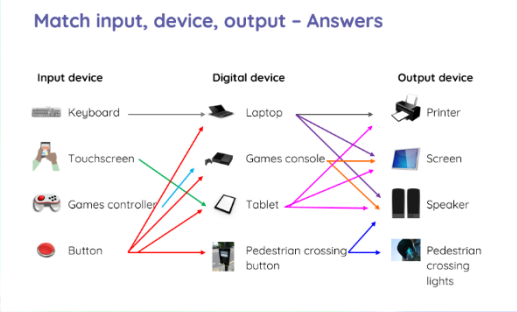
Computing overview- Year 3 Teach Computing

Unit title	Vocabulary	Device needed:
1: Computing systems and networks - Connecting computers	digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets	jspaint.app - chrome books

Lesson	Learning objectives	Tasks	Prior Knowledge/Subject Knowledge
1 How does a digital device work?	To explain how digital devices function • I can explain that digital devices accept inputs • I can explain that digital devices produce outputs • I can follow a process • I can explain what makes a secure password	Activity 1- Sorting objects - discussion with partner: How would you sort them into two groups and why have you chose that way? Activity 2- 'Input, process, output' machine - worksheet to complete with partner. Activity 3- In pairs to create their own 'input, process, output' machine on the lank A3 Activity worksheet Task: Test and record inputs and output using a digital device. Investigate, which will be the most secure password using the How Secure is My Password website. https://www.security.org/how-secure-is-my-password/	You will need an understanding of digital and non-digital devices. The key difference between them is that a digital device is capable of some processing, ie it has functions beyond being either on or off. You will need to be familiar with the concept of input, process, output (IPO), which underpins all digital devices.
2 What parts make up a digital device?	To identify input and output devices • I can classify input and output devices • I can describe a simple process • I can design a digital device	Activity 1 - As a class look at the images on PPT and decide whether they are an Input or output. Activity 2 -In pairs use the worksheet to match input, device, and output. For each device use a coloured felt tip and a ruler to draw the arrow.  Activity 3- Task: Use worksheet to design a new device that can make lights flash to music, tell jokes, takes pictures and changes it, records a voice and can change it and makes music.	You will need to be familiar with the inputs and outputs of a range of digital devices. You will need to understand that devices can have one input that leads to several outputs (eg starting a video leads to outputs from the screen and the speaker) and that many inputs can lead to one output (eg using a mouse and a keyboard to produce a document).

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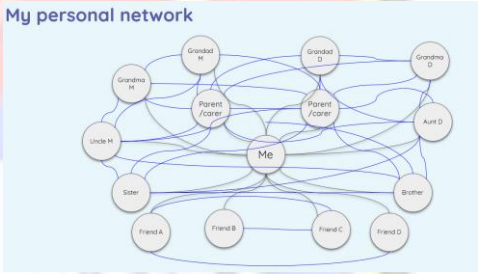
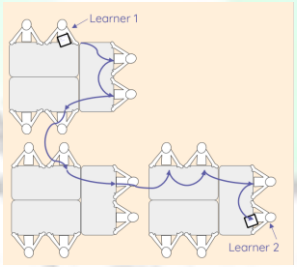
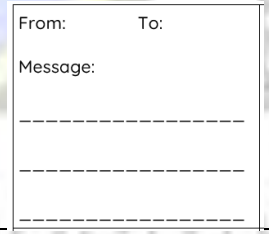
3 How do digital devices help us?	To recognise how digital devices can change the way that we work • I can explain how I use digital devices for different activities • I can recognise similarities between using digital devices and using non-digital tools • I can suggest differences between using digital devices and using non-digital tools	Activity 1: In groups complete the worksheet to explain what digital devices are used for Task- Activity 2: 15 minutes. Split the class in half. Half to paint a picture of a tree using paint and paper and half to use Chrome books and paintz.app to draw a tree digitally. Then swap and repeat so they both get the opportunity to do both. Activity 3: Discuss both approaches, which one did they prefer? Which one was quicker? Which one was cheaper? Which one was more efficient? (less mess)  **What can you use a digital device for?** Tick the box if you can complete the task on the device. Then, add some tasks of your own. Digital camera; Laptop computer; Games console; Smartphone Take pictures Write a story Play a game Make a phone call Send a message	You will need to be familiar with your chosen digital paint program, including the 'brush', 'fill', 'undo', and 'redo' functions.
4 How am I connected?	To explain how a computer network can be used to share information • I can recognise different connections • I can explain how messages are passed through multiple connections • I can discuss why we need a network switch	Activity 1 - worksheet My connections- Write 5 to 10 people that you have links with. These can be family members, carers, and friends. Draw a line between you and each of your connections. Look at the connections that they have drawn so far and to think about whether there could be any additional lines between people, eg between Mum and Dad. Then, ask them to draw lines in a different colour to represent these connections  My personal network Grandad M; Grandad D; Grandma M; Grandma D; Parent /carer; Parent /carer; Aunt D; Uncle M; Me; Sister; Brother; Friend A; Friend B; Friend C; Friend D  Learner 1 Learner 2 Activity 2 Task: Practical- Explore how messages are transported through a computer network. Use the worksheet slips to pass messages around the room without the children getting out their seat.  From: To: Message: _____ _____ _____	You will need a basic understanding of how information (data) flows around a computer network, and how this benefits us. A computer network is simply two or more computers joined together to enable information to be shared between them.
5 How are computers connected?	To explore how digital devices can be connected • I can recognise that a computer network is made up of a number of devices	Task: In groups, children to role play being a network. Within the task explore making a network, adding a server and wireless (Wi-Fi) connections	This lesson requires further knowledge of a simple school network. It introduces a server, which for the purposes of this lesson is defined as a location to store files (they can, and usually do, carry out more functions than this).

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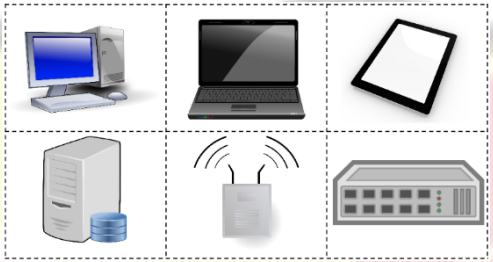
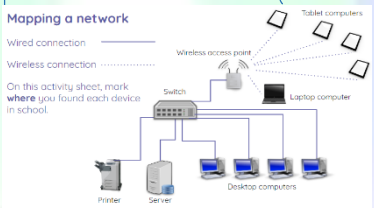
	• I can demonstrate how information can be passed between devices • I can explain the role of a switch, server, and wireless access point in a network	A print-off of Handout A1, A2 and A3 may be useful for each group to have. 	It also introduces wireless access points, which send and receive wireless signals from wireless devices such as tablets or laptops. There is likely to be a wireless access point in most classrooms or communal areas in school. It will be connected to the network via a physical cable.
6 What does our school network look like?	To recognise the physical components of a network • I can identify how devices in a network are connected together • I can identify networked devices around me • I can identify the benefits of computer networks	Activity 1 - Discuss the benefits of a network Activity 2 - Look at the school network. Print off resource sheet 2A (1 for each pair)  Task: Create a computing network using key network components. Children to work in pairs and use handout A3 (1 between 2) 	You will need to be familiar with how the main devices (network switch, server, wireless access point, router, and printer or copier) on your school's network are connected with one another, and where the devices are located. You may wish to discuss this with the IT technician prior to the lesson. You will need to know that network cables and network sockets are needed to connect devices in a network.

Unit title	Vocabulary	Device needed:
2: Creating Media - Stopframe animation	animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.	Cloud stop motion cloudstopmotion.com - chrome books

Lesson	Learning objectives	Tasks	Prior Knowledge/Subject Knowledge
1 Can a picture move?	To explain that animation is a sequence of drawings or photographs • I can draw a sequence of pictures	Activity 1 - What is an animation? Children to write ideas on a whiteboard as part of a class discussion. Activity 2- How are animations made?	Teachers will need to understand how to make a simple flip book animation (see slide 6 for a video example).

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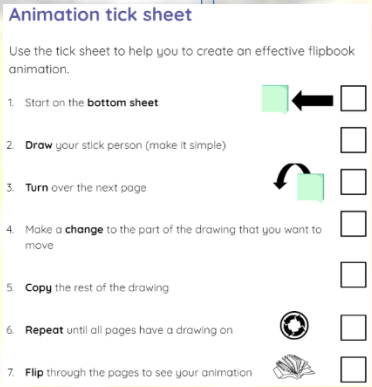
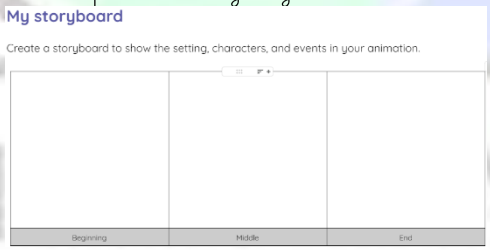
	• I can create an effective flip book-style animation • I can explain how an animation/flip book works	Another class discussion where children answer questions in table groups. Task: Make an animation flipbook to show a stick person waving. Children to use A3 worksheet to support their learning.  **Animation tick sheet** Use the tick sheet to help you to create an effective flipbook animation. 1. Start on the **bottom sheet** 2. **Draw** your stick person (make it simple) 3. **Turn** over the next page 4. Make a **change** to the part of the drawing that you want to move 5. **Copy** the rest of the drawing 6. **Repeat** until all pages have a drawing on 7. **Flip** through the pages to see your animation	Teachers will also need to understand that an animation is made up of a sequence of still images and can be created using many different mediums
2 Frame by frame	To relate animated movement with a sequence of images • 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	Activity 1 - Can you predict what will happen? Class discussion using the slides as talking points. Activity 2 - How do you use iMotion? Discussion and video. Task: Create a stopframe animation on a digital device (Whiteboard, iPad and iMotion app needed) Children to work in pairs. See example videos on the drive in the lesson folder.	How to make a simple stopframe animation.
3 What's the story?	To plan an animation • 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	Activity 1 - Gather Ideas - Print multiple copies of resource worksheet A1 for children to use in their animations. What ideas have children got? Discuss and guide children. Activity 2 - Make a storyboard - Using resource worksheetA2 (1 per child) Children must map out the story they will animate.  **My storyboard** Create a storyboard to show the setting, characters, and events in your animation. Beginning Middle End	You will need to have realistic expectations of what the learners can complete in one lesson. Animations take a long time to produce; even a short clip can take a long time. Keep this in mind when demonstrating planning to the learners. Eventful stories with multiple backgrounds and characters would be difficult to animate in one lesson, so learners should keep it simple, e.g. one background and two characters.

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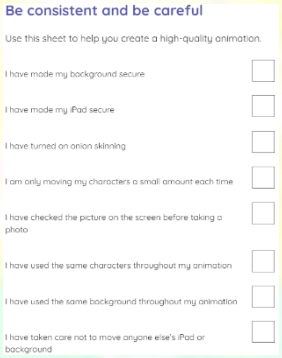
		Task: Develop and plan an animation that will be turned into an on screen animation. Children to use their ideas from Activities 1 and 2 to complete an animation.	
4 Picture perfect	To identify the need to work consistently and carefully • I can use onion skinning to help me make small changes between frames • I can review a sequence of frames to check my work • I can evaluate the quality of my animation	Activity 1 -Have a class discussion around the term consistent. Activity 2 - Spot the changes: Watch the videos and see if children can identify the inconsistencies. Show children resource worksheet A2- Use this as a checklist in your own animation.  **Be consistent and be careful** Use this sheet to help you create a high-quality animation. I have made my background secure I have made my iPad secure I have turned on onion skinning I am only moving my characters a small amount each time I have checked the picture on the screen before taking a photo I have used the same characters throughout my animation I have used the same background throughout my animation I have taken care not to move anyone else's iPad or background Task: Develop and review a consistent stopframe animation using a plan. Give children clear time guidelines to ensure they can manage their time well.	
5 Evaluate and make it great!	To review and improve an animation • I can explain ways to make my animation better • I can evaluate another learner's animation • I can improve my animation based on feedback	Activity 1 - Children to watch the video and be shown how they can edit what they have created so far. Activity 2 - Evaluate worksheet (resource 2A) print off on A3 paper. Children to evaluate what they have done so far.  **Evaluation sheet** Evaluate your own animation by answering the questions below using ✓ ✗. Then, ask another learner to answer the same questions about your animation. Me Another learner Did the animation follow the storyboard? Did the iPad or background move? Did the animation run smoothly? Were there any hands or unwanted objects showing? Did you enjoy watching the animation? What will you do to improve your animation? What could the learner do to improve their animation? Task: Review and edit an animation based on peer feedback. Children now have the chance to do a final take of the animation.	You will need to understand ways that the learners can improve the animations that they made last week. You will need to know how to use the iMotion app, including onion skinning, deleting frames, and saving.

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6 Lights, camera, action!	To evaluate the impact of adding other media to an animation • 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	Activity 1 - Discussion: Use slide to discuss the questions listed as a whole class. Activity 2 - Move your animation: Show children how to move their video to iMovie Activity 3 - Add other types of media: Using slides 7-9 discuss and show children how they can add music and text to their videos Task: Finalise an animation by adding music and text then evaluate. Display Resource sheet A3 - can children think about including any of the ideas listed as part of their video? Activity 4 - What is the impact? Use resource sheet worksheet A4 to review and evaluate the changes that adding the media have made.	You will need an understanding of how to import a video from the camera roll of an iPad into iMovie; how to add music, titles, pictures; and how to delete

Unit title	Vocabulary	Device needed:
3: Programming A - Sequencing sounds	Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code.	Scratch- chrome books scratch.mit.edu

Lesson	Learning objectives	Tasks	Prior Knowledge/Subject Knowledge
1 Introduction to Scratch	To explore a new programming environment • 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	Activity 1 - Introduction to Scratch - Discuss with children what features they recognise. Use the slides to introduce the new features of Scratch. Activity 2 - Sprites and the stage- Show children how to add a new sprite and how add a backdrop to the stage. Children to have a go at completing the tasks on handout A2. (This can be displayed on the board.)	You will need to be familiar with the Scratch programming environment. If you are new to Scratch, there are some useful tutorials within Scratch, or you could register on the course Teaching Programming in Primary Schools (ncce.io/PrimaryProgramming). For this lesson, you will need to be aware of the basic screen architecture and the attributes of sprites and the stage.

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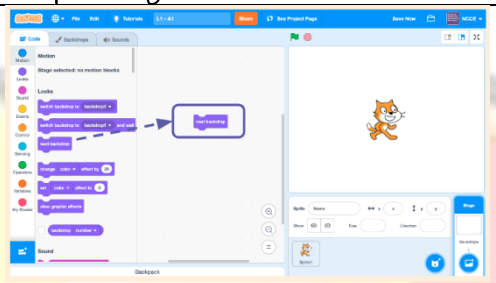
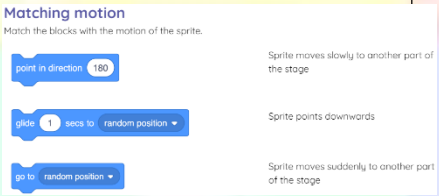
		 Task: Children to add a stage, sprites and change backdrops using Scratch.	
2 Programming Sprites	To identify that commands have an outcome • I can create a program following a design and understand that each sprite is controlled by the commands I choose • I can predict the coding blocks used to move a sprite • I can match coding blocks to their actions	Activity 1 – Moving more than one sprite: Children to follow the video clip and add code to their new sprites. No need for the handout A1. Teacher to take picture evidence. Activity 2 – Which blocks? Display slide 8. Allow children to discuss what has happened and which block best fits this description. Show slide 9 and ask children to predict what each block does. Let children test out their predictions. Activity 3 – Exploring movement in Scratch: Children to investigate new block movements and match them to the movement descriptions. A3 handout to each pair of children.  Task: Matching activity (Use A3 handout) Can children pair the block to it's movement description.	Building on the previous lesson, you will need to be familiar with the concept of coding multiple sprites in one project. You will also need to be aware of the new blocks introduced in this lesson: point in direction and turn.
3 Sequences	To explain that a program has a start • 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	Activity 1 – Introducing event blocks: Compare the screen recording of two sprites. Use a whiteboard with a partner to make the comparison. Children are then shown the coding blocks used and are introduced to event blocks. Activity 2 – Creating a project: Use the worksheet A2 to design your project. What will each sprite do and how will they move. Test this on the screen by coding each of your chosen sprites.	You will need to be familiar with the three event blocks introduced in this lesson:  Each of these blocks cause an event to start a script linked to a particular sprite. Although the term 'initialisation' is not introduced to learners at this stage, this is the process of starting a program. In the 'Creating a project' activity, learners will move between all four levels of abstraction of the project. This is highlighted throughout the plan below. More information about levels of abstraction are included in the Unit overview.

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		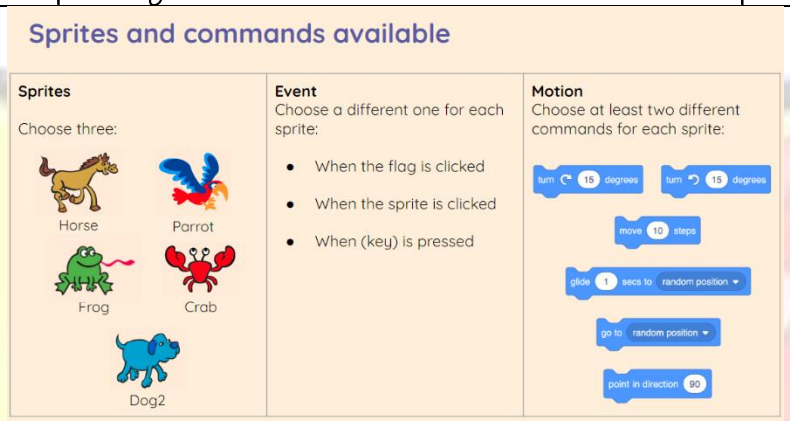 Task: Children to use Scratch and to code sprites in multiple ways. Each sprite should start their code from a different event.	
4 Ordering Commands	To recognise that a sequence of commands can have an order • I can explain what a sequence is • I can combine sound commands • I can order notes into a sequence	Activity 1 - Ordering blocks: Children to use the link (ncce.io/pg3a-4-a1-ca) to access a project and change the order of the blocks - What happens? Activity 2 - Creating a sequence: Children to input a given code, then explore how to code the next part from given code that needs sorting into the correct order. Activity 3 - Combining sounds to code chords: Explain what a chord is and show children how to code a chord. Children to then code their own chords. Task: Children to code their own chords using the knowledge built up in the earlier part of the lesson.	You need to be aware of the difference between the following two blocks: Play sound until done: This will play a sound on its own, and then move on to the next block. It can be used to code a tune, as one sound will not play on top of another. Start sound: This will play a sound as soon as an event happens, e.g. when green flag is clicked. This effect of playing more than one note at once can be used to create chords. You should also be aware that certain sounds are attached to certain sprites in Scratch. Sounds can be added or edited, but this will not be covered in this lesson.
5 Looking Good	To change the appearance of my project • 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	Activity 1 - Combining motion and sounds in a sequence: Answer the questions from the slides on a whiteboard, children can work with a partner or as part of a table group. Activity 2 - Changing the appearance of a sprite and backdrops: Print out the A2 worksheet for use in this activity. Follow the information on slides 6-9. Activity 3 - Design and make your own project: Children to work in pairs, each pair to have worksheet A3. Use slide 11 as an example for children. Task: Children to design and make a project.	You will need to be familiar with the concept of costumes for sprites and backdrops for the stage.
6 Making an instrument	To create a project from a task description	Activity 1 - Identifying and naming sprites: Using slide 4, show children the missing word sentences from A1 and get them to answer on a whiteboard Activity 2 - Writing an algorithm: Using slides 8-2 guide children through the task. Children can watch slide 2 or can have a go before then watching. No worksheet needed.	This lesson includes elements of the design process, using the concept of levels of abstraction as a framework (which was

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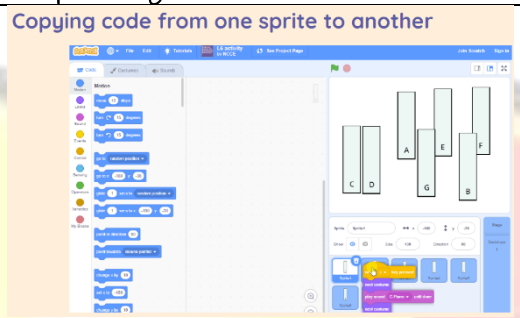
	• I can identify and name the objects I will need for a project • I can relate a task description to a design • I can implement my algorithm as code	 Task: Design a piano using Scratch	introduced in lesson 2 of this unit). Learners will work at all four levels of abstraction: • Task: What is needed? • Design: What it should do? • Code: How is it done? • Running the code: What it does? You will need to understand that an algorithm is a precise set of ordered instructions.

Unit title 4: Data and Information - Branching databases		**Vocabulary** attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.	**Device needed:** J2E https://www.j2e.com/jit5#branch on Chrome books
Lesson	**Learning objectives**	**Tasks...**	**Prior Knowledge/Subject Knowledge**
1 Yes or no questions	To create questions with yes/no answers • 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	Activity 1 - Asking questions: Display slides 8 then 9 and ask children to use whiteboards to come up with questions and ideas. Activity 2 - Grouping objects: Very similar to the above activity. Can children suggest ways to group items using their whiteboards. Activity 3 - Asking questions and making groups: Children to use resource worksheet A3 to group items from their created questions Task: Children to ask closed questions that can group items as an early way of data branching.	During this lesson, the learners will describe objects using appropriate attributes. This is highlighted in the plan below. More information about attributes is in the unit overview.
2 Making groups	To identify the attributes needed to collect data about an object • I can select an attribute to separate objects into groups	Activity 1 - Grouping objects more than once: Children work in pairs to sort the objects from the slides.	During this lesson, learners will be introduced to branching databases. This is highlighted in the plan below. More information about branching databases has been included in the unit overview.

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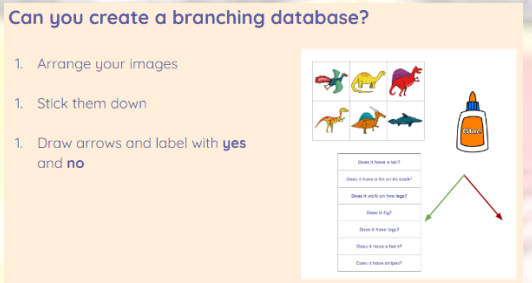
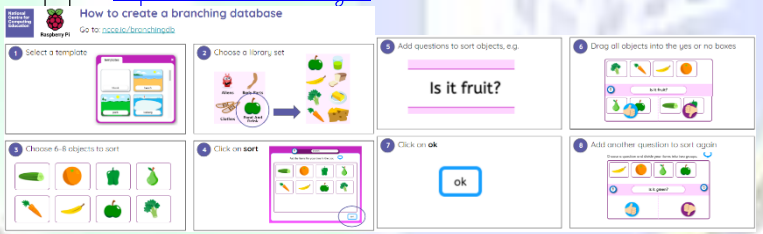
	• I can create a group of objects within an existing group • I can arrange objects into a tree structure	Activity 2 - Making a branching database: Children to use L2 resource and create their branching data base with a partner. Children to then swap their databases and road test each other's work.  Task: Create a branching database	
3 Creating a branching database	To create a branching database • I can select objects to arrange in a branching database • I can group objects using my own yes/no questions • I can test my branching database to see if it works	Activity 1 - Using a branching database: Print off A1 (1 per table) can children work in groups to identify each of the insects on the slides (5-6) Activity 2 - Creating an online branching database: Children to work in pairs with a copy of A2 resource. Children should follow the steps in the handout to complete their own branching database online. See the link provided for use with the pupils. http://ncce.io/branchingdb  Activity 3 - Testing a branching database: Children can then test their database using the play button. Task: Children to create and test an online database.	Learners will use the online database tool j2data Branch. You should be familiar with using this tool. Support with navigating j2data Branch can be found at www.j2e.com/help/videos/datags3. The L3 teacher resource also provides more information on using this tool. The learners will use the term 'attribute' to describe objects. This is highlighted in the plan below. More information about attributes has been included in the unit overview.
4 Structuring a branching database	To explain why it is helpful for a database to be well structured • I can create yes/no questions using given attributes • I can compare two branching database structures	Activity 1 - Creating questions: Children to work in table groups and to write questions linked to slide 7 on post it notes. Activity 2 - Comparing branching databases: Children to work in pairs to complete resource worksheet A2.	In this lesson, learners will use the online database tool j2data Branch. You should be familiar with using this tool. Support with navigating j2data Branch can be found at www.j2e.com/help/videos/datags3. The learners will use the term 'attribute' to describe objects. This is highlighted in the plan below. More

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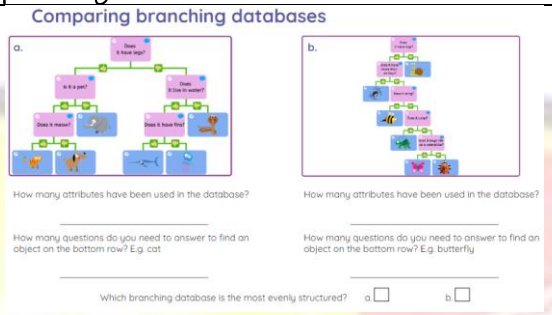
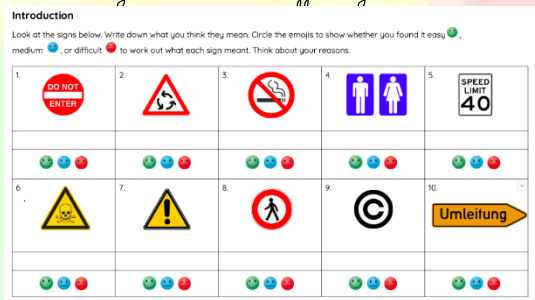
	• I can explain that questions need to be ordered carefully to split objects into similarly sized groups	 Activity 3 - Ordering questions: Children to work in groups of 4 and have a copy of the pictures in resource worksheet A3. Can they use ordering questions to complete a branching database? Task: Create a branching database that uses ordering questions.	information about attributes has been included in the unit overview.
5 Planning a branching database	To plan the structure of a branching database • I can independently create questions to use in a branching database • I can create questions that will enable objects to be uniquely identified • I can create a physical version of a branching database •	Activity 1 - Questions: Children to use whiteboards to answer questions on slides 5-6 Activity 2 - Grouping objects: Give out fact cards/handout to each pair of pupils and ask them to use their questions from activity one to sort the cards. Activity 3 - Building a branching database If using the resources, A3 needs printing off on A3 paper and the cards in A2 need to be printed off smaller so they fit in the boxes. Task: Build a branching database	Learners will create questions to divide groups of objects. Several question starters are included in the slides for the lesson, but you may wish to expand the range of questions. You will need to be familiar with the structure of a branching database.
6 Making a dinosaur identifier	To independently create an identification tool • I can create a branching database that reflects my plan • I can work with a partner to test my identification tool • I can suggest real-world uses for branching databases	Activity 1 - Make your branching database: j2data Branch (via ncce.io/branchingdb) You could use the teacher resource 'Branching databases – j2data' from Lesson 3 to support you in this activity. Activity 2 - Does it work? Test the database with your partner. Use the cards from resource A2 to support this task Task: Design, make and test a database.	In this lesson, learners will use the online branching database tool j2data Branch. You should be familiar with using this tool. Support with navigating j2data Branch can be found at www.j2e.com/help/videos/datags3. The L3 teacher resource 'Branching databases – j2data' also provides more information on using this tool.

Computing overview- Year 3 Teach Computing

Unit title 5: Creating Media - Desktop publishing	**Vocabulary** text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.	**Device needed:** canva.com https://www.canva.com/en_gb/ - chrome books Adobe Spark- chrome books

Lesson	Learning objectives	Tasks	Prior Knowledge/Subject Knowledge
1. Words and pictures	To recognise how text and images convey information • 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 • I understand how to use emojis respectfully online	Activity 1 - Guess the sign: Discussion using slides 5-11. Activity 2 - What does it mean?: Children work in pairs with resource worksheet A2 to work out each sign and rate the difficulty. Show this on the whiteboard.  Introduction Look at the signs below. Write down what you think they mean. Circle the emojis to show whether you found it easy, medium, or difficult to work out what each sign meant. Think about your reasons. 1. DO NOT ENTER 2. 3. 4. 5. SPEED LIMIT 40 6. 7. 8. 9. 10. Umleitung Activity 3 - Advantages and disadvantages: Task: Children can identify the advantages and disadvantages of communicating via text and images.	Teachers should have an understanding of the advantages of using text, images, or both to communicate messages (this is indicated in the slides).
2. Can you edit it?	To recognise that text and layout can be edited • 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	Activity 1 - Fonts: Work in table groups to sort the icons into the correct circle. Print off resource worksheet A1. Activity 2 - What would you change?: Give children a template so they are all starting with the same information. What would they change? Children to edit and compare with their peers. Activity 3 - Adding or changing text: Task: Children to identify improvements and then to edit and improve on given information.	Teachers would benefit from having some experience of desktop publishing packages. You will need to be able to show learners how to change font size, colour, and style in the chosen software. You will also need to be able to share a template with your learners. For teachers using Canva there is support here: How to add, edit and remove text on Canva: https://www.canva.com/designschool/tutorials/designing/adding-editing-text/ Formatting text: https://www.canva.com/en_gb/help/format-text/

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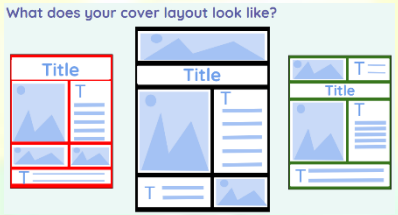
			How to share work (templates) with learners in Canva for Education: https://www.canva.com/en_gb/help/publish-canva-assignments/?query=sharing%20class Learner view - How to access shared templates from your teacher: https://www.canva.com/en_gb/help/complete-canva-assignments/
3. Great template!	To choose appropriate page settings • I can explain what 'page orientation' means • I can recognise placeholders and say why they are important • I can create a template for a particular purpose	Activity 1 - Landscape or portrait?: Discussion using the slideshow Activity 2 - What does a good front cover look like?: A collection of magazine front covers needed. Can children annotate on them - what is good. Make a list on the flipchart. Activity 3 - Placeholders: On a whiteboard build a template of what your front cover may look like.  Activity 4 - Create your own template: Use Canva to map out magazine front cover based on Technology. Task: Design a magazine front cover.	An understanding of the terms template, placeholder, and orientation would be helpful, but this is supported in the slides. You will need to know how to create a template using placeholders in your chosen software. (There is support available in the slides for those using Canva.)
4. Can you add content?	To add content to a desktop publishing publication • 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	Activity 1 - Can you find your work from last week?: Show children how to access saved work from Canva Activity 2 - What's it all about?: Give children a copy of A2 magazine content file, this is what they will be inputting. Show children the complete A2 resource. Activity 3 - Adding images: Children to add an image to their magazine cover. Task: Create a magazine cover using Canva	You will need to have an awareness of the tools in Canva and an understanding of how to copy from one document and paste into another. You should also ensure you are aware of your school's procedures relating to children searching for images and how to report any issues.
5. Lay it out	To consider how different layouts can suit different purposes • I can identify different layouts • I can match a layout to a purpose • I can choose a suitable layout for a given purpose	Activity 1 - Lay out the information: Discussion as you teach through the slides. Activity 2 - What's the purpose?: Match the layout to the purpose. Children to be given resource A2 to complete either individually or with a partner.	You will need to have an understanding of the different ways in which information can be laid out on a page, such as letters, postcards, or posters, and have an understanding of the purpose of each of these. This is supported in the slides.

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		 Activity 3 - Scenarios: Now can children apply their knowledge to resource A3 - Scenarios. What layout would work best for each scenario. Complete independently or with a partner. Task: To be able to explain the purpose of different layouts.	
6. Why desktop publishing?	To consider the benefits of desktop publishing • 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	Activity 1 - Where is desktop publishing used in the real world?: Discussion (slide 4) Activity 2 - What are the benefits of desktop publishing?: Discussion slides 5-9 Activity 3 - It's a race!: Children work independently to create a poster on A4 paper from the information on slide 11. Teacher uses a desktop publishing site to do the same. Discuss the questions on the next slides. What are the positives of desktop publishing? Task: Create a physical poster and compare the pros and cons of this compared with using desktop publishing to do the same thing.	You would benefit from having an understanding of the places desktop publishing is used in the real world, and some knowledge of the benefits of using desktop publishing applications. This is supported in the slides.

Unit title 6: Programming B - Events and actions in programs		Vocabulary motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.	Device needed: Scratch- chrome books scratch.mit.edu
Lesson	**Learning objectives**	**Tasks**	**Prior Knowledge/Subject Knowledge**
1 Moving a sprite	To explain how a sprite moves in an existing project • I can explain the relationship between an event and an action	Activity 1 - How does this sprite move?: http://ncce.io/pg3b-1-a1-ca Children to use the link above and explore how to move a sprite. Activity 2 - Improving movement: https://ncce.io/pg3b-1-a2-ca Use this link to allow children to discover how they can change the code to improve the movement. Use resource A2 to plan what changes need to be made.	You will need an awareness of basic movements in Scratch, and how to associate events with actions. You will also need to know how to program multiple sprites. This lesson includes elements of design. The approach to design in programming is based on levels of abstraction

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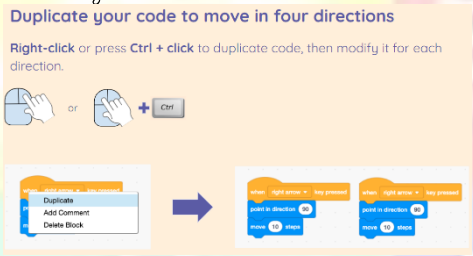
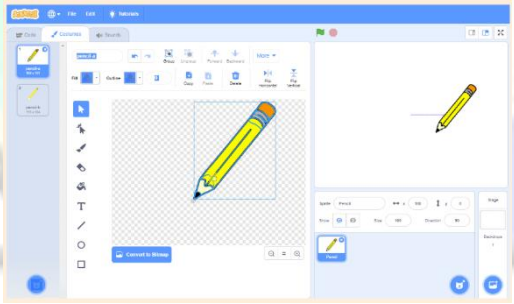
	• I can choose which keys to use for actions and explain my choices • I can identify a way to improve a program	Activity 3 - Control a second sprite: Children to introduce a new sprite and the start movement must be triggered in a different way (If the first sprite moves on a button press, the second sprite should move by mouse click) Task: Children can evaluate and edit code within Scratch.	and is outlined in Lesson 2 of the 'Programming A - Sequence in music' unit.
2 Maze movement	To create a program to move a sprite in four directions • I can choose a character for my project • I can choose a suitable size for a character in a maze • I can program movement	Activity 1 - Choosing and resizing sprites: http://ncce.io/pg3b-2-a1-ca Once children have opened the scratch file they need to choose and resize a sprite. Follow slide guidance. Activity 2 - Programming four-way movement: Children to create blocks of code for up, down, left and right. Test and debug. Suggest to children that the arrow keys would be the best choice to use.  Task: To choose, resize and code a sprite to move in four directions.	This lesson consolidates learning from Lesson 1 and gives learners the opportunity to apply their skills in a different context. No new programming blocks are introduced, other than pen down which is mentioned in the plenary to point forward to Lesson 3. You will need to be familiar with the process of resizing sprites. In this lesson, learners will move from the Task and Design levels in the 'Choosing and resizing sprites' activity, to the Design, Code, and Running the code levels in the 'Programming four-way movement' activity. This is highlighted throughout the plan below. More information about levels of abstraction is included in the 'Unit overview'.
3 Drawing lines	To adapt a program to a new context • 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	Activity 1 - Using blocks to draw lines in scratch: Children follow the guidance on slides 4and 5 to add the pen extension block for coding. Activity 2 - Centring a sprite: Watch slides 6 and 7. Pupils should then have a go at centring their sprites.  Activity 3 - Setup: Give out resource A3 to each pair of children. Watch the video on slide 8 several times. Children should fill in the sheet and then use this to support them when trying to code this feature in Scratch. Task: Write code so that the sprite will re-centre after the initial commands have completed.	You will need to be familiar with extension blocks in Scratch. Please note that the pen blocks in previous versions of Scratch were not extension blocks. In this lesson, learners will set up their projects so that they start in the same way every time they run. This setup process relates to the computing term 'initialisation'. Initialisation is the process of setting starting values (variables) for a program, so that the program starts in the same way each time. In the context of this project, initialisation means setting the variables of the start position of the pencil sprite and the line colour, putting the pen down, and clearing any existing lines on the screen. This ensures that the project works in the same way every time it is run. In later lessons, initialisation will be extended to include additional features such as line thickness. Variables are not introduced explicitly until Year 6, where the concept of initialisation is covered further. Typically, in Scratch, projects are initialised (set up) using the when green flag clicked block, and it is good practice for this block not be used for any other purpose.

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			Learners will be required to save their projects at the end of this lesson. We recommend the use of teacher accounts. These enable you to create individual learner accounts and arrange projects into 'studios'. Further guidance on the use of teacher accounts is included in the 'Unit overview'. If you are not able to create teacher and learner accounts, projects can be saved to local devices.
4 Adding features	To develop my program by adding features • I can identify additional features (from a given set of blocks) • I can choose suitable keys to turn on additional features • I can build more sequences of commands to make my design work	Activity 1 - Experimenting with pen blocks: Children to work with a partner using Scratch. Follow the steps shown on slides 4 and 5. Activity 2 - Which blocks have been used?: Show children the broken line on slide 6. Can they re-create this? Look at the blue and red line on slide 7, can children work out how to do this? Finally, look at slide 8 - the line changes thickness, can children do this too? Activity 3 - Including new Pen blocks in a design: Use the template worksheet A3. Children to complete their designs and can make changes from lesson 3. Activity 4 - Including new Pen blocks in a design: Edit their project from lesson 3. The project should reflect the design. Task: Children to edit their project using their new design.	You will need to be familiar with the Pen extension blocks introduced during this lesson: pen up, change pen colour, and change pen size. The change pen colour block uses a number to change the colour of the pen. The greater the number, the greater the contrast between colours. You should be aware of the difference between blocks such as pen up, which stops the sprite from drawing, and erase all, which removes all lines from the screen. The change pen size block is also introduced in this lesson, which will change the size of the pen by a given integer each time it is used. Learners will be introduced to blocks that set the size and colour of the pen in Lesson 5.
5 Debugging movement	To identify and fix bugs in a program • 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	Activity 1 - Debugging a project: https://ncce.io/pg3b-5-a1-ca A1 resource to be given out 1 between 2. Follow slides 4-14. Activity 2 - Debugging setup: What errors are present? Use slides 15 and 16 to guide children. Activity 3 - Modify a program using a design: Show slide 17, and draw attention to the design in the form of an algorithm. This algorithm will fix the error identified in the previous activity, and add a new feature by setting the width of the pen. 1. Start the pencil at x: -150, y: 150 2. Clear all lines on the screen 3. Centre the sprite on the tip of the pencil 4. Select pen size 1, 2, 3, 4, or 5 by using those keys on the keyboard Learners may have completed steps 1-3 in the 'Debugging setup' activity. To complete step 4, learners will need a set pen size block for each possible pen size (1-5). Task: Debug a program	You will need to be familiar with the term 'debug', and the process of 'debugging'. A bug is an error in the design or the coding of the program, and the process of debugging is finding and fixing these errors. The set pen size block is introduced in this lesson. You will need to be aware of the difference between set pen size and set size – the former sets the thickness of a line drawn, the latter changes the size of the sprite
6 Making a project	To design and create a maze-based challenge	Activity 1 - Design it: https://ncce.io/pg3b-6-a2-ca Give out the 'Design a maze project' worksheets and show the learners the design template. Children to design their project.	This lesson is an opportunity for learners to apply the skills and concepts introduced throughout this unit. As a result there are no new blocks introduced in this lesson.

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	• I can make design choices and justify them • I can implement my design • I can evaluate my project	Activity 2 - Code it: Use slides 5-6 to guide children and let them code their designs using Scratch. Activity 3 - Test it: Show slide 7. Debug their program and fix any errors. Task: Design and code a project using Scratch.	