

ICT Computing Curriculum- Based upon NCCE modules.

(We also integrate ICT throughout our curriculum)



Year 1	Unit	Objectives	Progress
	Technology around us	<p>To identify technology</p> <ul style="list-style-type: none"> ● I can explain technology as something that helps us ● I can locate examples of technology in the classroom ● I can explain how these technology examples help us <p>To identify a computer and its main parts</p> <ul style="list-style-type: none"> ● I can name the main parts of a computer ● I can switch on and log into a computer ● I can use a mouse to click and drag <p>To use a mouse in different ways</p> <ul style="list-style-type: none"> ● I can use a mouse to open a program ● I can click and drag to make objects on a screen ● I can use a mouse to create a picture <p>To use a keyboard to type</p> <ul style="list-style-type: none"> ● I can tell you that writing on a computer is called typing ● I can type my name on a computer ● I can save my work to a file <p>To use the keyboard to edit text</p> <ul style="list-style-type: none"> ● I can open my work from a file ● I can use the arrow keys to move the cursor ● I can delete letters <p>To create rules for using technology responsibly</p> <ul style="list-style-type: none"> ● I can identify rules to keep us safe and healthy when we are using technology in and beyond the home ● I can give examples of some of these rules ● I can discuss how we benefit from these rules 	<p>As this is a Year 1 unit, no prior knowledge is assumed.</p> <p>This unit progresses students' knowledge and understanding of technology and how they interact with it in school.</p> <p>Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse.</p>

	Digital Painting	<p>To describe what different freehand tools do</p> <ul style="list-style-type: none"> ● I can make marks on a screen and explain which tools I used ● I can draw lines on a screen and explain which tools I used ● I can use the paint tools to draw a picture <p>To use the shape tool and the line tools</p> <ul style="list-style-type: none"> ● I can make marks with the square and line tools ● I can use the shape and line tools effectively ● I can use the shape and line tools to recreate the work of an artist <p>To make careful choices when painting a digital picture</p> <ul style="list-style-type: none"> ● I can choose appropriate shapes ● I can make appropriate colour choices ● I can create a picture in the style of an artist <p>To explain why I chose the tools I used</p> <ul style="list-style-type: none"> ● I know that different paint tools do different jobs ● I can choose appropriate paint tools and colours to recreate the work of an artist ● I can say which tools were helpful and why <p>To use a computer on my own to paint a picture</p> <ul style="list-style-type: none"> ● I can make dots of colour on the page ● I can change the colour and brush sizes ● I can use dots of colour to create a picture in the style of an artist on my own <p>To compare painting a picture on a computer and on paper</p> <ul style="list-style-type: none"> ● I can explain that pictures can be made in lots of different ways ● I can spot the differences between painting on a computer and on paper ● I can say whether I prefer painting using a computer or using paper 	<p>Learners should be familiar with:</p> <ul style="list-style-type: none"> ● How to switch their device on ● Usernames ● Passwords <p>For an introduction to keyboard and mouse skills, learners may benefit from completing the Year 1 Computing Systems & Networks unit prior to this unit.</p>
	Digital Writing	<p>To use a computer to write</p> <ul style="list-style-type: none"> ● I can open a word processor ● I can recognise keys on a keyboard ● I can identify and find keys on a keyboard <p>To add and remove text on a computer</p> <ul style="list-style-type: none"> ● I can enter text into a computer ● I can use letter, number, and space keys ● I can use backspace to remove text <p>To identify that the look of text can be changed on a computer</p>	<p>This unit progresses students' knowledge and understanding of using computers to create and manipulate digital content, focussing on using a word processor. The learners will develop their ability to find and use the keys on a keyboard in order to create digital content.</p>

		<ul style="list-style-type: none"> ● I can type capital letters ● I can explain what the keys that I have learnt about already do ● I can identify the toolbar and use bold, italic, and underline <p>To make careful choices when changing text</p> <ul style="list-style-type: none"> ● I can select a word by double-clicking ● I can select all of the text by clicking and dragging ● I can change the font <p>To explain why I used the tools that I chose</p> <ul style="list-style-type: none"> ● I can say what tool I used to change the text ● I can decide if my changes have improved my writing ● I can use 'undo' to remove changes <p>To compare writing on a computer with writing on paper</p> <ul style="list-style-type: none"> ● I can write a message on a computer and on paper ● I can compare using a computer with using a pencil and paper ● I can say which method I like best 	<p>The learners are then introduced to manipulating the resulting text, making cosmetic changes, and justifying their reason for making these changes.</p>
	Grouping Data	<p>To label objects</p> <ul style="list-style-type: none"> ● I can describe objects using labels ● I can match objects to groups ● I can identify the label for a group of objects <p>To identify that objects can be counted</p> <ul style="list-style-type: none"> ● I can count objects ● I can group objects ● I can count a group of objects <p>To describe objects in different ways</p> <ul style="list-style-type: none"> ● I can describe an object ● I can describe a property of an object ● I can find objects with similar properties <p>To count objects with the same properties</p> <ul style="list-style-type: none"> ● I can group similar objects ● I can group objects in more than one way ● I can count how many objects share a property <p>To compare groups of objects</p> <ul style="list-style-type: none"> ● I can choose how to group objects 	<p>This unit will introduce pupils to data and information. It will introduce pupils to the concept of labelling and grouping objects based on their properties. Pupils will develop their understanding that objects can be given labels, which is fundamental to their future learning concerning databases and spreadsheets. In addition, pupils will begin to improve their ability to use dragging and dropping skills on a device.</p>

		<ul style="list-style-type: none"> ● I can describe groups of objects ● I can record how many objects are in a group <p>To answer questions about groups of objects</p> <ul style="list-style-type: none"> ● I can decide how to group objects to answer a question ● I can compare groups of objects ● I can record and share what I have found 	
	Programming Animations	<p>To choose a command for a given purpose</p> <ul style="list-style-type: none"> ● I can find the commands to move a sprite ● I can use commands to move a sprite ● I can compare different programming tools <p>To show that a series of commands can be joined together</p> <ul style="list-style-type: none"> ● I can use more than one block by joining them together ● I can use a Start block in a program ● I can run my program <p>To identify the effect of changing a value</p> <ul style="list-style-type: none"> ● I can find blocks that have numbers ● I can change the value ● I can say what happens when I change a value <p>To explain that each sprite has its own instructions</p> <ul style="list-style-type: none"> ● I can show that a project can include more than one sprite ● I can delete a sprite ● I can add blocks to each of my sprites <p>To design the parts of a project</p> <ul style="list-style-type: none"> ● I can choose appropriate artwork for my project ● I can decide how each sprite will move ● I can create an algorithm for each sprite <p>To use my algorithm to create a program</p> <ul style="list-style-type: none"> ● I can use sprites that match my design ● I can add programming blocks based on my algorithm ● I can test the programs I have created 	This unit shows progression from simply moving a robot to providing programming to provide movement.
Year 2	Computer systems and network	<p>To recognise the uses and features of information technology</p> <ul style="list-style-type: none"> ● I can identify examples of computers ● I can describe some uses of computers 	Learners should have an understanding of what technology is and where it is

		<ul style="list-style-type: none"> ● I can identify that a computer is a part of information technology <p>To identify information technology in the home</p> <ul style="list-style-type: none"> ● I can explain the purpose of information technology in the home ● I can open a file ● I can move and resize images <p>To identify information technology beyond school</p> <ul style="list-style-type: none"> ● I can find examples of information technology ● I can talk about uses of information technology ● I can compare types of information technology <p>To explain how information technology benefits us</p> <ul style="list-style-type: none"> ● I can demonstrate how information technology is used in a shop ● I can recognise that information technology can be connected ● I can explain how information technology helps people <p>To show how to use information technology safely</p> <ul style="list-style-type: none"> ● I can list different uses of information technology ● I can recognise how to use information technology responsibly ● I can say how those rules/guides can help me <p>To recognise that choices are made when using information technology</p> <ul style="list-style-type: none"> ● I can identify the choices that I make when using information technology ● I can explain simple guidance for using information technology in different environments and settings ● I can enjoy a variety of activities 	<p>used in a school context. They should also be familiar with the technology available in their own school setting.</p> <p>This unit progresses students' knowledge and understanding of technology and how they interact with it beyond school. Learners will also build on their knowledge of using technology safely and responsibly, and begin to consider the implications of the choices that they make.</p>
	Digital Photography	<p>To use a digital device to take a photograph</p> <ul style="list-style-type: none"> ● I can recognise what devices can be used to take photographs ● I can talk about how to take a photograph ● I can explain what I did to capture a digital photo <p>To make choices when taking a photograph</p> <ul style="list-style-type: none"> ● I can explain the process of taking a good photograph ● I can take photos in both landscape and portrait format ● I can explain why a photo looks better in portrait or landscape format <p>To describe what makes a good photograph</p> <ul style="list-style-type: none"> ● I can identify what is wrong with a photograph ● I can discuss how to take a good photograph 	<p>This unit begins the learners' understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4.</p>

		<ul style="list-style-type: none"> ● I can improve a photograph by retaking it <p>To decide how photographs can be improved</p> <ul style="list-style-type: none"> ● I can explore the effect that light has on a photo ● I can experiment with different light sources ● I can explain why a picture may be unclear <p>To use tools to change an image</p> <ul style="list-style-type: none"> ● I can recognise that images can be changed ● I can use a tool to achieve a desired effect ● I can explain my choices <p>To recognise that photos can be changed</p> <ul style="list-style-type: none"> ● I can apply a range of photography skills to capture a photo ● I can recognise which photos have been changed ● I can identify which photos are real and which have been changed 	
	Pictograms	<p>To recognise that we can count and compare objects using tally charts</p> <ul style="list-style-type: none"> ● I can record data in a tally chart ● I can represent a tally count as a total ● I can compare totals in a tally chart <p>To recognise that objects can be represented as pictures</p> <ul style="list-style-type: none"> ● I can enter data onto a computer ● I can use a computer to view data in a different format ● I can use pictograms to answer simple questions about objects <p>To create a pictogram</p> <ul style="list-style-type: none"> ● I can organise data in a tally chart ● I can use a tally chart to create a pictogram ● I can explain what the pictogram shows <p>To select objects by attribute and make comparisons</p> <ul style="list-style-type: none"> ● I can tally objects using a common attribute ● I can create a pictogram to arrange objects by an attribute 	<p>This unit progresses students' knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes.</p>

		<ul style="list-style-type: none"> ● I can answer 'more than'/'less than' and 'most/least' questions about an attribute <p>To recognise that people can be described by attributes</p> <ul style="list-style-type: none"> ● I can choose a suitable attribute to compare people ● I can collect the data I need ● I can create a pictogram and draw conclusions from it <p>To explain that we can present information using a computer</p> <ul style="list-style-type: none"> ● I can use a computer program to present information in different ways ● I can share what I have found out using a computer ● I can give simple examples of why information should not be shared 	
	Robot algorithms	<p>To describe a series of instructions as a sequence</p> <ul style="list-style-type: none"> ● I can follow instructions given by someone else ● I can choose a series of words that can be enacted as a sequence ● I can give clear and unambiguous instructions <p>To explain what happens when we change the order of instructions</p> <ul style="list-style-type: none"> ● I can create different algorithms for a range of sequences (using the same commands) ● I can use an algorithm to program a sequence on a floor robot ● I can show the difference in outcomes between two sequences that consist of the same commands <p>To use logical reasoning to predict the outcome of a program (series of commands)</p> <ul style="list-style-type: none"> ● I can follow a sequence ● I can predict the outcome of a sequence ● I can compare my prediction to the program outcome <p>To explain that programming projects can have code and artwork</p> <ul style="list-style-type: none"> ● I can explain the choices I made for my mat design ● I can identify different routes around my mat ● I can test my mat to make sure that it is usable <p>To design an algorithm</p> <ul style="list-style-type: none"> ● I can explain what my algorithm should achieve ● I can create an algorithm to meet my goal 	<p>In advance of the lessons in this Year 2 unit, pupils should have had some experience of creating short programs and predicting the outcome of a simple program. This unit progresses students' knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Pupils will spend time looking at how the order of commands affects outcomes. Pupils will use this knowledge and logical reasoning to trace programs and predict outcomes.</p>

		<ul style="list-style-type: none"> ● I can use my algorithm to create a program <p>To create and debug a program that I have written</p> <ul style="list-style-type: none"> ● I can plan algorithms for different parts of a task ● I can test and debug each part of the program ● I can put together the different parts of my program 	
	Programming quizzes	<p>To explain that a sequence of commands has a start</p> <ul style="list-style-type: none"> ● I can identify the start of a sequence ● I can identify that a program needs to be started ● I can show how to run my program <p>To explain that a sequence of commands has an outcome</p> <ul style="list-style-type: none"> ● I can predict the outcome of a sequence of commands ● I can match two sequences with the same outcome ● I can change the outcome of a sequence of commands <p>To create a program using a given design</p> <ul style="list-style-type: none"> ● I can work out the actions of a sprite in an algorithm ● I can decide which blocks to use to meet the design ● I can build the sequences of blocks I need <p>To change a given design</p> <ul style="list-style-type: none"> ● I can choose backgrounds for the design ● I can choose characters for the design ● I can create a program based on the new design <p>To create a program using my own design</p> <ul style="list-style-type: none"> ● I can choose the images for my own design ● I can create an algorithm ● I can build sequences of blocks to match my design <p>To decide how my project can be improved</p> <ul style="list-style-type: none"> ● I can compare my project to my design ● I can improve my project by adding features ● I can debug 	This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.
Year 3	Connecting computers	<p>To explain how digital devices function</p> <ul style="list-style-type: none"> ● I can explain that digital devices accept inputs ● I can explain that digital devices produce outputs ● I can follow a process 	This unit progresses students' knowledge and understanding of technology by focussing on digital and non-digital devices,

		<p>To identify input and output devices</p> <ul style="list-style-type: none"> ● I can classify input and output devices ● I can model a simple process ● I can design a digital device <p>To recognise how digital devices can change the way we work</p> <ul style="list-style-type: none"> ● I can explain how I use digital devices for different activities ● I can recognise similarities between using digital devices and non-digital tools ● I can suggest differences between using digital devices and non-digital tools <p>To explain how a computer network can be used to share information</p> <ul style="list-style-type: none"> ● I can recognise different connections ● I can explain how messages are passed through multiple connections ● I can discuss why we need a network switch <p>To explore how digital devices can be connected</p> <ul style="list-style-type: none"> ● 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 of a switch, server, and wireless access point in a network <p>To recognise the physical components of a network</p> <ul style="list-style-type: none"> ● I can identify how devices in a network are connected with one another ● I can identify networked devices around me ● I can identify the benefits of computer networks 	<p>and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks.</p>
	<p>Stop Frame Animation</p>	<p>To explain that animation is a sequence of drawings or photographs</p> <ul style="list-style-type: none"> ● I can draw a sequence of pictures ● I can create an effective flip book—style animation ● I can explain how an animation/flip book works <p>To relate animated movement with a sequence of images</p> <ul style="list-style-type: none"> ● I can predict what an animation will look like ● I can explain why little changes are needed for each frame ● I can create an effective stop-frame animation <p>To plan an animation</p> <ul style="list-style-type: none"> ● I can break down a story into settings, characters and events ● I can describe an animation that is achievable on screen ● I can create a storyboard 	<p>This unit progresses students' knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. Following this unit, learners will further develop their video editing skills in Year 5.</p>

		<p>To identify the need to work consistently and carefully</p> <ul style="list-style-type: none"> ● I can use onion skinning to help me make small changes between frames ● I can review a sequence of frames to check my work ● I can evaluate the quality of my animation <p>To review and improve an animation</p> <ul style="list-style-type: none"> ● I can explain ways to make my animation better ● I can evaluate another learner's animation ● I can improve my animation based on feedback <p>To evaluate the impact of adding other media to an animation</p> <ul style="list-style-type: none"> ● I can add other media to my animation ● I can explain why I added other media to my animation ● I can evaluate my final film 	
	Desktop Publishing	<p>To recognise how text and images convey information</p> <ul style="list-style-type: none"> ● I can explain the difference between text and images ● I can recognise that text and images can communicate messages clearly ● I can identify the advantages and disadvantages of using text and images <p>To recognise that text and layout can be edited</p> <ul style="list-style-type: none"> ● I can change font style, size, and colours for a given purpose ● I can edit text ● I can explain that text can be changed to communicate more clearly <p>To choose appropriate page settings</p> <ul style="list-style-type: none"> ● I can define the term 'page orientation' ● I can recognise placeholders and say why they are important ● I can create a template for a particular purpose <p>To add content to a desktop publishing publication</p> <ul style="list-style-type: none"> ● I can choose the best locations for my content ● I can paste text and images to create a magazine cover ● I can make changes to content after I've added it <p>To consider how different layouts can suit different purposes</p> <ul style="list-style-type: none"> ● I can identify different layouts ● I can match a layout to a purpose ● I can choose a suitable layout for a given purpose <p>To consider the benefits of desktop publishing</p>	<p>This unit progresses learners' knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2.</p>

		<ul style="list-style-type: none"> ● I can identify the uses of desktop publishing in the real world ● I can say why desktop publishing might be helpful ● I can compare work made on desktop publishing to work created by hand 	
	Branching databases	<p>To create questions with yes/no answers</p> <ul style="list-style-type: none"> ● I can investigate questions with yes/no answers ● I can make up a yes/no question about a collection of objects ● I can create two groups of objects separated by one attribute <p>To identify the object attributes needed to collect relevant data</p> <ul style="list-style-type: none"> ● I can select an attribute to separate objects into groups ● I can create a group of objects within an existing group ● I can arrange objects into a tree structure <p>To create a branching database</p> <ul style="list-style-type: none"> ● I can select objects to arrange in a branching database ● I can group objects using my own yes/no questions ● I can prove my branching database works <p>To explain why it is helpful for a database to be well structured</p> <ul style="list-style-type: none"> ● I can create yes/no questions using given attributes ● I can explain that questions need to be ordered carefully to split objects into similarly sized groups ● I can compare two branching database structures <p>To identify objects using a branching database</p> <ul style="list-style-type: none"> ● I can select a theme and choose a variety of objects ● I can create questions and apply them to a tree structure ● I can use my branching database to answer questions <p>To compare the information shown in a pictogram with a branching database</p> <ul style="list-style-type: none"> ● I can explain what a pictogram tells me ● I can explain what a branching database tells me ● I can compare two ways of presenting information 	This unit progresses students' knowledge and understanding of presenting information. It builds on their knowledge of data and information from key stage 1. They continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.
	Sequencing sounds	<p>To explore a new programming environment</p> <ul style="list-style-type: none"> ● I can identify the objects in a Scratch project (sprites, backdrops) ● I can explain that objects in Scratch have attributes (linked to) ● I can recognise that commands in Scratch are represented as blocks <p>To identify that commands have an outcome</p>	This unit assumes that learners will have some prior experience of programming; the KS1 NCCE units cover floor robots and ScratchJr. However,

		<ul style="list-style-type: none"> ● I can identify that each sprite is controlled by the commands I choose ● I can choose a word which describes an on-screen action for my design ● I can create a program following a design <p>To explain that a program has a start</p> <ul style="list-style-type: none"> ● I can start a program in different ways ● I can create a sequence of connected commands ● I can explain that the objects in my project will respond exactly to the code <p>To recognise that a sequence of commands can have an order</p> <ul style="list-style-type: none"> ● I can explain what a sequence is ● I can combine sound commands ● I can order notes into a sequence <p>To change the appearance of my project</p> <ul style="list-style-type: none"> ● I can build a sequence of commands ● I can decide the actions for each sprite in a program ● I can make design choices for my artwork <p>To create a project from a task description</p> <ul style="list-style-type: none"> ● I can identify and name the objects I will need for a project ● I can relate a task description to a design ● I can implement my algorithm as code 	<p>experience of other languages or environments may also be useful.</p>
	<p>Events and actions in programmes</p>	<p>To explain how a sprite moves in an existing project</p> <ul style="list-style-type: none"> ● I can explain the relationship between an event and an action ● I can choose which keys to use for actions and explain my choices ● I can identify a way to improve a program <p>To create a program to move a sprite in four directions</p> <ul style="list-style-type: none"> ● I can choose a character for my project ● I can choose a suitable size for a character in a maze ● I can program movement <p>To adapt a program to a new context</p> <ul style="list-style-type: none"> ● I can use a programming extension ● I can consider the real world when making design choices ● I can choose blocks to set up my program <p>To develop my program by adding features</p> <ul style="list-style-type: none"> ● I can identify additional features (from a given set of blocks) 	<p>This unit assumes that learners will have some prior experience of programming. The key stage 1 National Centre for Computing Education units focus on floor robots and ScratchJr, however experience of other languages or environments may also be useful. The Year 3 — Programming A unit introduces the Scratch programming environment and the concept of sequences.</p>

		<ul style="list-style-type: none"> ● I can choose suitable keys to turn on additional features ● I can build more sequences of commands to make my design work <p>To identify and fix bugs in a program</p> <ul style="list-style-type: none"> ● I can test a program against a given design ● I can match a piece of code to an outcome ● I can modify a program using a design <p>To design and create a maze-based challenge</p> <ul style="list-style-type: none"> ● I can make design choices and justify them ● I can implement my design ● I can evaluate my project 	
Year 4	The internet	<p>To describe how networks physically connect to other networks</p> <ul style="list-style-type: none"> ● I can describe the internet as a network of networks ● I can demonstrate how information is shared across the internet ● I can discuss why a network needs protecting <p>To recognise how networked devices make up the internet</p> <ul style="list-style-type: none"> ● I can describe the different networked devices and how they connect ● I can explain how the internet allows us to view the World Wide Web ● I can recognise that the World Wide Web is the part of the internet that contains websites and web pages <p>To outline how websites can be shared via the World Wide Web</p> <ul style="list-style-type: none"> ● I can explain the types of media that can be shared on the World Wide Web (WWW) ● I can describe where websites are stored when uploaded to the WWW ● I can describe how to access websites on the WWW <p>To describe how content can be added and accessed on the World Wide Web</p> <ul style="list-style-type: none"> ● I can create media which can be found on websites ● I can recognise that I can add content to the WWW ● I can explain that new content can be created online <p>To recognise how the content of the WWW is created by people</p> <ul style="list-style-type: none"> ● I can explain that websites and their content are created by people ● I can suggest who owns the content on websites ● I can explain that there are rules to protect content <p>To evaluate the consequences of unreliable content</p>	This unit progresses students' knowledge and understanding of networks in Year 3. In Year 5, they will continue to develop their knowledge and understanding of computing systems and online collaborative working.

		<ul style="list-style-type: none"> ● I can explain that not everything on the World Wide Web is true. ● I can explain why some information I find online may not be honest, accurate, or legal. ● I can explain why I need to think carefully before I share or reshare content 	
	Audio editing	<p>To identify that sound can be digitally recorded:</p> <ul style="list-style-type: none"> ● I can identify digital devices that can record sound and play it back ● I can identify the inputs and outputs required to play audio or record sound ● I can recognise the range of sounds that can be recorded <p>To use a digital device to record sound:</p> <ul style="list-style-type: none"> ● I can use a device to record audio and play back sound ● I can suggest how to improve my recording ● I can discuss what other people include when recording sound for a podcast <p>To explain that a digital recording is stored as a file:</p> <ul style="list-style-type: none"> ● I can plan and write the content for a podcast ● I can discuss why it is useful to be able to save digital recordings ● I can save a digital recording as a file <p>To explain that audio can be changed through editing:</p> <ul style="list-style-type: none"> ● I can open a digital recording from a file ● I can discuss ways in which audio recordings can be altered ● I can edit sections of of an audio recording <p>To show that different types of audio can be combined and played together:</p> <ul style="list-style-type: none"> ● I can discuss sounds that other people combine ● I can choose suitable sounds to include in a podcast ● I can use editing tools to arrange sections of audio <p>To evaluate editing choices made:</p> <ul style="list-style-type: none"> ● I can explain that digital recordings need to be exported to share them ● I can discuss the features of a digital recording I like ● I can suggest improvements to a digital recording 	This unit progresses students' knowledge and understanding of creating media, by focusing on the recording and editing of sound to produce a podcast. Following this unit, learners will explore combining audio with video in the 'Video editing' unit in Year 5.
	Photo editing	<p>To explain that digital images can be changed</p> <ul style="list-style-type: none"> ● I can identify changes that we can make to an image ● I can explore how images can be changed in real life ● I can explain the effect that editing can have on an image <p>To change the composition of an image</p>	Learners should have experience of making choices on a tablet/computer. They should be able to navigate within an application.

		<ul style="list-style-type: none"> ● I can explain what has changed in an edited image ● I can change the composition of an image by selecting parts of it ● I can consider why someone might want to change the composition of an image <p>To describe how images can be changed for different uses</p> <ul style="list-style-type: none"> ● I can talk about changes made to images ● I can choose effects to make my image fit a scenario ● I can explain why my choices fit a scenario <p>To make good choices when selecting different tools</p> <ul style="list-style-type: none"> ● I can identify how an image has been retouched ● I can give examples of positive and negative effects that retouching can have on an image ● I can choose appropriate tools to retouch an image <p>To recognise that not all images are real</p> <ul style="list-style-type: none"> ● I can sort images into 'fake' or 'real' and explain my choices ● I can combine parts of images to create new images ● I can talk about fake images around me <p>To evaluate how changes can improve an image</p> <ul style="list-style-type: none"> ● I can consider the effect of adding other elements to my work ● I can compare the original image with my completed publication ● I can evaluate the impact of my publication on others through feedback 	<p>This unit progresses students' skills through editing digital images and considering the impact that editing can have on an image. Learners will also consider how editing can be used appropriately for different scenarios, and create and evaluate 'fake' images, combining all of their new skills.</p>
	Data logging	<p>To explain that data gathered over time can be used to answer questions</p> <ul style="list-style-type: none"> ● I can choose a data set to answer a given question ● I can suggest questions that can be answered using a given data set ● I can identify data that can be gathered over time <p>To use a digital device to collect data automatically</p> <ul style="list-style-type: none"> ● I can explain that sensors are input devices ● I can use data from a sensor to answer a given question ● I can identify that data from sensors can be recorded <p>To explain that a data logger collects 'data points' from sensors over time</p> <ul style="list-style-type: none"> ● I can identify a suitable place to collect data ● I can identify the intervals used to collect data ● I can talk about the data that I have captured <p>To use data collected over a long duration to find information</p>	<p>This unit progresses pupils' knowledge and understanding of data and how it can be collected over time to answer questions. The unit also introduces the idea of automatic data collection.</p>

		<ul style="list-style-type: none"> ● I can import a data set ● I can use a computer to view data in different ways ● I can use a computer program to sort data <p>To identify the data needed to answer questions</p> <ul style="list-style-type: none"> ● I can propose a question that can be answered using logged data ● I can plan how to collect data using a data logger ● I can use a data logger to collect data <p>To use collected data to answer questions</p> <ul style="list-style-type: none"> ● I can interpret data that has been collected using a data logger ● I can draw conclusions from the data that I have collected ● I can explain the benefits of using a data logger 	
	Repetition in shape	<p>To identify that accuracy in programming is important</p> <ul style="list-style-type: none"> ● I can program a computer by typing commands ● I can explain the effect of changing a value of a command ● I can create a code snippet for a given purpose <p>To create a program in a text-based language</p> <ul style="list-style-type: none"> ● I can use a template to draw what I want my program to do ● I can write an algorithm to produce a given outcome ● I can test my algorithm in a text-based language <p>To explain what 'repeat' means</p> <ul style="list-style-type: none"> ● I can identify repetition in everyday tasks ● I can identify patterns in a sequence ● I can use a count-controlled loop to produce a given outcome <p>To modify a count-controlled loop to produce a given outcome</p> <ul style="list-style-type: none"> ● I can identify the effect of changing the number of times a task is repeated ● I can predict the outcome of a program containing a count-controlled loop ● I can choose which values to change in a loop <p>To decompose a task into small steps</p> <ul style="list-style-type: none"> ● I can identify 'chunks' of actions in the real world ● I can use a procedure in a program ● I can explain that a computer can repeatedly call a procedure <p>To create a program that uses count-controlled loops to produce a given outcome</p> <ul style="list-style-type: none"> ● I can design a program that includes count-controlled loops 	This unit progresses students' knowledge and understanding of programming. It progresses from the sequence of commands in a program to using count-controlled loops. Pupils will create algorithms and then implement those algorithms as code.

		<ul style="list-style-type: none"> ● I can make use of my design to write a program ● I can develop my program by debugging it 	
	Repetition in games	<p>To develop the use of count-controlled loops in a different programming environment</p> <ul style="list-style-type: none"> ● I can list an everyday task as a set of instructions including repetition ● I can predict the outcome of a snippet of code ● I can modify a snippet of code to create a given outcome <p>To explain that in programming there are infinite loops and count-controlled loops</p> <ul style="list-style-type: none"> ● I can modify loops to produce a given outcome ● 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 <p>To develop a design that includes two or more loops which run at the same time</p> <ul style="list-style-type: none"> ● I can choose which action will be repeated for each object ● I can explain what the outcome of the repeated action should be ● I can evaluate the effectiveness of the repeated sequences used in my program <p>To modify an infinite loop in a given program</p> <ul style="list-style-type: none"> ● I can identify which parts of a loop can be changed ● I can explain the effect of my changes ● I can re-use existing code snippets on new sprites <p>To design a project that includes repetition</p> <ul style="list-style-type: none"> ● I can evaluate the use of repetition in a project ● I can select key parts of a given project to use in my own design ● I can develop my own design explaining what my project will do <p>To create a project that includes repetition</p> <ul style="list-style-type: none"> ● I can refine the algorithm in my design ● I can build a program that follows my design ● I can evaluate the steps I followed when building my project 	This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units. However, experience of other languages or environments may also be useful.
	Computing systems and networks	<p>To explain that computers can be connected together to form systems</p> <ul style="list-style-type: none"> ● I can explain that systems are built using a number of parts ● I can describe that a computer system features inputs, processes, and outputs ● I can explain that computer systems communicate with other devices <p>To recognise the role of computer systems in our lives</p> <ul style="list-style-type: none"> ● I can identify tasks that are managed by computer systems 	This unit progresses learners' knowledge and understanding of computing systems and online collaborative working.

		<ul style="list-style-type: none"> ● I can identify the human elements of a computer system ● I can explain the benefits of a given computer system <p>To recognise how information is transferred over the internet</p> <ul style="list-style-type: none"> ● I can recognise that data is transferred using agreed methods ● I can explain that networked digital devices have unique addresses ● I can explain that data is transferred over networks in packets <p>To explain how sharing information online lets people in different places work together</p> <ul style="list-style-type: none"> ● I can recognise that connected digital devices can allow us 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 <p>To contribute to a shared project online</p> <ul style="list-style-type: none"> ● I can suggest strategies to ensure successful group work ● I can make thoughtful suggestions on my group's work ● I can compare working online with working offline <p>To evaluate different ways of working together online</p> <ul style="list-style-type: none"> ● 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 	
	Vector drawing	<p>To identify that drawing tools can be used to produce different outcomes</p> <ul style="list-style-type: none"> ● I can recognise that vector drawings are made using shapes ● I can identify the main drawing tools ● I can discuss how a vector drawing is different from paper-based drawings <p>To create a vector drawing by combining shapes</p> <ul style="list-style-type: none"> ● 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 <p>To use tools to achieve a desired effect</p> <ul style="list-style-type: none"> ● 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 different effects <p>To recognise that vector drawings consist of layers</p>	<p>This unit progresses students' knowledge and understanding of digital painting and has some links to desktop publishing in which learners used digital images. They are now creating the images that they could use in desktop publishing documents.</p>

		<ul style="list-style-type: none"> ● I can identify that each added object creates a new layer in the drawing ● I can identify which objects are in the front layer or in the back layer of a drawing ● I can change the order of layers in a vector drawing <p>To group objects to make them easier to work with</p> <ul style="list-style-type: none"> ● I can copy part of a drawing by duplicating several objects ● I can group to create a single object ● I can reuse a group of objects to further develop my vector drawing <p>To evaluate my vector drawing</p> <ul style="list-style-type: none"> ● I create alternatives to vector drawings ● I can suggest improvements to a vector drawing ● I can apply what I have learned about vector drawings 	
	Video editing	<p>To recognise video as moving pictures, which can include audio</p> <ul style="list-style-type: none"> ● I can explain that a video can include both visual and audio media ● I can explain the benefits of adding audio to a video ● I can plan a video project using a storyboard <p>To identify digital devices that can record video</p> <ul style="list-style-type: none"> ● I can identify and name digital devices that can record video and sound ● I can choose the most suitable digital device for recording my project ● I can locate and identify the working features of a digital device that can record video <p>To capture video using a digital device</p> <ul style="list-style-type: none"> ● I can select a suitable device and software to capture my video ● I can demonstrate suitable methods of using a digital device to capture my video ● I can demonstrate the safe use and handling of devices <p>To recognise the features of an effective video</p> <ul style="list-style-type: none"> ● I can list some of the features of an effective video ● I can record a video that demonstrates some of the features of an effective video ● I can explain why lighting and angle are important in creating an effective video <p>To identify that video can be improved through reshooting and editing</p> <ul style="list-style-type: none"> ● I can store, retrieve, and export my recording to a computer ● I can explain how to improve a video by reshooting and editing ● I can select the correct tools to make edits to my video <p>To consider the impact of the choices made when making and sharing a video</p>	<p>This unit progresses learners' knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video. By the end of the unit, learners will have developed the skills required to plan, record, edit, and finalise a video.</p>

		<ul style="list-style-type: none"> ● I can make edits to my video and improve the final outcome ● I can recognise that my choices when making a video will impact on the quality of the final outcome ● I can evaluate my video and share my opinions 	
	Flat file databases	<p>To use a form to record information</p> <ul style="list-style-type: none"> ● I can create multiple questions about the same field ● I can explain how information can be recorded ● I can order, sort, and group my data cards <p>To compare paper and computer-based databases</p> <ul style="list-style-type: none"> ● I can navigate a flat-file database to compare different views of information ● I can explain what a 'field' and a 'record' is in a database ● I can choose which field to sort data by to answer a given question <p>To outline how grouping and then sorting data allows us to answer questions</p> <ul style="list-style-type: none"> ● I can explain how information can be grouped ● I can group information to answer questions ● I can combine grouping and sorting to answer more specific questions <p>To explain that tools can be used to select specific data</p> <ul style="list-style-type: none"> ● 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 <p>To explain that computer programs can be used to compare data visually</p> <ul style="list-style-type: none"> ● I can select an appropriate chart to visually compare data ● I can refine a chart by selecting a particular filter ● I can explain the benefits of using a computer to create graphs <p>To apply my knowledge of a database to ask and answer real-world questions</p> <ul style="list-style-type: none"> ● 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 	<p>This unit progresses pupils' knowledge and understanding of why and how information might be stored in a database, and looks at how tools within a database can help us to answer questions about our data. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems. Finally, the pupils create a presentation showing understanding and application of all the tools used within the unit.</p>
	Selection in physical computing	<p>To control a simple circuit connected to a computer</p> <ul style="list-style-type: none"> ● I can build a simple circuit to connect a microcontroller to a computer ● I can program a microcontroller to light an LED ● I can explain why I used an infinite loop 	<p>This unit assumes that learners will have prior experience of programming using block-based construction (eg Scratch) and understand the concepts</p>

		<p>To write a program that includes count-controlled loops</p> <ul style="list-style-type: none"> ● I can connect more than one output device to a microcontroller ● I can design sequences for given output devices ● I can decide which output devices I control with a count-controlled loop <p>To explain that a loop can stop when a condition is met, eg number of times</p> <ul style="list-style-type: none"> ● I can explain that a condition is something that can be either true or false (eg whether a value is more than 10, or whether a button has been pressed) ● I can experiment with a 'do until' loop ● I can program a microcontroller to respond to an input <p>To conclude that a loop can be used to repeatedly check whether a condition has been met</p> <ul style="list-style-type: none"> ● 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 <p>To design a physical project that includes selection</p> <ul style="list-style-type: none"> ● I can identify a condition to start an action (real world) ● I can describe what my project will do (the task) ● I can create a detailed drawing of my project <p>To create a controllable system that includes selection</p> <ul style="list-style-type: none"> ● I can write an algorithm to control lights and a motor ● I can use selection to produce an intended outcome ● I can test and debug my project 	<p>of sequence and repetition. The National Centre for Computing Education key stage 1 units focus on floor robots and ScratchJr, however, experience of other languages or environments may also be useful.</p>
Selection in quizzes		<p>To explain how selection is used in computer programs</p> <ul style="list-style-type: none"> ● I can recall how conditions are used in selection ● I can identify conditions in a program ● I can modify a condition in a program <p>To relate that a conditional statement connects a condition to an outcome</p> <ul style="list-style-type: none"> ● 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 with different outcomes using selection <p>To explain how selection directs the flow of a program</p> <ul style="list-style-type: none"> ● I can explain that program flow can branch according to a condition 	<p>This unit assumes that learners will have prior experience of programming using block-based construction (eg Scratch), understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'. Ideally, learners will have</p>

		<ul style="list-style-type: none"> ● I can design the flow of a program which contains ‘if... then... else...’ ● I can show that a condition can direct program flow in one of two ways <p>To design a program which uses selection</p> <ul style="list-style-type: none"> ● 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 <p>To create a program which uses selection</p> <ul style="list-style-type: none"> ● 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 <p>To evaluate my program</p> <ul style="list-style-type: none"> ● 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 	<p>completed ‘Programming A – Selection in physical computing’ before undertaking this unit, as this will provide them with the required knowledge of ‘selection’.</p>
Year 6	Internet communication	<p>To identify how to use a search engine</p> <ul style="list-style-type: none"> ● I can complete a web search to find specific information ● I can refine my search ● I can compare results from different search engines <p>To describe how search engines select results</p> <ul style="list-style-type: none"> ● 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 <p>To explain how search results are ranked</p> <ul style="list-style-type: none"> ● I can explain that search results are ordered ● I can explain that a search engine follows rules to rank relevant pages ● I can suggest some of the criteria that a search engine checks to decide on the order of results <p>To recognise why the order of results is important, and to whom</p> <ul style="list-style-type: none"> ● 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 <p>To recognise how we communicate using technology</p>	<p>This unit progresses students’ knowledge and understanding of computing systems and online collaborative working.</p>

		<ul style="list-style-type: none"> ● I can explain the different ways in which people communicate ● I can identify that there are a variety of ways of communicating over the internet ● I can choose methods of communication to suit particular purposes <p>To evaluate different methods of online communication</p> <ul style="list-style-type: none"> ● I can compare different methods of communicating on the internet ● I can decide when I should and should not share ● I can explain that communication on the internet may not be private 	
	3D Modelling	<p>To use a computer to create and manipulate three-dimensional (3D) digital objects</p> <ul style="list-style-type: none"> ● I can discuss the similarities and differences between 2D and 3D shapes ● I can explain why we might represent 3D objects on a computer ● I can select, move, and delete a digital 3D shape <p>To compare working digitally with 2D and 3D graphics</p> <ul style="list-style-type: none"> ● I can identify how graphical objects can be modified ● I can resize a 3D object ● I can change the colour of a 3D object <p>To construct a digital 3D model of a physical object</p> <ul style="list-style-type: none"> ● I can rotate a 3D object ● I can position 3D objects in relation to each other ● I can select and duplicate multiple 3D objects <p>To identify that physical objects can be broken down into a collection of 3D shapes</p> <ul style="list-style-type: none"> ● I can identify the 3D shapes needed to create a model of a real-world object ● I can create digital 3D objects of an appropriate size ● I can group a digital 3D shape and a placeholder to create a hole in an object <p>To design a digital model by combining 3D objects</p> <ul style="list-style-type: none"> ● I can plan my 3D model ● I can choose which 3D objects I need to construct my model ● I can modify multiple 3D objects <p>To develop and improve a digital 3D model</p> <ul style="list-style-type: none"> ● I can decide how my model can be improved ● I can modify my model to improve it ● I can evaluate my model against a given criterion 	This unit progresses students' knowledge and understanding of creating 3D graphics using a computer. Prior to undertaking this unit, learners should have worked with 2D graphics applications.
	Web Page Creation	<p>To review an existing website and consider its structure</p> <ul style="list-style-type: none"> ● I can explore a website 	This unit progresses students' knowledge and understanding

		<ul style="list-style-type: none"> ● I can discuss the different types of media used on websites ● I know that websites are written in HTML <p>To plan the features of a web page</p> <ul style="list-style-type: none"> ● 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 <p>To consider the ownership and use of images (copyright)</p> <ul style="list-style-type: none"> ● 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' <p>To recognise the need to preview pages</p> <ul style="list-style-type: none"> ● 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. <p>To outline the need for a navigation path</p> <ul style="list-style-type: none"> ● 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 <p>To recognise the implications of linking to content owned by other people</p> <ul style="list-style-type: none"> ● 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 	<p>of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing.</p>
	<p>Introduction to spreadsheets</p>	<p>To identify questions which can be answered using data</p> <ul style="list-style-type: none"> ● I can explain the relevance of data headings ● I can answer questions from an existing data set ● I can ask simple relevant questions which can be answered using data <p>To explain that objects can be described using data</p> <ul style="list-style-type: none"> ● I can explain what an item of data is ● I can apply an appropriate number format to a cell ● I can build a data set in a spreadsheet application <p>To explain that formulas can be used to produce calculated data</p> <ul style="list-style-type: none"> ● I can explain the relevance of a cell's data type 	<p>This unit progresses students' knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets.</p>

		<ul style="list-style-type: none"> ● I can construct a formula in a spreadsheet ● I can identify that changing inputs changes outputs <p>To apply formulas to data, including duplicating</p> <ul style="list-style-type: none"> ● I can recognise that data can be calculated 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 <p>To create a spreadsheet to plan an event</p> <ul style="list-style-type: none"> ● I can use a spreadsheet to answer questions ● I can explain why data should be organised ● I can apply a formula to calculate the data I need to answer questions <p>To choose suitable ways to present data</p> <ul style="list-style-type: none"> ● I can produce a graph ● I can use a graph to show the answer to questions ● I can suggest when to use a table or graph 	
	Variables in games	<p>To define a 'variable' as something that is changeable</p> <ul style="list-style-type: none"> ● I can identify examples of information that is variable ● I can explain that the way that a variable changes can be defined ● I can identify that variables can hold numbers or letters <p>To explain why a variable is used in a program</p> <ul style="list-style-type: none"> ● 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 <p>To choose how to improve a game by using variables</p> <ul style="list-style-type: none"> ● 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 <p>To design a project that builds on a given example</p> <ul style="list-style-type: none"> ● I can choose the artwork for my project ● I can explain my design choices ● I can create algorithms for my project <p>To use my design to create a project</p> <ul style="list-style-type: none"> ● I can create the artwork for my project ● I can choose a name that identifies the role of a variable 	<p>This unit assumes that pupils will have some prior experience of programming in Scratch. Specifically, they should be familiar with the programming constructs of sequence, repetition, and selection. These constructs are covered in the Year 3, 4, and 5 National Centre for Computing Education programming units respectively. Each year group includes at least one unit that focuses on Scratch.</p>

		<ul style="list-style-type: none"> ● I can test the code that I have written <p>To evaluate my project</p> <ul style="list-style-type: none"> ● I can identify ways that my game could be improved ● I can extend my game further using more variables ● I can share my game with others 	
	Sensing	<p>To create a program to run on a controllable device</p> <ul style="list-style-type: none"> ● 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 <p>To explain that selection can control the flow of a program</p> <ul style="list-style-type: none"> ● 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 <p>To update a variable with a user input</p> <ul style="list-style-type: none"> ● I can use a condition to change a variable ● I can experiment with different physical inputs ● I can explain that if you read a variable, the value remains <p>To use an conditional statement to compare a variable to a value</p> <ul style="list-style-type: none"> ● I can explain the importance of the order of conditions in else, if statements ● I can use an operand (e.g. <=>) in an if, then statement ● I can modify a program to achieve a different outcome <p>To design a project that uses inputs and outputs on a controllable device</p> <ul style="list-style-type: none"> ● 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 <p>To develop a program to use inputs and outputs on a controllable device</p> <ul style="list-style-type: none"> ● 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 	<p>This unit of work is based around the micro:bit. It has been designed to be taught with the physical computing device and this is how it will be most effective. However, the makecode.microbit.org website has an emulator (an interactive, on-screen micro:bit) that schools can use if micro:bits are unavailable.</p>