Computing Medium Term Planning

Year 3

Key Concepts	EYFS	Year 1	Year2	Year 3	Year 4	Year 5	Year 6
Computing systems and networks	To know that a computer has a mouse and a keyboard and be able to recognise them **(N)** To use a mouse to manipulate a program **(R)** To use a keyboard and understand keys represent letters and numbers **(R)** To understand that a tablet is different to a computer in some ways **(R)**	**Technology Around Us** ◊ Understand what technology is ◊ Know what technology they have in their lives ◊ Be able to use a mouse and a keyboard ◊ Be able to open a file ◊ Be able to create a typed document and save it	**IT Around Us** ◊ Develop the understanding of where technology can be found in the world ◊ Be able to name the types of technology found in shops, schools and at home ◊ Understand why we use IT ◊ Understand how to use IT safely	**Connecting Computers** ◊ Understand how inputs and outputs work in digital technology ◊ Understand how to use technology and inputs/outputs to achieve an aim ◊ Understand why we choose to use technology ◊ Understand the difference between digital and analogue outcomes ◊ Understand that technology connects people ◊ Begin to understand how networks connect people and how they work	**The Internet** ◊ Understand how computers are physically connected in networks ◊ Start to understand the role of some of the devices in a network ◊ Know what the internet is ◊ Know what the WWW is and it is different from the internet ◊ Understand that people create web page ◊ Understand that not all information on the WWW is accurate	**Sharing information** ◊ Understand what a digital system is ◊ Understand how larger computer systems work(traffic lights) ◊ Understand that the internet forms part of some systems ◊ Know what an IP address is ◊ Be able to work collaboratively online ◊ Understand how systems and networks enable collaborative working	**Communication** ◊ Develop from the understanding of the internet to understand what the WWW is ◊ Be able to carry out specific searches on the WWW ◊ Understand how search engines work ◊ Understand what SEO is ◊ Know that the internet can be used to communicate ◊ Understand how to stay safe when communicating online
Creating media	◊ To independently listen to digital audio **(N)** ◊ Take photographs using a digital device **(N/R)** ◊ To record video using a digital device **(R)** ◊ To record audio **(R)**	**Digital Painting** ◊ To be able to digitally paint ◊ Use a range of tools to digitally paint ◊ Create a digital painting ◊ Compare digital painting to a painting on paper **Digital Writing** ◊ Type a document on a computer ◊ Be able to use a range of tools to digitally write ◊ Select tools to create digital writing ◊ Compare digital writing with handwriting	**Digital Photography** ◊ Compose and frame an image ◊ Select images ◊ Edit images using software ◊ Produce a final image too meet a brief **Making Music** ◊ Discuss how music makes us feel ◊ Understand that music has patterns ◊ Create rhythms and patterns in music ◊ Use software to compose music	**Stop-Frame Animation** ◊ Understand that animations are a series of photos or drawings ◊ Understand movement is a created by a sequence of images ◊ Plan/storyboard an animation ◊ Create and improve an animation ◊ Evaluate an animation **Desktop Publishing** ◊ Understand that text and images convey information ◊ Consider layout ◊ Understand how to create and edit content ◊ Use editing tools such as copy and paste to create content ◊ Discuss the benefits of desktop publishing	**Audio Editing** ◊ Understand that sound can be digitally recorded ◊ Understand what input(microphone) and output devices are speakers) ◊ Use a digital recording device ◊ Edit a digital sound file **Photo Editing** ◊ Understand that an image can be changed ◊ Change the composition of an image ◊ Use tools to edit images ◊ Understand that some images are fake/edited	**Vector Drawing** ◊ Know how to use tools in a vector based drawing program ◊ Use tools to create drawings by combining shapes ◊ Understand that vector drawing software uses layers ◊ Understand how to group objects for easy use **Video Editing** ◊ Understand what makes a video effective ◊ Record video using a digital device ◊ Create a storyboard ◊ Improve video by reshooting and editing	**3D Modelling** ◊ Compare 2d and 3D shapes ◊ Use modelling software to combine shapes ◊ Colour, rotate and resize shapes ◊ Design a physical object ◊ Improve designs **Web Page Creation** ◊ Understand that web pages are written in HTML ◊ Plan a web page design ◊ Create a web page using software ◊ Use navigation paths and consider effective links
Programming	◊ Group objects by type (N) ◊ Discuss data and information and understand that things can be categorised using labels (R) ◊ Create tally charts (R)	**Floor Robots** ◊ Understand what commands are ◊ Use commands to control a floor robot ◊ Choose commands to achieve a goal ◊ Understand that a program is a set of commands ◊ Debug and improve programs **Programming Animations** ◊ Compare floor robots to Scratch Jnr ◊ Know what block code is ◊ Know that an algorithm is a set of instructions ◊ Write code (instructions) to control a sprite	**Robot Algorithms** ◊ Understand that an algorithm is a set of instructions ◊ Understand that computers read and follow algorithms without thought ◊ Make predictions about programs ◊ Understand that programs can contain code and artwork ◊ Write a program to achieve an aim **Programming Quizzes** ◊ Understand that programs have a start and an outcome ◊ Incorporate design in a program ◊ Edit designs in a program ◊ Refine designs in programs to meet the initial brief	**Sequence in Music** ◊ Progress from Sratch Jr to Scratch ◊ Understand that commands have outcomes ◊ Change the sequence of commands ◊ Edit the program appearance ◊ Write a program from a task description **Events and actions** ◊ Explain how sprites move in a program ◊ Be able to move a sprite in four directions using code ◊ Adapt an existing program to fit a different context ◊ Develop and refine a program by adding features ◊ Develop a process for debugging ◊ Design and create a program that creates a maze-based challenge	**Repetition in Shapes** ◊ Write code inn a text-based language ◊ Understand the role of repetition in programs ◊ Understand what a count-controlled loop is ◊ Write a program using a count-controlled loop **Repetition in Games** ◊ Develop the understanding of a count-controlled loop in a different environment ◊ Compare infinite loops and count-controlled loops ◊ Use loops in programs	**Selection in Physical Computing** ◊ Control a simple circuit connected to a computer ◊ Write programs including controlled loops ◊ Understand that a loop can end based on a condition ◊ Write a program that includes selection **Selection in Quizzes** ◊ Understand that conditions control the flow of programs ◊ Link a condition statement to a condition outcome ◊ Design and create a program that uses selection	**Variables in Games** ◊ Understand what variables are ◊ Know how to use variables in programs ◊ Enhance a game code using variables ◊ Write a game code using variables ◊ Evaluate projects **Sensing** ◊ Learn what a Micro bit is ◊ Create a program using software ◊ Install software onto Micro bit ◊ Use variables ◊ Write a code to create a compass on a Micro bit ◊ Code and debug a step counter
Data and information	◊ Program a floor robot to follow a simple set of instructions **(N)** ◊ Completes a simple program on an electronic device to achieve a goal (beebots) **(R)**	**Grouping Data** ◊ Understand that objects can be labelled and grouped ◊ Be able to label and group objects based on properties ◊ Choose searches and compare groups ◊ Debug and improve	**Pictograms** ◊ Use tally charts to collect data ◊ Understand that data can be represented in pictograms ◊ Use software to create and analyse pictograms ◊ Group object and label groups using attributes ◊ Draw conclusions from represented data ◊ Be able to present and discuss data	**Databases** ◊ Understand how 'yes'no' can sort data ◊ Understand that attributes can be used to refine data ◊ Select appropriate attributes required to find desired data ◊ Understand what a branching database is ◊ Use a branching database to sort information ◊ Compare branching databases to pictograms	**Data Logging** ◊ Understand that data can be collected over time ◊ Be able to use a datalogger ◊ Know that dataloggers collect data points from sensors ◊ Select what data need to be collected ◊ Answer question using data	**Flat File Databases** ◊ Create paper file databases ◊ Understand how computers file records ◊ Group data ◊ Search records ◊ Compare data using charts ◊ Select flights based on search criteria	**Spreadsheets** ◊ Understand how spreadsheets organise data ◊ Manipulate data sets using spreadsheets ◊ Write and use formulas ◊ Calculate using spreadsheets ◊ Plan a budget

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Connecting Computers	**Stop Frame Animation**	**Desk-top Publishing** **Branching Databases**	Sequencing Sounds	Events and Actions in Programs

Autumn Term 2—Connecting Computers

Prior Learning	Children should know about: What technology they see in their lives(bar code readers, televisions, bank cards, traffic lights That the school has rules about using technology in school Understand some of the rules about using technology in school
End Points	**Invent a digital device that incorporates inputs and outputs and explain how it works**
Vocabulary	Digital device, input, process, output, program, digital, non-digital, connection, network, network switch, server, wireless access point, network cables, network sockets,

Key Concept	Second Order Concepts	Lesson Sequence	Learning Objectives	Resources

Computing systems and networks	**Responsibility:** (being safe online, using social media responsibly and respectfully, privacy, cyberbullying)
	Similarity and difference: (making comparisons, finding patterns, noting differences and drawing conclusions)
	Cause and consequence: (inputs and outputs, programming)
	Significance: (significant inventions, significant figures from the world of computing)
	Chronology: (changes in technology over time, inventions, future technology)
		Lesson1	I can explain how digital devices function
			This lesson introduces the concepts of input, process, and output. These concepts are fundamental to all digital devices.
				Slides
				Activities:
				    A1 Handout – Sorting images (optional)
				    A2 Activity sheet – Exploring inputs and outputs
				    A2 Answers – Exploring inputs and outputs
				    A3 Activity sheet – Processes

		Lesson 2	I can identify input and output devices
			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.
				Slides
				A1 Teacher handout – Devices **or** examples of input and output devices
				Activities:
				    A2 Activity sheet – Match input, device, output
				    A2 Answers – Match input, device, output
				    A3 Activity sheet – Invent your own digital device (optional: print in A3 to provide more working space)
				Homework (optional)

		Lesson 3	I can recognise how digital devices can change the way we work
			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 other. Learners will then compare and contrast the two approaches
				Slides
				Activities:
				    A1 Activity sheet – What can you use a digital device for?
				    A3 Activity sheet – Learner review (optional)
				Paper and paint
				A computer or tablet with a basic graphics program, eg Microsoft Paint (Windows), JS Paint (jspaint.app — online), PaintZ (paintz.app — online), or Brushes Redux (free app for iOS devices, downloadable from the Apple App Store online store)

		Lesson 4	I can explain how a computer network can be used to share information
			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 allows information to be shared between users and systems.
				Slides
				Activities:
				    A1 Activity sheet – My connections
				    A2 Activity sheet – Becoming a computer network (several message squares per learner)
				Pencils

		Lesson 5	I can explore how digital devices can be connected 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.	Slides A1, A2, and A3 Handout – Images for role play (ideally, print the first page in size A3, or print the larger images) String, wool, or skipping ropes to represent wired connections Blank paper Homework (optional)

		Lesson 6	I can recognise the physical components of a network
			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.
				Slides
				Activities:
				    A2 Activity sheet – Scavenger hunt (optional)
				    A3 Activity sheet – Mapping a network
				A camera, or a tablet that can take photographs (optional)

Spring Term 1—Stop Frame Animation

Prior Learning	Children should know about: How apps and software can be used to adapt and alter images A range of digital devices and how they are used			
End Points	To be able to: **Create a completed animation that has been edited and improved**			
Vocabulary	Animation, flip book, stop-frame animation, frame, sequence, image, photograph, setting, character, events, onion skinning, media, import, transition, evaluation, delete			

Key Concept	Second Order Concepts	Lesson Sequence	Learning Objectives	Resources
Creating media	**Responsibility:** (being safe online, using social media responsibly and respectfully, privacy, cyberbullying) **Similarity and difference:** (making comparisons, finding patterns, noting differences and drawing conclusions) **Cause and consequence:** (inputs and outputs, programming) **Significance:** (significant inventions, significant figures from the world of computing) **Chronology:** (changes in technology over time, inventions, future technology)	Lesson1	I can explain that animation is a sequence of drawings or photographs 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	L1 Slides Sticky notes (or small pieces of paper stapled together to make a small book — the pages need to be the same size to ensure that you can flip through the book at the end to demonstrate the animation) Pens/pencils A3 Worksheet – Animation tick sheet L1 Homework: Animations (optional)
		Lesson 2	I can relate animated movement with a sequence of images 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.	**L2 Slides** Whiteboards (or paper) Whiteboard pens (or pens/pencils if using paper) Whiteboard rubbers (or rubbers if using paper) Sticky tape iPad devices and iPad stands iMotion app
		Lesson 3	I can plan an animation 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.	L3 Slides A1 Resource – Characters - printed on card (you could use the characters provided, or create your own topic-specific characters, or learners could draw characters on card/use Small World characters, etc.) A1 Resource – Backgrounds - (you could use the backgrounds provided, or create your own topic-specific backgrounds, or learners could draw backgrounds/use building bricks to create scenes, etc.) A2 Worksheet – My storyboard A2 Handout – Explorer task (optional) Whiteboards/pens/rubbers Sticky tack
		Lesson 4	I can identify the need to work consistently and carefully 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.	L4 Slides A2 Handout: Checklist iPad devices iMotion app Characters and backgrounds (created in the previous lesson) Sticky tape Sticky tack
		Lesson 5	I can review and improve an animation 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.	L5 Slides A2 Worksheet – Evaluation sheet (one A4 printout per learner & one A3 copy) iPad devices iMotion app Characters/backgrounds from lesson 3 Storyboards from lesson 3
		Lesson 6	I can evaluate the impact of adding other media to an animation 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.	L6 Slides A3 Worksheet – Explorer task A4 Worksheet – Impact Unit assessment rubric iPad devices (containing work from the previous week in the camera roll) iMotion app iMovie app

Spring Term 2 — Desktop Publishing

Prior Learning	Children should know about: Understand that technology can be used to change digital files(paintings, images, text) Understand that apps and software have tools that can be used to change files
End Points	Create a magazine page including text and images and discuss the tools that were used to create it
Vocabulary	Text, images, advantages, disadvantages, communicate, font, font style, communicate, template, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, benefits

Key Concept	Second Order Concepts	Lesson Sequence	Learning Objectives	Resources
Creating media	**Responsibility:** (being safe online, using social media responsibly and respectfully, privacy, cyberbullying) **Similarity and difference:** (making comparisons, finding patterns, noting differences and drawing conclusions) **Cause and consequence:** (inputs and outputs, programming) **Significance:** (significant inventions, significant figures from the world of computing) **Chronology:** (changes in technology over time, inventions, future technology)	Lesson1	I can recognise how text and images convey information 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.	L1 Slides A2 What does it mean? worksheet A2 What does it mean? answers A3 Advantages and disadvantages worksheet (pages 1 and 2 A3; page 3 A4)
		Lesson 2	I can recognise that text and layout can be edited 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, 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.	Desktop publishing software: this planning assumes the use of Adobe Spark, available online at spark.adobe.com or via the app (other software is available, such as Canva or Microsoft Publisher) Creating an Adobe Spark account (teacher resource sheet) L2 Slides A1 Sorting tools activity worksheet A2 Exploratory task handout
		Lesson 3	I can choose appropriate page settings 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 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.	Desktop publishing software A4 paper: one sheet per person L3 Slides A3 Magazine jigsaw worksheet (cut up for each learner) A4 Exploratory task worksheet Sticky notes or A3 paper
		Lesson 4	I can add content to a desktop publishing publication 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 from within the search facility in Adobe Spark. Teachers could ask learners to gather copyright-free images from http://www.pixabay.com if using a different application.	L4 Slides A2 Magazine content file A2 Teacher example sheet A2 Exploratory task text A3 Exploratory task images
		Lesson 5	I can consider how different layouts can suit different purposes 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.	L5 Slides A2 Layout worksheet A2 Layout worksheet answers A3 Scenario worksheet Whiteboards, pens, and rubbers, glue
		Lesson 6	I can consider the benefits of desktop publishing 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.	L6 Slides - note that there is a deliberate error in the slide deck, slide 11 Whiteboards, pens, and rubbers Sticky notes Pens or pencils A4 paper

Spring Term 2—Branching Databases

Prior Learning	Children should know about: Grouping data. Labelling objects. Grouping objects based on different properties Pictograms and how they can be used to sort information			
End Points	**Sort information using physical and digital databases**			
Vocabulary	Attribute, value, questions, table, objects, branching database, database, attribute, value, questions, objects, equal, even, separate, structure, compare, order, organise, j2data, selecting, pictogram, compare, information, decision tree			

Key Concept	Second Order Concepts	Lesson Sequence	Learning Objectives	Resources
Data and information	**Responsibility:** (being safe online, using social media responsibly and respectfully, privacy, cyberbullying) **Similarity and difference:** (making comparisons, finding patterns, noting differences and drawing conclusions) **Cause and consequence:** (inputs and outputs, programming) **Significance:** (significant inventions, significant figures from the world of computing) **Chronology:** (changes in technology over time, inventions, future technology)	Lesson1	I can create questions with yes/no answers During this lesson, learners will start to explore questions with yes or no answers, and how these can be used to identify and compare objects. They will create their own yes or no questions before using these to split a collection of objects into groups.	Slides (ncce.io/dat3-1-s) Activities: 'Find the object' resource (ncce.io/dat3-1-a1-rf) (optional) 'Asking questions' worksheet (ncce.io/dat3-1-a3-w) and solutions (ncce.io/dat3-1-a3-s) Eight or nine unique physical objects for each table, these objects need to be easy to move into groups, e.g. pen, pencil, rubber, ruler, etc.
		Lesson 2	I can identify the object attributes needed to collect relevant data During this lesson, learners will continue to develop their understanding of using questions with yes or no answers to group collections of objects. They will learn how to arrange objects in a tree structure and will continue to think about which attributes the questions are related to.	Slides (ncce.io/dat3-2-s) Activities: 'Images and questions' resource (ncce.io/dat3-2-ri) 'Making a branching database' solutions (ncce.io/dat3-2-a3-s) Large paper, one piece per group Glue or sticky tack (optional) Red and green colouring pencils/markers (optional)
		Lesson 3	I can create a branching database During this lesson, learners will continue to develop their understanding of ordering objects/images in a branching database structure. They will learn how to use an online database tool to arrange objects into a branching database, and will create their own questions with yes or no answers. The learners will show that their branching database works through testing.	Slides (ncce.io/dat3-3-s) 'Branching databases' teacher handout (ncce.io/dat3-3-hb) 'Branching databases' L3 j2data resource (ncce.io/dat3-3-a2-ra) 'Creating questions' homework (ncce.io/dat3-3-w) (optional)
		Lesson 4	I can explain why it is helpful for a database to be well structured During this lesson, learners will continue to develop their understanding of how to create a well-structured database. They will use attributes to create questions with yes or no answers and apply these to given objects. The learners will be able to explain why questions need to be in a specific order and will compare the efficiency of different branching databases.	Slides (ncce.io/dat3-4-s) Activities: 'Creating questions' handout (ncce.io/dat3-4-a1-hc) (optional) 'Branching database objects' resource (ncce.io/dat3-4-a2-rb) 'Comparing branching databases' worksheet (ncce.io/dat3-4-a3-w) and solutions (ncce.io/dat3-4-a3-s) 'Minibeast branching database' L4 j2data resource (ncce.io/dat3-4-ap-rb) Personal whiteboards and pens (optional) Sticky notes or strips of paper for writing questions Large piece of paper or flip chart (optional)
		Lesson 5	I can identify objects using a branching database During this lesson, learners will independently create a branching database that will identify a given object. They will continue to think about the attributes of objects to write questions with a yes or no answer, which will enable them to separate a group of objects effectively. The learners will then arrange the questions and objects into a tree structure, before using their branching database to answer questions.	Slides (ncce.io/dat3-5-s) 'Branching databases' L5 j2data resource (ncce.io/dat3-5-a1-ra) 'Minibeast branching database' L5 j2data resource (ncce.io/dat3-5-a3-rb) 'Using my branching database' worksheet (ncce.io/dat3-5-a3-w) Large piece of paper or flip chart (optional) 'Your own branching database' homework (ncce.io/dat3-5-w) (optional)
		Lesson 6	I can compare the information shown in a pictogram with a branching database During this lesson, the learners will compare two ways of presenting information. They will demonstrate their ability to explain what information is shown in a pictogram and a branching database. The learners will begin to compare the two ways of presenting information.	Slides (ncce.io/dat3-6-s) J2data resource (ncce.io/dat3-6-a1-rc) 'Data to present' handout (ncce.io/dat3-6-a1-hd) and possible solutions (ncce.io/dat3-6-rd) (both are optional) Individual whiteboards and pens (optional) 'Chatbot' Scratch project (ncce.io/dat3-6-ap-ca)

Summer Term 1 - Sequencing Sounds

Prior Learning	Children should know about: That algorithms are a series of instructions How to program floor robots How to use block coding in Scratch Jnr How to debug a program How to design an algorithm to achieve a goal	
End Points	**Write computer code on Scratch that creates a digital piano that can be played by a user**	
Vocabulary	Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code	

Key Concept	Second Order Concepts	Lesson Sequence	Learning Objectives	Resources—Floor Robots required for each session (lessons may need to be staggered across the week)
Programming	Responsibility: (being safe online, using social media responsibly and respectfully, privacy, cyber-bullying) Similarity and difference: (making comparisons, finding patterns, noting differences and drawing conclusions) Cause and consequence: (inputs and outputs, programming) Significance: (significant inventions, significant figures from the world of computing) Chronology: (changes in technology over time, inventions, future technology)	Lesson1	I can explore a new programming environment 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.	L1 Slides Activities AP Activity sheet – Introduction to Scratch Internet-enabled devices to access scratch.mit.edu. If possible, these should be PC-type devices. Scratch will work on tablets, but the lack of a separate keyboard can restrict some functions. Please also note that Scratch does not run on the Microsoft Edge browser platform. This lesson assumes that learners have had prior experience of ScratchJr and Bee-Bot for programming activities.

		Lesson 2	I can identify that commands have an outcome
			 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.
				L2 Slides
				 Activities
				     A1 Activity sheet – Planning movement
				     A2 Activity sheet – Exploratory task
				     A3 Activity sheet – Matching motion
				     AP handout – Ordering motion blocks
				 L2 Homework – Which blocks?
				 Devices capable of running Scratch 3

		Lesson 3	I can explain that a program has a start
			 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.
				L3 Slides
				 Activities
				     A0 Handout – Sequence definition
				     A1 Activity sheet – Comparing blocks
				     A2 Activity sheet – Project design
				 L3 Homework – Sequencing sounds

		Lesson 4	I can recognise that a sequence of command can have an order
			 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.
				L4 Slides
				 A1 resource (optional) – Printable Scratch blocks
				 Activities
				     Starter activity – Scratch project (ncce.io/pg3a-4-a0-ca)
				     A1 Activity sheet – Code reading
				     A1 Scratch project (ncce.io/pg3a-4-a1-ca)
				     A2 Handout – Exploratory learning
				     A2 Scratch project (ncce.io/pg3a-4-a2-ca)
				 Classroom screen with sound
				 Devices capable of running Scratch 3
				 Headphones (optional)

		Lesson 5	I can change the appearance of my project
			 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, sprites with costumes, and multiple backdrops.
				L5 Slides
				 Activities
				     Activity 1 Scratch project
				     A2 Handout – Help sheets
				     Activity 2 Scratch project (ncce.io/pg3a-5-a2-ca)
				     A3 Activity sheet – Project design
				 Devices capable of running Scratch 3
				 Headphones (optional)

		Lesson 6	I can create a project from a task description 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.	L6 Slides A1 Activity sheet – Identifying sprites Activity 1 Scratch project (ncce.io/pg3a-6-a1-ca) A2 Activity sheet – Designing your project Devices capable of running Scratch 3 Headphones (optional)

Summer Term 2—Events and Actions in Programs

Prior Learning	Children should know about:: Block coding The Scratch block coding environment How to use events and motion in Scratch Debugging and how it is important in writing a program
End Points	**Draw a shape in Scratch by programming a sprite to follow an algorithm**
Vocabulary	Motion, event, sprite, algorithm, logic, move, resize, algorithm, extension block, pen up, set up, pen, event, action, debugging, errors, design, code, setup, test, debug, actions, events

Key Concept	Second Order Concepts	Lesson Sequence	Learning Objectives	Resources
Creating media	**Responsibility:** (being safe online, using social media responsibly and respectfully, privacy, cyberbullying) **Similarity and difference:** (making comparisons, finding patterns, noting differences and drawing conclusions) **Cause and consequence:** (inputs and outputs, programming) **Significance:** (significant inventions, significant figures from the world of computing) **Chronology:** (changes in technology over time, inventions, future technology)	Lesson1	I can explain how a sprite moves an existing project In this lesson, learners will investigate how characters can be moved using 'events'. They will analyse and improve an existing 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.	L1 Slides Activities: A1 Worksheet – Complete the instructions Scratch project (ncce.io/pg3b-1-a1-ca) Improving movement: A2 Worksheet – Design for moving a sprite Scratch project (ncce.io/pg3b-1-a2-ca)
		Lesson 2	I can create a program to move a sprite in four directions In this lesson, learners will program a sprite to move in four directions: up, down, left, and 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.	L2 Slides Introduction Scratch project (ncce.io/pg3b-2-a0-ca) Activity 1 Scratch project (ncce.io/pg3b-2-a1-ca) Computers capable of running Scratch 3.0. The activities in this lesson require the use of a keyboard, so they are not suitable for tablets.
		Lesson 3	I can adapt a program to a new context This lesson will introduce learners to extension blocks in Scratch using the Pen extension. Learners will use 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.	L3 Slides Activities A3 Worksheet – Setup Computers capable of running Scratch 3.0. The activities in this lesson require the use of a keyboard, so they are not suitable for tablets.
		Lesson 4	I can develop my program by adding features In this lesson, learners will be given the opportunity to use additional Pen blocks. They will 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.	L4 Slides Activities: Experimenting with **Pen** blocks: Scratch project (ncce.io/pg3b-4-a1-ca) A3 Worksheet – Project design Computers capable of running Scratch 3.0. The activities in this lesson require the use of a keyboard, so they are not suitable for tablets. Access to learners' projects from Lesson 3. See the 'Unit overview' for guidance on the use of Scratch teacher and learner accounts.
		Lesson 5	I can identify and fix bugs in a program This lesson explores the process of debugging, specifically looking at how to identify and fix errors in a 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.	L5 Slides Activities: Debugging a project: Project (ncce.io/pg3b-5-a1-ca) A1 Worksheet – Debugging movement A1 Solutions – Debugging movement Debugging setup: project (ncce.io/pg3b-5-a2-ca) Computers capable of running Scratch 3.0 The activities in this lesson require the use of a keyboard, so they are not suitable for tablets.
		Lesson 6	I can design and create a maze-based challenge In this lesson, learners will design and create their own projects. Using a template (which can be blank or 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.	L6 Slides Activities: A1 Worksheet – Design a maze project Code it: Scratch template project (ncce.io/pg3b-6-a2-ca) AP Handout – Project evaluations Computers capable of running Scratch 3.0. The activities in this lesson require the use of a keyboard, so they are not suitable for tablets.