to make a program. I understand… how to use programming to sequence sounds.	Year 3: I know… how to use desktop publishing software and how to select font size, colour and type to edit and improve work. I understand… how to add text and images to a piece of work and evaluate what I have produced.	Year 3: I can… draw lines with sprites and change the size and colour of lines. I know… how to choose appropriate sprites for my designs. I understand… how to design and code my own maze-tracing program.
Prior Skills	Year 3: Explain how a computer network can be used to share information Explain the role of a switch, server and wireless access point in a network To move a subject between captures To play a sequence of images back to review	Year 3: To show that page orientation can be changed To organise text and image placeholders in a page layout To add and remove images to and from place holders	Year 3: To build a sequence of commands To combine commands in a program To order commands in a program To create a sequence of commands to produce a given outcome

	Remove images to improve an animation To add text and sound effects to play back and then review and export a film	To move, rotate and resize images	
Key vocabulary	Implement, demonstrate, world wide web, information, network, internet, media, content Digital devices, recorded, input and output, recording, discuss, digital recording, podcast, film, altered, edit	Composition, publication, fake or real, positive/negative effects, retouching, scenario, elements Data set, collect data, propose questions, conclusions, computer program	Code snippet, commands, text-based, outcome, repetition, patterns in sequences, loop, values, chunks, debugging Existing, project, repeated sequences, loops, outcomes, processes, effectiveness, sprites
Statutory Requirements	Understand computer networks including the internet; how they can provide multiple services, such as the WWW, and the opportunities they offer for collaboration 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 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. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Use search technologies effectively. Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. Select, use and combine a variety of software 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. Work with various forms of input Select, use and combine a variety of software 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.	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. Select, use and combine a variety of software 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. 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.

Skills covered	The internet: To describe how networks physically connect to the internet and other networks. To recognise how networked devices make up the internet. To outline how websites can be shared via the WWW. To describe how content can be added and accessed on the WWW To recognise how the content of the WWW is created by people. To evaluate the consequences of unreliable content Audio editing: To identify that sound can be digitally recorded To use a digital device to record sound To explain that a digital recording is stored as a file To explain that audio can be changed through editing To show that different types of audio can be combined and played together To evaluate editing choices made.	Photo editing: To explain that digital images can be changed To change the composition of an image To describe how images changed for different uses To make good choices when selecting different tools To recognise that not all images are real To evaluate how changes can improve an image Data logging: 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 use data collected over a long duration to find information to identify the data needed to answer questions to use collected data to answer questions	Repetition in shapes: 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 count-controlled loop to produce a given outcome Repetition in games: 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 out 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
End Point	The internet: I can… explain the use of the WWW and how to make informed choices about the content and its' reliability. I know… that not all content online is reliable and accurate. I understand… the risks and dangers of believing and acting upon unreliable content. Audio editing:	Photo editing: I can… explain why images can sometimes be altered and edited online I know… that not all images online are real. I understand… how to evaluate whether changes to an image have been positive / improves the final image. Data logging:	Repetition in shapes: I can… create a program in text-based language I know… how to use 'repeat' to create count-controlled loops in a program. I understand… how to create a step by step set of instructions, including repetition. Repetition in games:

| I can… store digital recordings and combine sounds to play together.
I know… that editing sounds can change the final sound.
I understand… how to evaluate editing choices of a digital recording. | I can… explain what a data logger is and what it's used for.
I know… how digital data can be stored and used via a data logger
I understand… how to use collected data to answer questions. | I can… develop the use of count-controlled loops in a different programming environment.
I know… how to design and create a project that includes repetition.
I understand… how to use loops to run out at the same time in a program as well as infinite loops. |

	Year Five		
Term & theme	Autumn	Spring	Summer
	Computing systems and networks – Sharing information Creating media – Vector drawing	Creating media – Video editing Data and information – Flat-file databases	Programming A – Selection in physical computing Programming B – Selection in quizzes
Big question/key concept	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 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 Group objects to make them easier to work with Evaluate my vector drawing	Explain what makes a video effective Identify digital recording devices Capture videos using a range of techniques and create a storyboard 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 use a form to record information Compare paper and computer-based databases Outline how grouping and 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 databases to ask and answer real-world questions	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 Explain that a loop can be used to repeatedly check whether a condition has been met Design a physical project that includes selection Create a program that controls a physical computing project 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 Design and create a program which uses selection to then evaluate
Prior knowledge	Year 4: To describe how networks physically connect to the internet and other networks. To recognise how networked devices make up the internet. To outline how websites can be shared via the WWW. To recognise how the content of the WWW is created by people.	Year 4: to explain that a data logger collects data points from sensors over time To explain that digital images can be changed To change the composition of an image To describe how images changed for different uses To evaluate how changes can improve an image	Year 4: Modify a count-controlled loop to produce a given outcome Create a program that uses count-controlled loops to produce a given outcome Develop use of count-controlled loops in a different programming environment Explain that in programming there are infinite loops and count-controlled loops

Prior Skills	Year 4: Describe how networks physically connect to other networks Recognise how networked devices make up the internet Outline how websites can be shared using the WWW	Year 4: to use a digital device to collect data automatically to use data collected over a long duration to find information	Year 4: Develop a design that includes two or more loops which run at the same time Decompose a task into small steps
Key vocabulary	Computer system features, human elements of a computer system, networked digital devices, unique, connected digital devices, online/offline, collaboration Vector drawing, resize, duplicated, zoom tool, layering	Visual media, digital video recording, camera angles, reshooting, scenes, retrieve, export, filming techniques Multiple, field, record, database, value, criteria, chart, filter, compare	Circuit, microcontroller, infinite loop, LED switch on, conditional loop, condition, action, intended outcomes Conditions, program flow, outcome, outline, section
Statutory Requirements	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 repetitions in programs; work with variables and various forms of input and output. Understand computer networks including the internet; how they can provide multiple services, such as the WWW and the opportunities they offer for communication and collaboration. Select, use and combine a variety of software 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.	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 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.	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 repetitions 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. Select, use and combine a variety of software 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. 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 detects and correct errors in algorithms and programs.
Skills covered	Sharing information: to recognise that computers can be part of a system in an electronic device to understand that computers can be connected together to form systems to see that computers communicate with other devices to recognise input, process and output in larger computer systems to recognise how information is transferred across the internet to recognise that data is transferred using agreed protocols to recognise the role that computer systems have in our lives to explain that data is transferred in packets to recognise that connections between computers allow us to access shared stored flies to recognise that connections between computers allow us to work together to explain that the internet lets people in different places work together to explain that the internet allows different media to be shared to evaluate the different ways of working together to recognise that internet collaborations can be public or private. Vector drawings: to add an object to a vector drawing to select one or more objects to delete objects and move them between the layers of a drawing to modify, reposition and duplicate objects using copy and paste to group and ungroup selected objects to combine options to achieve a desired effect	Video editing: Develop – to review existing video content to plan a video production using a storyboard Capture – to use a recording device and a computer to make a video to hold the device safely in landscape orientation to locate the function on the device to record a video to press start/stop when recording to pan left, right, up and down to focus, zoom and compose (see Y4 video editing) Playback – to locate captured video on a device and play it back Edit – to select a section of a video to apply effects to a section of a video to split and crop a section of a video to delete a section of a video to save and export a video file Flat file databases: to navigate a flat-file database to design a structure for a flat-file database to choose different ways of viewing data to choose which attribute to sort data by to answer a given question to choose which attribute and value to search by to answer a given question to choose multiple criteria to search data to answer a given question (AND or OR) to select and appropriate graph to visually compare data	Selection in physical computing: to create a condition-controlled loop to use a condition in an 'if…then…' statement to start an action to use selection to switch the program flow in one of two ways to use a condition in an 'if…then…else' statement to produce given outcomes Selection in quizzes: to experiment with a repeat-until loop to use a condition in an 'if…then…' statement to produce a given outcome to show that a condition can switch program flow in one of two ways to use a condition in an 'if…then…else' statement to produce given outcomes

	to create a vector drawing for a given purpose	to chose suitable ways to present information to other people	
End Point	Sharing information: I can…take part in a collaborative online project with other class members and develop their skills in working together online. I know… how to explain the input, output, and process aspects of a variety of different real-world systems. I understand…computer systems and how information is transferred between systems and devices. Vector drawings: I can… use different drawing tools to help them create images. I know…that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. I understand… how to layer objects and begin grouping and duplicating them to support the creation of more complex pieces of work.	Video editing: I can…short videos by working in pairs or groups. I know…how to reflect on and assess their progress in creating a video I understand…topic-based language and develop the skills of capturing, editing, and manipulating video. Flat file databases: I can…use tools within a database to order and answer questions about data. I know… how to create graphs and charts from their data to help solve problems. I understand… how to use a real-life database to answer a question, and present their work to others.	Selection in physical computing: I can… use a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors). I know… about conditions as a means of controlling the flow of actions and make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the if, then structure). I understand… the concept of selection in programming through the use of the Crumble programming environment. Selection in quizzes: I can… write programs that ask questions and use selection to control the outcomes based on the answers given I know… how to design a quiz in response to a given task and implement it as a program I understand… how to evaluate a program by identifying how it meets the requirements of the task, the ways i have improved it, and further ways it could be improved.

Year Six			
Term & theme	Autumn Computing systems and networks – Communication Creating media – 3D Modelling	Spring Creating media – Web page creation Data and information – Spreadsheets	Summer Programming A – Variables in games Programming B – Sensing
Big question/key concept	Identify how to use a search engine Describe how search engines select results Explain how search engine results are ranked Recognise why the order of results is important and to whom Recognise how we communicate through technology Evaluate different methods of online communication Use a computer to create and manipulate 3D digital objects Compare working digitally with 2D and 3D graphics Construct a digital 3D model of physical objects Identify that physical objects can be broken down into a collection of 3D shapes Design a digital model by combining 3D shapes Develop and improve a 3D digital model	Review an existing website and consider its structure Plan the features of a webpage Consider the ownership and use of images (copyright) Recognise the need to preview pages and the need for a navigation path. Recognise the implications of linking content owned by other people Identify questions which can be answered using data Explain that objects can be described using data Explain that formulas can be used to produce calculated data Apply formulas to data including duplicating Create a spreadsheet to plan an event and use other subtle ways of presenting data	Define a variable as something that is changeable Explain why variables are used when programming Choose how to improve a game by using variables Design a project that builds on giving variables and then create and evaluate the project 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 vale Design a project that uses inputs and outputs on a controllable device and then develop the program
Prior knowledge	Year 5: Understand computer networks including the internet; how they can provide multiple services, such as the WWW and the opportunities they offer for communication and collaboration. Year 5: use a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors).	Year 5: take part in a collaborative online project with other class members and develop their skills in working together online. Year 5: I can…use tools within a database to order and answer questions about data. I know… how to create graphs and charts from their data to help solve problems. I understand… how to use a real-life database to answer a question, and present their work to others.	Year 5: use a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors). Year 4: Use sequence, selection and repetition in programs; work with variables and various forms of input and output.
Prior Skills	Year 5: Recognise how information is transferred over the internet	Year 5: To describe how networks physically connect to the internet and other networks.	Year 5: Control a simple circuit connected to a computer

	Explain how sharing information online lets people in different places work together Year 5: Identify that drawing tools can be used to produce different outcomes	To recognise how the content of the WWW is created by people. Year 5: Outline how grouping and 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	Write a program that includes count-controlled loops Create a program that controls a physical computing project Year 5: I know… how to explain the input, output, and process aspects of a variety of different real-world systems
Key vocabulary	Search engines, web search, web crawlers, refine, limitations, methods of communication, search results Duplicate shapes, graphical objects can be modified, position, rotate, placeholder, modify	Types of media, HTML, 'fair use', preview, navigation path, hyperlinks, copyright-free Data set, headings, format, cell, column, row, formula, graph, table	Variable, single value Programming, environment, flow, variable, physical inputs, operand (<>=), approaches to fixing bugs
Statutory Requirements	Design write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Understand computer networks, including the internet; how they can provide multiple services, such as WWW, 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 if software 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.	Use search technologies effectively, appreciate how results are selected and ranked and be discerning in evaluating digital content. Select, use and combine a variety if software 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. Select, use and combine a variety if software 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.	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. Select, use and combine a variety if software 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.
Skills covered	Internet communication: To identify how to use a search engine To describe how search engines select results. To explain how search engines are ranked.	Web Page Creation: 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	Variables in games: To define a variable as something that is changeable To explain why a variable is used in a program

	To recognise why the order of results is important, and to whom. 3D modelling: To use a computer to create and manipulate 3D digital objects. To compare working digitally with 2D and 3D graphics To construct a digital 3D model of physical object To identify that physical objects can be broken down into a collection of 3D shapes To design a digital model by combining 3D objects To develop and improve a digital 3D model	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 Spreadsheets: To identify questions which can be answered using data. To explain that objects can be described using data To explain that formulas can be used to produce calculated data To apply formulas to data, including duplicating To create a spreadsheet to plan an event To choose suitable ways to present data	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 Sensing: 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 a conditional statement to compare a variable to a value To design a project that uses inputs and output on a controllable device To develop a program to use inputs
End Point	Internet communication: I can… recall how to use a search engine I know…how to use, select and compare search engines. I understand… the in depth running of a search engine. 3D modelling: I can… create a 3D model. I know… to use tools online to create 3D graphical objects. I understand… how to create 3D graphical objects on a computer.	Web page creation: I can… demonstrate the use of search tools to find and access online content which can be reused by others. I know… how to explain the rules of fair use and apply this to case studies. I understand… why copying someone else's work from the internet without permission can cause problems. Spreadsheets: I can… explain what an item of data is and how computers deal with different data types. I know… how to identify different software tools to work with data. I understand… why data should be organised and to be able to choose suitable ways to represent data.	Variables in games: I can… use a variable in more than one location in a program. I know… how to use and change variables. I understand… the name of a variable and how it can be used. Sensing: I can… use an event in a program to update a variable. I know… the importance of setting up a variable at the start of a program. I understand… how to recognise the value of a variable and how it can be used, updated and where in a program to set a variable.