



Bledlow Ridge School

Medium Term Plan for Computing

Implementation

From Spring term 2 (2023) the school is switching from Rising Start 'switched on Computing' scheme of work to Teach Computing curriculum <https://teachcomputing.org/startng-out> From Sept 2023 Teach computing MTP will be followed from start of Autumn Term.

The progression and sequence of lessons for each year group are detailed below:

Year group	Computing Autumn 2023 First half term					
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1 <i>Technology around us</i>	Technology around us: Learners will become familiar with the term 'technology'. They will classify what is and what is not technology in their school and/or classroom. Learners will demonstrate their understanding of how	Using technology: Learners will get to know the main parts of a desktop or laptop computer. They will practise turning on and logging in to a computer. The learners will apply	Developing mouse skills: Learners will be building on the mouse skills they were introduced to in Lesson 2. Learners will review images of a computer to explain what each part does. They	Using a computer keyboard: Learners will begin to use the computer keyboard for a purpose. They should understand that writing on a keyboard is called typing and will begin to	Developing keyboard skills: Learners will begin by opening a file they have previously created. They will demonstrate their ability to use a keyboard to edit text, by writing a sentence and then	Using a computer responsibly: Learners will be introduced to the concept of using computers safely, within the context of a school setting. They will explore why we have rules in school and how those rules help us,



	technology helps us in different ways.	their knowledge of the different parts of a computer, to complete a mouse-based task.	will develop an understanding that different computers use different mice, but they perform the same function. They will use the mouse to open a program and create a simple picture.	demonstrate their ability to write their name. Learners will then save their work using the save icon and understand that this icon is used in lots of different programs.	deleting letters. They will also use the keyboard arrow keys to move the text cursor in their textbox.	and then apply this understanding to rules needed for using computer technology safely.
2 <i>Information technology around us</i>	What is IT? Learners will develop their understanding of what information technology (IT) is. They will identify devices that are computers and consider how IT can help them both at school and beyond.	IT in school: Learners will consider common uses of information technology in a context that they are familiar with. They will identify examples of IT and be able to explain the purpose of different examples	IT in the world: Learners will begin to explore IT in environments beyond school, including home and familiar places such as shops. They will talk about the uses of IT in these environments and be able to explain	The benefits of IT: Learners will explore the benefits of using IT in the wider world. They will focus on the use of IT in a shop and how devices can work together. Learners will sort activities based on whether they use IT or not	Using IT safely: Learners will consider how they use different forms of information technology safely, in a range of different environments. They will list different uses of IT and talk about the different rules that might be associated with	Using IT in different ways: Learners will think about the choices that are made when using information technology, and the responsibility associated with those choices. They will use IT in different types of activities and explain that



		of IT in the school setting.	that IT is used in many workplaces.	and will be able to say why we use IT.	using them. Learners will then say how rules can help keep them safe when using IT.	sometimes they will need to use IT in different ways.
3 <i>Connecting computers</i>	<u>How does a digital devise work?</u> This lesson introduces the concepts of input, process, and output. These concepts are fundamental to all digital devices.	<u>What parts make up a digital devise?</u> Learners will develop their knowledge of the relationship between inputs, processes, and outputs and apply it to devices and parts of devices that they will be familiar with from their everyday surroundings.	<u>How do digital devises help us?</u> Learners will apply their learning from Lessons 1 and 2 by using programs in conjunction with inputs and outputs on a digital device. They will create two pieces of work with the same focus, using digital devices to create one piece of work, and non-digital tools to create the	<u>How am I connected?</u> Many digital devices are now connected to other digital devices, e.g. computers through wires, tablets through Wi-Fi, and smartphones through mobile phone networks. The benefit of connecting digital devices is that it	<u>How are computers connected?</u> This lesson introduces key network components, including a server and wireless access points. Learners will examine each device's functionality and look at the benefits of networking computers.	<u>What does our school network look like?</u> Learners will further develop their understanding of computer networks. They will see examples of network infrastructure in a real-world setting and relate them to the activities in Lesson 5.



			<p>other. Learners will then compare and contrast the two approaches.</p>	<p>allows information to be shared between users and systems.</p> <p>This lesson introduces the concept of connections and moving information between connected devices. Learners will learn to explain how and why computers are joined together to form networks.</p>		
4 <i>The internet</i>	Connecting networks: Learners will explore how a network can share messages with another network to form the	What is the internet made of? Learners will describe the parts of a network and how they connect	Sharing information: Learners will explore what can be shared on the World Wide Web	What is a website? Learners will analyse a website and identify the key parts. They	Who owns the web? Learners will explore who owns the content on the World Wide Web	Can I believe what I read? Learners will gain an appreciation of the fact that not everything they see



	<p>internet. They will consider some of the network devices involved in this, such as routers, and will also discuss what should be kept in and out of a network to keep safe.</p>	<p>to each other to form the internet. They will use this understanding to help explain how the internet lets us view the World Wide Web and recognise that the World Wide Web is part of the internet which contains websites and web pages.</p>	<p>and where websites are stored. They will also explore how the World Wide Web can be accessed on a variety of devices.</p>	<p>will then consider what content can be added to websites and what factors they should consider before adding content to a website. Finally, they will use a website which enables them to create their own content online.</p>	<p>(or 'web' for short). They will explore a variety of websites and will investigate what they can and cannot do with the content on them. They will also relate this to principles of ownership and sharing in the real world.</p>	<p>on the internet is true, honest, or accurate. They will review images and decide whether or not they are real, before looking at why web searches can return ambiguous (and sometimes misleading) results. Finally, learners will complete a practical activity, demonstrating how quickly information can spread beyond their control.</p>
5 <i>Systems & searching</i>	Systems: Learners are introduced to the concept of a system. They begin to understand that components can work	<u>Computer systems and us:</u> Learners consider how larger computer systems work. They see how devices and	<u>Searching the web:</u> Learners are introduced to a range of search engines. They are given the	<u>Selecting search results:</u> Learners gain an understanding of why search engines are necessary to help	<u>How search results are ranked:</u> Learners take part in an unplugged activity to find out about how a webpage's content	<u>How are searches influenced?</u> Learners explore how someone performing a web search can influence the



	<p>together to perform a task. Finally, learners explore how digital systems can work and learn about physical and electronic connections.</p>	<p>processes are connected, and reflect on how computer systems can help them.</p>	<p>opportunity to explain how to search, before they write and test instructions. Next, they learn that searches do not always return the results that someone is looking for, and refine their searches accordingly. Finally, learners are introduced to the two most common methods of searching: using a search engine and using the address bar.</p>	<p>them find things on the World Wide Web. They conduct their own searches and break down, in detail, the steps needed to find things on the web. Learners then emulate web crawlers to create an index of their own classroom. Finally, they consider why some searches return more results than others.</p>	<p>can influence where it is ranked in search results. In groups, learners create paper-based webpages on a topic that they are familiar with. They then discover how their webpages would rank when searching for keywords relating to their content.</p>	<p>results that are returned, and how content creators can optimise their sites for searching. They also explore some of the limitations of searching and discuss what cannot be searched.</p>
6 <i>Communication & collaboration</i>	<u>Internet addresses:</u> Learners explore what is necessary for effective communication and the	<u>Data packets:</u> Learners are introduced to the concept of	<u>Working together:</u> Learners consider how people can work together	<u>Shared working:</u> Learners are introduced to another approach	<u>How we communicate:</u> Learners deepen their understanding of the term	<u>Communicating responsibly:</u> Learners use information provided in the



	<p>importance of agreed protocols. They apply this understanding to IP addresses and the rules (protocols) that computers have for communicating with one another. Learners also use a Domain Name Server (DNS) to translate web addresses into IP addresses.</p>	<p>packets. They complete an activity based on transferring an image across the internet, to see that as well as messages (text), other types of data (images, video, and audio) are also transferred over the internet. They gain an understanding of the key parts of a packet: the header and the data payload.</p>	<p>when they are not in the same location. They discuss ways of working and complete a collaborative online project. The online activity assumes that learners can make simple slides, including text and images. If your learners are unsure how to do this, you may wish to spend some time on the Year 3 – ‘Desktop publishing’ unit before this lesson.</p>	<p>to online working: reusing and modifying work done by someone else.</p> <p>(Note: Using someone else’s work needs to be within the bounds of copyright and with the relevant permissions.) This lesson involves the Scratch programming tool, which allows learners to use other people’s work.</p>	<p>‘communication’. They explore different methods of communication, before they consider internet-based communication in more detail. Finally, learners evaluate which methods of communication suit particular purposes.</p>	<p>lesson and their own prior knowledge to categorise different forms of internet communication. They then choose which method(s) they would use for the scenarios discussed in the previous lesson. Through these activities, learners explore issues around privacy and information security.</p>
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Year group	Computing Autumn 2023 Second half term
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	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1 Digital painting	How can we paint using computers? This lesson introduces learners to the freehand tools available for digital painting. The freehand painting tools in Microsoft Paint or the online app Paintz (paintz.app), or another appropriate digital painting program	Using shape and lines: This lesson introduces learners to a range of shape tools, allowing them to create a painting in the style of an artist. <i>The style of Piet Mondrian</i> (or another appropriate artist); primary colours; and the line, shape, fill, and undo tools in the digital painting program you've chosen	Making careful choices: This lesson introduces learners to a range of shape tools, allowing them to create a painting in the style of an artist. <i>The style of Henri Matisse</i> (or another appropriate artist); the shape, fill, and undo tools in the digital painting program you've chosen	Why did I choose that? This lesson increases learners' understanding of the available paint tools and encourages them to select the best tools to create a digital painting in the style of Wassily Kandinsky. The following painting tools in the digital painting program: paintbrush, undo, brush sizes, and brush styles (e.g. spray can) if available	Painting all by myself: Learners select appropriate colours, brush sizes, and brush tools to independently create their own image in the style of an artist. The following painting tools in the digital painting program: paintbrush, pencil, fill tool, eraser, undo, shape tool, and brush styles if available	Comparing computer art and painting: Learners compare their preferences when creating paintings on computers and on paper. The following painting tools in the digital painting program: paintbrush, pencil, fill tool, eraser, undo, shape tool, and brush styles if available



2 Digital photography	Taking photographs: This lesson introduces the concept that many devices can be used to take photographs. In the lesson, learners begin to capture their own photographs.	Landscape or portrait: A photograph can be taken in either portrait or landscape format. In this lesson, learners explore taking photographs in both portrait and landscape formats and explore the reasons why a photographer may favour one over the other.	What makes a good photograph? A photograph is composed by a photographer. In this lesson, learners discover what constitutes good photography composition and put this into practice by composing and capturing photos of their own.	Lighting: This lesson introduces the concepts of light and focus as further important aspects of good photography composition. In this lesson, learners investigate the effect that good lighting has on the quality of the photos they take, and explore what effect using the camera flash and adding an artificial light source have on their photos. They also learn how the camera autofocus tool can be used to make an object in an image stand out.	Effects: This lesson introduces the concept of simple image editing. Learners are introduced to the Pixlr image editing software and use the 'Adjust' tool to change the colour effect of an image.	Is it real? This lesson introduces the concept that images can be changed for a purpose. Learners are introduced to a range of images that have been changed in different ways and through this, develop an awareness that not all images they see are real. To start the lesson, learners are first challenged to take their best photograph by applying the photography composition skills that they have developed during the unit.
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3 <i>Stop-frame animation</i>	Can a picture move?	Frame by frame:	What's the story?	Picture perfect:	Evaluate & make it great!	Lights, camera, action!
	<p>Learners will discuss whether they think a picture can move. They will learn about simple animation techniques and create their own animations in the style of flip books (flick books) using sticky notes.</p>	<p>In the previous lesson, learners created their own flip book-style animations. In this lesson, they will develop this knowledge and apply it to make a stop-frame animation using a tablet.</p>	<p>Remind the learners of the animations that we created last week and tell them that next week we will use tablets to animate some of our own stories. Tell the learners that during this lesson they will create a storyboard showing the characters, settings and events that they would like to include in their own stop-frame animation next week.</p>	<p>In the previous lesson, learners planned out their own stop-frame animations in a storyboard. This lesson, they will use tablets to carefully create stop-frame animations, paying attention to consistency.</p>	<p>Last lesson, learners created their own stop-frame animations. This lesson, they will evaluate their animations and try to improve them by creating a brand-new animation based on their feedback.</p>	<p>Last lesson, learners perfected their stop-frame animations. This lesson, they will add other media and effects into their animations, such as music and text.</p>



4 Audio production	Recording sound: In this lesson, learners will identify the input devices used to record sound and output devices needed to listen to it. They will then record their voices using a computer, and reflect on what makes a good audio recording. Lastly, learners will consider ownership and copyright issues related to recordings. You will need to be familiar with the location of built-in microphones if using laptops. You should be familiar with using Audacity to	Editing audio: In this lesson, learners will record and re-record their voices to improve their recordings. They will edit the recordings, removing long pauses and mistakes. Learners will also listen to a range of podcasts and identify the features of a podcast. You will need to be familiar with using Audacity to record audio, including how to delete individual tracks. You will also need to be able to trim and align audio.	Planning a podcast: In this lesson, learners will record their voices and then import and align sound effects to create layers in their recordings. Learners will learn how to save their work so it remains editable. They will then plan their own podcast which they will work on in future lessons. You will need to be familiar with importing audio into Audacity as well as how to save an Audacity project.	Creating a podcast: In this lesson, learners will record the voice tracks for their podcast. They will review their recordings and re-record if necessary. Learners will edit, trim, and align their voice recordings, and then save their project so they can continue working on it in the next lesson. You will need to be familiar with using Audacity to record sound, edit audio, and adjust the volume of tracks.	Combining audio: In this lesson, learners will develop their podcast further by adding content such as sound effects and background music. The audio will be layered with their existing voice recordings and exported as an audio file. You will need to: Be familiar with loading a saved Audacity project and importing audio files	Evaluating podcasts: In this lesson, learners will evaluate their own podcasts and that of others. After looking at the evaluation, learners will decide if they can improve their podcast and then make any changes they have chosen You will need to be familiar with using Audacity to export audio recordings.
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	<p>record sound. You should be aware of ways to improve the quality of recorded audio including: low background noise and proximity to the person talking in relation to the microphone.</p>				<p>Be able to copy and paste audio within a track Be able to export an Audacity project as an mp3 file Note: You may wish to help learners fade music in or out. To create fades in Audacity, select the section to fade — often this is the first or last second or two of a track. Then go to the effects menu and choose fade in or fade out.</p>	
5 Video production	<u>What is video?</u> Learners will be introduced to video as a media format. They will see examples of videos featuring production	<u>Filming techniques:</u> Learners will explore the capabilities of a digital device that can be used to record video. Once they are familiar	<u>Using a storyboard:</u> Learners will use a storyboard to explore a variety of filming techniques, some of which they will use in their own	<u>Planning a video:</u> Learners will plan a video by creating a storyboard. Their storyboard will describe each scene, and will include a	<u>Importing and editing video:</u> Learners will film the remaining scenes of their video, and then import their content to video editing	<u>Video evaluation:</u> Learners will complete their video by removing unwanted content and reordering their clips. They will then



	<p>and editing techniques that they will work towards using their own videos. Learners will begin by explaining what the medium of video is before analysing and comparing examples of videos.</p>	<p>with their device, learners will experiment with different camera angles, considering how different camera angles can be used for different purposes.</p>	<p>video project later in the unit. They will evaluate the effectiveness of these techniques before offering feedback on others' work.</p>	<p>script, camera angles, and filming techniques. Learners will use their storyboards to film the first scene of their videos.</p>	<p>software. They will then explore key editing techniques and decide whether sections of their video can be edited or need to be shot again.</p>	<p>export their finished video and evaluate the effectiveness of their edits. Finally, they will consider how they could share their video with others.</p>
6 Web page creation	<p><u>What makes a good website?</u></p> <p>In this lesson, learners will explore and review existing websites and evaluate their content. They will have some understanding that websites are created by using HTML code.</p>	<p><u>How would you layout your webpage?</u></p> <p>Learners will look at the different layout features available in Google Sites and plan their own web page on paper.</p> <p>Homework: Learners will look at two of their favourite websites and sketch them on</p>	<p><u>Copyright or copywrong?</u></p> <p>During this lesson learners will become familiar with the terms 'fair use' and 'copyright'. They will gain an understanding of why they should only use copyright-free images and will find appropriate images to use in</p>	<p><u>How does it look?</u></p> <p>Today learners will revise how to create their own web page in Google Sites. Using their plan from previous lessons, learners will create their own web page/home page. They will preview their web page as it will</p>	<p><u>Follow the breadcrumbs:</u></p> <p>During this lesson learners will begin to appreciate the need to plan the structure of a website carefully. They will plan their website, paying attention to the navigation paths (the way that pages are linked together).</p>	<p><u>Think before you link!!</u></p> <p>Learners will consider the implications of linking to content owned by other people and create hyperlinks on their own websites that link to other people's work. They will then evaluate the user experience</p>



		<p>the worksheet provided, detailing the similarities and differences.</p> <p>Note: For the homework activity, teachers could provide printed 'home page' images for anyone who doesn't have internet access at home.</p>	<p>their work from suggested sources.</p> <p>Homework: Learners answer a series of questions based on copyright and fair use.</p>	<p>appear on different devices and suggest or make edits to improve the user experience on each device.</p>	<p>They will then create multiple web pages for their site and use hyperlinks to link them together as detailed in their planning.</p>	<p>when using their own website and that of another learner.</p>
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Year group	Computing Spring 2024 <i>First half term</i>					
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1 <i>Moving a robot</i> (A)	Buttons: Learners will be introduced to floor robots. They will talk about what the buttons on a floor robot might do and then try the buttons out. They will spend time linking an outcome to a button press. Learners will consider the direction command buttons, as well as the 'clear memory' and 'run program' buttons.	Directions: Learners will think about the language used to give directions and how precise it needs to be. They will also work with a partner to give and follow instructions. These real-world activities should, at suitable points during this lesson, be related to the floor robot introduced in Lesson 1.	Forwards & backwards: Learners will focus on programming the floor robot to move forwards and backwards. They will see that the robot moves forwards and backwards a fixed distance. This highlights the idea that robots follow a clear, fixed command in a precise and repeatable way. Learners will think about starting the robot from the same place each time. Using the same starting position with fixed commands will allow	Four directions: Learners will use 'left turn' and 'right turn' commands along with 'forwards' and 'backwards' commands. Doing this will allow learners to develop slightly more complex programs. Learners will create their programs in this lesson through trial and error, before moving on to planning out their programs in Lesson 5. In Activity 3, learners will predict where given programs will move the robot to.	Getting there: Learners will decide what their program will do. They will then create their program and test it on the robot. Where needed, learners will also debug their program.	Routes: Learners will be encouraged to plan routes around a mat before they start to write programs for those routes. The activities in this lesson also introduce the concept of there being more than one way to solve a problem. This concept is valid for a lot of programming activities: the same outcome can be achieved through a number of different approaches, and there is not necessarily a 'right' approach. The lesson also introduces the



			<p>learners to predict what a program will do.</p> <p>Note: This lesson focuses specifically on forward and backward movement only. This is to ensure that learners are developing a depth of knowledge in the concepts surrounding programming, as well as developing their ability to make the robot move. The success criteria for this lesson highlight this and ensure that the learners' knowledge is built in a suitably paced way.</p>	<p>Learners will make their predictions by looking at the commands and matching the program steps to movements.</p>		<p>idea of program design, where learners need to plan what they want their program to achieve before they start programming.</p>
2	<u>Giving instructions:</u>	<u>Same but different:</u>	<u>Making predictions:</u>	<u>Mats & routes:</u>	<u>Algorithm design:</u>	<u>Break it down:</u>



<p>Robot algorithms (A)</p>	<p>Learners will follow instructions given to them and give instructions to others. They will consider the language used to give instructions, and how that language needs to be clear and precise. Learners will combine several instructions into a sequence that can then be issued to another learner to complete. They will then consider a clear and precise set of instructions in relation to an algorithm, and will think about how computers can only follow clear and</p>	<p>Learners will focus on sequences, and consider the importance of the order of instructions within a sequence. They will create sequences using the same instructions in different orders. They will then test these sequences to see how the different orders affect the outcome.</p>	<p>Learners will use logical reasoning to make predictions. They will follow a program step by step and identify what the outcome will be.</p> <p>Note: Learners may need to be encouraged to think through their predictions and understand that they are reasoned decisions rather than guesses.</p>	<p>Learners will design, create, and test a mat for a floor robot. This will introduce the idea that design in programming not only includes code and algorithms, but also artefacts related to the project, such as artwork.</p> <p>Note: The designs in this lesson can be changed to suit a topic or theme that the class is learning about. The ideas included in the slides are examples.</p>	<p>Learners will design an algorithm to move their robot around the mat that they designed in Lesson 4. As part of the design process, learners will outline what their task is by identifying the starting and finishing points of a route. This outlining will ensure that learners clearly understand what they want their program to achieve.</p>	<p>Learners will take on a larger programming task. They will break the task into chunks and create algorithms for each chunk. This process is known as 'decomposition' and is covered further in key stage 2. Learners will also find and fix errors in their algorithms and programs. They will understand this process to be 'debugging'.</p>
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	unambiguous instructions.					
3 <i>Sequencing sounds</i> (A)	<u>Introduction to scratch:</u> This lesson introduces learners to a new programming environment: Scratch. Learners will begin by comparing Scratch to other programming environments they may have experienced, before familiarising themselves with the basic layout of the screen.	<u>Programming sprites:</u> In this lesson, learners will create movement for more than one sprite. In doing this, they will design and implement their code, and then will create code to replicate a given outcome. Finally, they will experiment with new motion blocks.	<u>Sequences:</u> In this lesson, learners will be introduced to the concept of sequences by joining blocks of code together. They will also learn how event blocks can be used to start a project in a variety of different ways. In doing this, they will apply principles of design to plan and create a project.	<u>Ordering commands:</u> This lesson explores sequences, and how they are implemented in a simple program. Learners have the opportunity to experiment with sequences where order is and is not important. They will create their own sequences from given designs.	<u>Looking good:</u> This lesson develops learners' understanding of sequences by giving them the opportunity to combine motion and sounds in one sequence. They will also learn how to use costumes to change the appearance of a sprite, and backdrops to change the appearance of the stage. They will apply the skills in Activity 1 and 2 to design and create their own project, including sequences,	<u>Making an instrument:</u> In this lesson, learners will create a musical instrument in Scratch. They will apply the concept of design to help develop programs and use programming blocks — which they have been introduced to throughout the unit. They will learn that code can be copied from one sprite to another, and that projects should be tested to see if they perform as expected.



					sprites with costumes, and multiple backdrops.	
4 <i>Repetition in Shapes</i> (A)	<p><u>Programming a screen turtle:</u></p> <p>This lesson will introduce pupils to programming in Logo. Logo is a text-based programming language where pupils type commands that are then drawn on screen. Pupils will learn the basic Logo commands, and will use their knowledge of them to read and write code.</p>	<p><u>Programming letters:</u></p> <p>In this lesson, pupils will create algorithms (a precise set of ordered instructions, which can be turned into code) for their initials. They will then implement these algorithms by writing them in Logo commands to draw the letter. They will debug their code by finding and fixing any errors that they spot.</p>	<p><u>Patterns & repeats:</u></p> <p>In this lesson, pupils will first look at examples of patterns in everyday life. They will recognise where numbers, shapes, and symbols are repeated, and how many times repeats occur. They will create algorithms for drawing a square, using the same annotated diagram as in Lesson 2. They will use this algorithm to program a square the 'long' way, and recognise the</p>	<p><u>Using loops to create shapes:</u></p> <p>In this lesson, pupils will work with count-controlled loops in a range of contexts. First, they will think about a real-life example, then they will move on to using count-controlled loops in regular 2D shapes. They will trace code to predict which shapes will be drawn, and they will modify existing code by changing values within the code snippet.</p>	<p><u>Breaking things down:</u></p> <p>In this lesson, pupils will focus on decomposition. They will break down everyday tasks into smaller parts and think about how code snippets can be broken down to make them easier to plan and work with. They will learn to create, name, and call procedures in Logo, which are code snippets that can be reused in their programming.</p>	<p><u>Creating a program:</u></p> <p>In the final lesson, pupils will apply the skills that they have learnt in this unit to create a program containing a count-controlled loop. Over the course of the lesson, they will design wrapping paper using more than one shape, which they will create with a program that uses count-controlled loops. They will begin by creating the algorithm, either as an annotated sketch, or as a sketch and</p>



			repeated pattern within a square. Once they know the repeated pattern, they will use the repeat command within Logo to program squares the 'short' way.			algorithm, and then implement it as code. They will debug their work throughout, and evaluate their programs against the original brief.
5 <i>Selection in physical computing (A)</i>	<u>Connecting crumbles:</u> In this lesson, your learners will become familiar with the Crumble controller and the programming environment used to control it. Learners will connect a Sparkle to a Crumble and then program the Crumble to make the Sparkle flash different colour patterns. Learners	<u>Combining output components:</u> In this lesson, learners will connect a Sparkle and a motor to the Crumble controller. Learners will design sequences of actions for these components. They will then apply their understanding of repetition by using count-controlled loops when	<u>Controlling with conditions:</u> In this lesson, learners will be introduced to conditions, and how they can be used in programs to control their flow. They will identify conditions in statements, stating if they are true or false. Learners will be introduced to a Crumble switch, and learn how it can provide the Crumble	<u>Starting with selection:</u> In this lesson, learners will develop their understanding of how the flow of actions in algorithms and programs can be controlled by conditions. They will be introduced to selection and then represent conditions and actions using the 'if...then...' structure. Learners will create	<u>Drawing designs:</u> In this lesson, learners will apply their understanding of microcontrollers and selection when designing a project to meet the requirements of a given task. To support their understanding, learners will identify how selection might be used in real-world situations, then they	<u>Writing & testing algorithms:</u> In this final lesson of the unit, learners will develop Crumble programs to control the model of a fairground ride they built in Lesson 5. First, learners will identify how they are going to use selection before writing an algorithm to meet the requirements of the given task. They will



	<p>will also use infinite loops, which were introduced to the learners in the previous school year.</p>	<p>implementing their design as a program.</p>	<p>controller with an input that can be used as a condition. They will explore how to write programs that use an input as a condition.</p>	<p>algorithms that include selection. They will use their algorithms to guide their program writing. Learners will see that infinite repetition is required to repeatedly check if a condition has been met.</p>	<p>will consider how they can apply this knowledge to design their project. Learners will produce design sketches to show how their model will be made and how they will connect the microcontroller to its components.</p>	<p>then implement their algorithms as code. Learners will run their programs to identify any bugs, and then return to the code or algorithm to debug it where necessary. Finally, to conclude the unit, learners will evaluate their designs.</p>
6 Variables in games (A)	<p>Introducing variables:</p> <p>Learners are introduced to variables. They see examples of real-world variables (score and time in a football match) before they explore them in a Scratch project. Learners then design and</p>	<p>Variables in programming:</p> <p>Learners understand that variables are used in programs, and that they can only hold a single value at a time. They complete an unplugged task that demonstrates the process of changing variables. Then,</p>	<p>Improving a game:</p> <p>Learners apply the concept of variables to enhance an existing game in Scratch. They predict the outcome of changing the same change score block in different parts of a program, then they test their</p>	<p>Designing a game:</p> <p>Learners work at the 'design' level of abstraction, where they create their artwork and algorithms. Learners first design the sprites and backgrounds for their project, then they design their</p>	<p>Design a code:</p> <p>Learners implement the algorithms that they created in Lesson 4. In doing this, they identify variables in an unfamiliar project and learn the importance of naming variables. They also have the</p>	<p>Improving & sharing:</p> <p>Learners build on the project that they created in Lesson 5. They consider how they could improve their own projects and make small changes to achieve this. Learners then have the opportunity to add a variable</p>



	<p>make their own project that includes variables. Finally, learners identify that variables are named and that they can be letters (strings) as well as numbers.</p>	<p>learners explore why it is important to name variables and apply their learning in a Scratch project in which they make, name, and update variables.</p>	<p>predictions in Scratch. Learners also experiment with using different values in variables, and with using a variable elsewhere in a program. Finally, they add comments to their project to explain how they have met the objectives of the lesson.</p>	<p>algorithms to create their program flow.</p>	<p>opportunity to add another variable to enhance their project.</p>	<p>independently. Finally, learners evaluate each other's projects; they identify features that they liked and features that could be improved.</p>
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Year group	Computing Spring 2024 <i>Second half term</i>					
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1						
2						
3						
4						
5						
6						



Year group	Computing Summer 2024 <i>First half term</i>					
	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1 <i>Digital writing</i>	<p><u>Exploring the keyboard:</u></p> <p>Learners will familiarise themselves with a word processor and think about how they might use this application in the future. The learners will also identify and find keys, before adding text to their page by pressing keys on a keyboard.</p>	<p><u>Adding & removing text:</u></p> <p>Learners will continue to familiarise themselves with word processors and how they can interact with the computer using a keyboard. The learners will focus on adding text and will explore more of the keys found on a keyboard. Finally, they will begin to use the Backspace key to remove text from the computer.</p>	<p><u>Exploring the toolbar</u></p> <p>Learners will begin to explore the different tools that can be used in word processors to change the look of the text. Learners will use the Caps Lock key to add capital letters to their writing and will begin thinking about how to use this successfully.</p> <p>Learners will match simple descriptions to the related keys. Finally, learners will begin exploring the different buttons</p>	<p><u>Making changes to texts:</u></p> <p>Learners will begin to understand when it is best to change the look of their text and which tool will achieve the most appropriate outcome. The learners will begin to use their mouse cursor to select text to enable them to make more efficient changes. They will explore the different fonts available to them and change the font for their lost toy poster.</p>	<p><u>Explaining my choices:</u></p> <p>Learners will begin to justify their use of certain tools when changing text. The learners will decide whether the changes that they have made have improved their writing and will begin to use 'Undo' to remove changes. They will begin to consolidate their ability to select text using the cursor, through double-clicking and clicking and dragging. The learners will be able to explain what tool</p>	<p><u>Pencil or keyboard:</u></p> <p>Learners will make comparisons between using a computer for writing and writing on paper. The learners will discuss how the two methods are the same and different and think of examples to explain this. They will demonstrate making changes to writing using a computer to compare the two methods. Finally, the learners will begin to explain which they like best and think</p>



			available on the toolbar in more detail, and use these to change their own text.		from the toolbar they have used to change their writing.	about which method would be the best method to use in different situations.
2 Digital music	How music makes us feel: In this lesson learners will listen to and compare two pieces of music from <i>The Planets</i> by Gustav Holst. They will then use a musical description word bank to describe how this music generates emotions, i.e. how it makes them feel.	Rhythms & patterns: In this lesson, learners will explore rhythm . They will create patterns and use those patterns as rhythms. They will use untuned percussion instruments and computers to hear the different rhythm patterns that they create.	How music can be used: During this lesson, learners will explore how music can be used in different ways to express emotions and to trigger their imaginations. They will experiment with the pitch of notes to create their own piece of music, which they will then associate with a physical object — in this case, an animal.	Notes & tempo: In this lesson, learners will develop their understanding of music. They will use a computer to create and refine musical patterns.	Creating digital music: In this lesson, learners will choose an animal and create a piece of music using the animal as inspiration. They will think about their animal moving and create a rhythm pattern from that. Once they have defined a rhythm, they will create a musical pattern (melody) to go with it.	Reviewing & editing music: In this lesson, learners will retrieve and review their work. They will spend time making improvements and then share their work with the class.



3 Desktop publishing	<u>Words & pictures:</u> In this lesson, learners will become familiar with the terms 'text' and 'images' and understand that text and images need to be used carefully to communicate messages clearly. Learners will be able to give advantages and disadvantages of using text, images, or both text and images to communicate messages effectively.	<u>Can you edit it?</u> This lesson will build on last week's lesson, in which we looked at using images and text to communicate a message effectively. In this lesson we will look at desktop publishing. Learners will think about how to make careful choices regarding font size, colour, and type in an invitation. The use of the Return, Backspace,	<u>Great template:</u> Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' within desktop publishing software. The learners will create their own magazine template, which they will add content to during the next lesson. This lesson has been designed on a laptop using Adobe Spark	<u>Can you add content?</u> In this lesson, learners will add their own content (text and images) to the magazine templates they created in lesson 3. They will copy the information for the front of their magazine from a prewritten document and paste it into the chosen place on their magazine cover. Images will be added	<u>Lay it out:</u> In this lesson, learners will think about the different ways information can be laid out on a page. They will look at a range of page layouts such as letters and newspapers, and begin to think about the purpose of each of these.	<u>Why desktop publishing?</u> In this lesson, learners will explain what desktop publishing means in their own words. They will think about how desktop publishing is used in the wider world and consider the benefits of using desktop publishing applications.



		<p>and Shift keys will be explored and learners will be taught how to type age-appropriate punctuation marks. This will build on the typing skills learned in the Year 1 'Digital painting' unit. Learners will understand that once content has been added, it can be rearranged on the page.</p>	<p>and this is reflected in the screenshots and videos. Teachers may decide to use the Adobe Spark app, or other software such as Canva or Microsoft Publisher. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' within desktop publishing software. The learners will create their own magazine template, which they will add content to during the next lesson.</p>	<p>from within the search facility in Adobe Spark.</p>		
4 <i>Photo editing</i>	<u>Changing digital images:</u> In this lesson, you will introduce	<u>Changing composition:</u> In this lesson, learners will look at	<u>Changing images:</u> In this lesson, learners will be introduced to the	<u>Retouching images:</u> In this lesson, students learn how to use different tools	<u>Fake images:</u> In this lesson, learners will apply all the skills they have	<u>Making & evaluating a publication:</u> This lesson is the final lesson in the



	learners to the concept of editing images. They will go on to explore when we need to rotate and crop an image as well as how to use an image editor to make these changes. Learners will then discuss image composition.	the effect that different colours and filters can have on an image. They will choose appropriate effects to fit a scenario, and explain how they made their choices. They will then edit the images using different effects to suit two different scenarios.	cloning tool and its use in both changing the composition of a photo and photo retouching. They will see how parts of a photo can be removed or duplicated using cloning. Learners will consider what parts of an image can be retouched and learn techniques to make this as unnoticeable as possible. Finally, they will consider when it is necessary to edit photographs in this way.	to select areas of an image. Learners then use copy and paste within one image and between two images to produce a combined image. Finally, learners will consider when it's appropriate to edit an image and discuss some of the ethics around retouching photos.	learnt in the unit so far. They will start by reviewing some images and considering what makes an image look real or made up. Learners will then plan their own image. They will choose from a selection of images, open them and edit them to create their own project.	unit on photo editing. Learners will review the image that they created in Lesson 5. After they have reviewed their image, they will have the opportunity to make changes to their image based on their review. Learners will then add text to their image to complete it as a publication.
5 Vector graphics	<u>The drawing tools:</u>	<u>Creating images:</u>	<u>Making effective drawings:</u>	<u>Layers & objects:</u>	<u>Manipulating objects:</u>	<u>Create a vector drawing:</u>



	<p>Learners are introduced to vector drawings and begin to understand that they are made up of simple shapes and lines. They use the main drawing tools within the Google Drawings application to create their own vector drawings. Learners discuss how vector drawings differ from paper-based drawings.</p>	<p>Learners begin to identify the shapes that are used to make vector drawings. They are able to explain that each element of a vector drawing is called an object. Learners create their own vector drawing by moving, resizing, rotating, and changing the colours of a selection of objects. They also learn how to duplicate the objects to save time.</p>	<p>Learners increase the complexity of their vector drawings and use the zoom tool to add detail to their work. They are shown how grids and resize handles can improve the consistency of their drawings. Learners also use tools to modify objects to create a new image.</p>	<p>Learners gain an understanding of layers and how they are used in vector drawings. They discover that each object is built on a new layer and that these layers can be moved forwards and backwards to create effective vector drawings.</p>	<p>Learners find out how to select and duplicate multiple objects at a single time. They develop this skill further by learning how to group multiple objects to make them easier to work with. Learners then use this knowledge to group and ungroup objects, in order to make changes to and develop their vector drawings.</p>	<p>Learners use the skills they have gained in this unit to create a vector drawing for a specific purpose. They reflect on the skills they have used to create the vector drawing and think about why they used the skills they did. Learners then begin to compare vector drawings to freehand paint program drawings.</p>
6 3D modelling	<u>Introduction to 3D modelling:</u> Learners will be introduced to the concept of 3D modelling by creating a range of	<u>Modifying 3D objects:</u> Learners will manipulate 3D objects digitally. They will resize objects in one, two,	<u>Make your own name badge:</u> Learners will develop their understanding of manipulating digital 3D objects. They will rotate	<u>Making a desk tidy:</u> Learners will be introduced to the dimensions of shapes in Tinkercad which will enable them to accurately	<u>Planning a 3D model:</u> Learners will see how computer-based 3D design is used in architecture to plan buildings.	<u>Make your own 3D model:</u> Learners will create a computer 3D model based on their design. They will then evaluate their



	<p>3D shapes that they select and move. Learners also examine shapes from a variety of views within the 3D space.</p>	<p>and three dimensions. They will also lift and lower 3D objects relative to the <i>workplane</i>, and combine two 3D objects to make a new shape. Finally learners will recolour 3D objects.</p>	<p>objects in three dimensions, duplicate objects, and then use grouping and ungrouping to manipulate many objects at once. They will combine these skills to create their own 3D name badge. Finally, learners will consider the practicality of 3D printing the objects they have made.</p>	<p>resize and move shapes. Learners will then be introduced to placeholders which can be used to create holes in objects. Finally learners will duplicate, then resize multiple objects to create a meaningful 3D object.</p>	<p>They will explode 3D models of buildings to see what shapes they comprise of. Learners will then look at real world structures and identify the shapes that they include. They will then plan their own 3D building design.</p>	<p>model and that of another learner, before modifying their own model to improve it.</p>
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Year group	Computing
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Summer 2024 *Second half term*

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
1 Programming animations (B)	During this lesson learners will become accustomed to the ScratchJr programming environment. They will discover that they can move characters on-screen using commands, and compare ScratchJr to the Bee-Bots used in the previous unit.	During this lesson learners will discover that blocks can be joined together in ScratchJr. They will use a Start block to run their programs. They will also learn additional skills such as adding backgrounds and deleting sprites. Learners will follow given algorithms to create simple programs.	During this lesson learners will discover that some blocks in ScratchJr have numbers underneath them. They will learn how to change these values and identify the effect on a block of changing a value.	During this lesson learners will be taught how to add and delete sprites in ScratchJr. They will discover that each sprite has its own programming area, and learn how to add programming blocks to give instructions to each of the sprites.	During this lesson learners will choose appropriate backgrounds and sprites for a 'Space race' project. They will decide how each sprite will move, and create an algorithm based on the blocks available in ScratchJr that reflects this.	During this lesson learners will use their project designs from the previous lesson to create their projects on-screen in ScratchJr. They will use their project design, including algorithms created in the previous lesson, to make programs for each of their rocket sprites. They will test whether their algorithms are effective when their programs are run.
2 Programming quizzes (B)	During this lesson, learners will recap what they know already about the ScratchJr app. They	During this lesson, learners will discover that a sequence of commands has an	During this lesson, learners will be taught how to use the Start on tap and Go to page (Change)	During this lesson, learners will look at an existing quiz design and think about how this can	During this lesson, learners will create their own quiz question designs including their own	During this lesson, learners will compare their projects to their designs. They will



	<p>will begin to identify the start of sequences in real-world scenarios, and learn that sequences need to be started in ScratchJr. Learners will create programs and run them in full-screen mode using the Green flag.</p>	<p>'outcome'. They will predict the outcomes of real-life scenarios and a range of small programs in ScratchJr. Learners will then match programs that produce the same outcome when run, and use a set of blocks to create programs that produce different outcomes when run.</p>	<p>background) blocks. They will use a predefined design to create an animation based on the seasons. Learners will then be introduced to the task for the next lesson. They will predict what a given algorithm might mean.</p>	<p>be realised within the ScratchJr app. They will choose backgrounds and characters for their own quiz projects. Learners will modify a given design sheet and create their own quiz questions in ScratchJr.</p>	<p>choices of question, artwork, and algorithms. They will increase the number of blocks used within their sequences to create more complex programs.</p>	<p>think about how they could improve their designs by adding additional features. They will modify their designs and implement the changes on their devices. Learners will find and correct errors in programs (debug) and discuss whether they debugged errors in their own projects.</p>
3 Events & actions (B)	<p>In this lesson, learners will investigate how characters can be moved using 'events'. They will analyse and improve an existing</p>	<p>In this lesson, learners will program a sprite to move in four directions: up, down, left, and</p>	<p>This lesson will introduce learners to extension blocks in Scratch using the Pen extension. Learners will use</p>	<p>In this lesson, learners will be given the opportunity to use additional Pen blocks. They will</p>	<p>This lesson explores the process of debugging, specifically looking at how to identify and fix errors in a</p>	<p>In this lesson, learners will design and create their own projects. Using a template (which can be blank or</p>



	<p>project, and then apply what they have learned to their own projects. They will then extend their learning to control multiple sprites in the same project.</p>	<p>right. They will begin by choosing a sprite and sizing it to fit in with a given background. Learners will then create the code to move the sprite in one direction before duplicating and modifying it to move in all four directions. Finally, they will consider how their project could be extended to prove that their sprite has successfully navigated a maze.</p>	<p>the pen down block to draw lines, building on the movement they created for their sprite in Lesson 2. Learners will then decide how to set up their project every time it is run.</p>	<p>predict the functions of new blocks and experiment with them, before designing features to add to their own projects. Finally, they will add these features to their projects and test their effectiveness.</p>	<p>program. Learners will review an existing project against a given design and identify bugs within it. They will then correct the errors, gaining independence as they do so. Learners will also develop their projects by considering which new setup blocks to use.</p>	<p>partially completed), learners will complete projects to move a sprite around a maze, with the option to leave a pen trail showing where the sprite has moved. Ideally, projects will include setup blocks to position the sprite at the start of the maze and clear any lines already on the screen.</p>
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4 Programming Repetition in games (B)	In the first lesson, learners look at real-life examples of repetition, and identify which parts of instructions are repeated. Learners then use Scratch, a block-based programming environment, to create shapes using count-controlled loops. They consider what the different values in each loop signify, then use existing code to modify and create new code, and work on reading code and predicting what the output will be once the code is run.	In this lesson, learners look at different types of loops: infinite loops and count-controlled loops. They practise using these within Scratch and think about which might be more suitable for different purposes.	In this lesson, learners create designs for an animation of the letters in their names. The animation uses repetition to change the costume (appearance) of the sprite. The letter sprites will all animate together when the event block (green flag) is clicked. When they have designed their animations, the learners will program them in Scratch. After programming, learners then evaluate their work, considering how effectively they used repetition in their code.	In this lesson, learners look at an existing game and match parts of the game with the design. They make changes to a sprite in the existing game to match the design. They then look at a completed design, and implement the remaining changes in the Scratch game. They add a sprite, re-use and modify code blocks within loops, and explain the changes made.	In this lesson, learners look at a model project that uses repetition. They then design their own games based on the model project, producing designs and algorithms for sprites in the game. They share these designs with a partner and have time to make any changes to their design as required.	In this lesson, learners build their games, using the designs they created in Lesson 5. They follow their algorithms, fix mistakes, and refine designs in their work as they build. They evaluate their work once it is completed, and showcase their games at the end.
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5 Selection in quizzes (B)	In this lesson, learners revisit previous learning on 'selection' and identify how 'conditions' are used to control the flow of actions in a program. They are introduced to the blocks for using conditions in programs using the Scratch programming environment. They modify the conditions in an existing program and identify the impact this has.	In this lesson, learners will develop their understanding of selection by using the 'if... then... else...' structure in algorithms and programs. They will revisit the need to use repetition in selection to ensure that conditions are repeatedly checked. They identify the two outcomes in given programs and how the condition informs which outcome will be selected. Learners use this knowledge to write their own programs that use selection with two outcomes.	In this lesson, learners consider how the 'if... then... else...' structure can be used to identify two responses to a binary question (one with a 'yes or no' answer). They identify that the answer to the question is the 'condition', and use algorithms with a branching structure to represent the actions that will be carried out if the condition is true or false. They learn how questions can be asked in Scratch, and how the answer, supplied by the user, is used in the condition to control the	In this lesson, learners will be provided with a task: to use selection to control the outcomes in an interactive quiz. They will outline the requirements of the task and use an algorithm to show how they will use selection in the quiz to control the outcomes based on the answer given. Learners will complete their designs by using design templates to identify the questions that will be asked, and the outcomes for both correct and incorrect answers. To demonstrate	In this lesson, learners will use the Scratch programming environment to implement the first section of their algorithm as a program. They will run the first section of their program to test whether they have correctly used selection to control the outcomes, and debug their program if required. They will then continue implementing their algorithm as a program. Once completed, they will consider the value of sharing their program with others so that they	In this lesson, learners will return to their completed programs and identify ways in which the program can be improved. They will focus on issues where answers similar to those in the condition are given as inputs, and identify ways to avoid such problems. Learners will also consider how the outcomes may change the program for subsequent users, and identify how they can make use of 'setup' to provide all users with the same experience. They



			<p>outcomes. They use an algorithm to design a program that uses selection to direct the flow of the program based on the answer provided. They implement their algorithm as a program and test whether both outcomes can be achieved.</p>	<p>their understanding of how they are using selection to control the flow of the program, learners will identify which outcomes will be selected based on given responses.</p>	<p>can receive feedback. Learners conclude the lesson by using another learner's quiz and providing feedback on it.</p>	<p>will implement their identified improvements by returning to the Scratch programming environment and adding to their programs. They conclude the unit by identifying how they met the requirements of the given task, and identifying the aspects of the program that worked well, those they improved, and areas that could improve further.</p>
6 Sensing Movement (B)	Pupils will be introduced to the <i>micro:bit</i> as an input,	Pupils will explore how if, then, else statements are	Pupils will initially use the buttons to change the value of	Pupils will apply their understanding of the importance	Pupils will be working at the design level. They	Pupils will use the design that they have created in



	<p>process, output device that can be programmed. Pupils will familiarise themselves with the device itself and the programming environment, before creating their own programs. They will then run their programs on the device.</p> <p>Note: This unit is written assuming that you will be using a desktop or laptop computer (not a tablet) to connect micro:bits.</p> <p>This unit of work is based around the micro:bit. It has been designed to be taught with the physical computing device and</p>	<p>used to direct the flow of a program. They will initially relate if, then, else statements to real-world situations, before creating programs in <i>MakeCode</i>. They will apply their knowledge of if, then, else statements to create a program that features selection influenced by a random number to create a micro:bit fortune teller project.</p>	<p>a variable using selection. They will then develop their programs to update the variable by moving their micro:bit using the accelerometer to sense motion. Finally, they will learn that a variable's value remains the same after it has been checked by the program.</p>	<p>of order in programs. They will then use operands in selection to determine the flow of a program. Pupils will then modify a program which will enable the micro:bit to be used as a navigational device. To code this, they will adapt the code they completed to make a basic compass.</p>	<p>will pick out features of a step counter, a piece of technology with which they are likely to be familiar. They will then relate those features to the sensors on a micro:bit. In the main activity, pupils will design the algorithm and program flow for their step counter project.</p>	<p>Lesson 5 to make a micro:bit-based step counter. First they will review their plans, followed by creating their code. Pupils will test and debug their code, using the emulator and then the physical device. To successfully complete this project, Pupils will need to demonstrate their understanding of all the programming lessons they've had so far.</p>
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	<p><i>this is how it will be most effective.</i></p> <p><i>However, the makecode.microbit.org website has an emulator (an interactive, on-screen micro:bit) that schools can use if micro:bits are unavailable.</i></p>				
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Use your subject Road Map so you know the theme

How do you make sure that the curriculum is carefully sequenced to build knowledge and skills: **Add the knowledge, skills and understanding** you want pupils to gain in your **medium-term** plan for each year group.

Where the National Curriculum (or equivalent) doesn't describe in detail 'what' you should teach, you have flexibility, have you made your choices clear?

For example:

- What texts pupils will read in English
- What **knowledge** you'll include in a unit about the Vikings
- What 'local history' project you'll undertake
- Which artists or designers you'll study

Are subject-specific skills (or any wider skills, such as oracy) clearly laid out in your medium-term plan? (This is particularly critical in some subjects, e.g. art)

Does learning build towards clear **end points**?

How is your curriculum coverage progressive throughout the school? Is the sequencing of lessons supporting **all** children's progress?

