Year 3 Computing Curriculum

Unit Autumn 1	Connecting computers
Summary	Identify that digital devices have inputs, processes and outputs and how devices can be connected to make networks.
NC Objectives	- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output - Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
Teacher Subject Knowledge Required	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, i.e. it has functions beyond being either on or off. You will also need to be familiar with the concept of input, process, output (IPO), which underpins all digital devices. You will need to understand that devices can have one input that leads to several outputs (e.g. starting a video, leads to outputs from the screen and the speaker) and that many inputs can lead to one output (e.g. using a mouse and a keyboard to produce a document). You will need a basic understanding of how information (data) flows around a computer network, and how this benefits us. You will also need to know that a network switch manages the way in which data moves around a network. You will need to be familiar with the main parts of a school network, including the server, wireless access points, network switch, router, and output devices such as a printer or copier.
Hardware/Software required	Paint app – on ipad or desktop Network tour – school map with server, switch and wireless access points marked out
Key Vocabulary	Digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless, access point, cables, sockets
Progression	This unit progresses learners' knowledge and understanding of technology by focusing on digital and non-digital devices, from IT around us Year 2, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks.
Adaptations	SEND pupils would benefit from exploring IT Around Us, Year 2 Teach Computing unit.

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Unit Autumn 2	**Programming A – Sequencing Sounds**
Summary	Creating sequences in a block-based programming language to make music
NC Objectives	- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
Teacher Subject Knowledge Required	This unit focuses on developing learners' understanding of sequences in a new programming language. It highlights that the order of sequences is important. This unit also develops learners' understanding of design in programming, using the approach outlined below. When programming, there are four levels which can help describe a project (known as levels of abstraction). Research suggests that this structure can support learners in understanding how to create a program and how it works: - Task - what is needed - Design - what it should do - Code - how it is done - Running the code - what it does Spending time at the task and design levels before engaging in code-writing can aid learners in assessing the 'do-ability' of their programs. It also reduces a learner's cognitive load during programming. Learners will move between the different levels throughout the unit and this is highlighted within each lesson plan.
Hardware/Software required	Scratch ScratchJr App
Key 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, order, note, chord, algorithm, bug, debug, code
Progression	This unit assumes that learners will have some prior experience of programming; via the KS1 NCCE units. They will have experienced programming via floor robots; Moving A Robot Year 1 and Robot algorithms Year 2, alongside the use of ScratchJr through Programming animations Year 1 and Programming quizzes Year 2. ScratchJr uses a similar programming environment to Scratch, which is highlighted in lesson 1 of this unit.
Adaptations	ScratchJr app can be used to introduce simple sequences of code.

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Unit Spring 1	**Programming B – Events and actions in programs**
Summary	Writing algorithms and programs that use a range of events to trigger sequences of actions
NC Objectives	- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
Teacher Subject Knowledge Required	- Task — this is what is needed - Design — this is what it should do - Code — this is how it is done - Running the code — this is what it does
Hardware/Software required	Scratch
Key Vocabulary	Motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions
Progression	This unit assumes that learners will have some prior experience of programming. The Year 3 — Programming A unit introduces the Scratch programming environment and the concept of sequences.
Adaptations	

Year 3 Computing Curriculum

Unit Spring 2	**Desktop Publishing**
Summary	Creating documentsand modifying text, images and page layouts for a specific purpose.
NC Objectives	- use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
Teacher Subject Knowledge Required	You will need to recognise the different ways in which information can be presented on a page (letters, postcards, posters etc.) and the different purposes each of these formats are used for. Additionally, you will need to have an understanding of the advantages of using text, images, or both to communicate messages. Within your chosen desktop publishing software, you will need to be confident in showing pupils how to change font size, colour, and style, guidance is provided within the resources for this unit. You will also need to know how to create templates using placeholders, as well as an awareness of the additional tools available to you. The ability to share files with your learners, via Canva, (or if using other software via Google Drive or on your school's network) would support the delivery of this unit. You should be aware of your school's procedures relating to children searching for images and how to report any issues.
Hardware/Software required	The suggested application for this unit is Canva https://www.canva.com/ . Canva is web based and can be used on tablets, desktops and laptops. Mac, Windows and Android apps are available: https://www.canva.com/download/windows/ . **Students below the age of 13 require parental consent to use Canva for Education. For further details and to download a sample consent template visit:** https://www.canva.com/help/invite-teachers-and-students/ To use Canva as a teacher, you will require a Canva for Education account. To learn more and sign up for a FREE Canva teacher account visit: https://www.canva.com/help/about-canva-for-education/. Google or Word can be used in replace of the above.
Key Vocabulary	Text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits
Progression	This unit progresses learners' knowledge and understanding of using digital devices to combine text and images
Adaptations	

Year 3 Computing Curriculum

Unit Summer 1	Stop Frame Animation
Summary	Capturing and editing digital still images to produce a stop frame animation that tells a story.
NC Objectives	- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Teacher Subject Knowledge Required	Teachers will need to understand that animations are a series of still images stitched together to create a motion video. Teachers need to understand how to create a simple off-screen flipbook and how to use software to create an on-screen animation. Within their chosen software, teachers will need to be aware of 'onion skinning' (showing a part transparent photo to demonstrate the previous frame to make small movements more consistent), deleting frames and saving.
Hardware/Software required	i-motion app on Ipad Stop Motion Studio
Key Vocabulary	Animation, flip-book, stop-frame, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition
Progression	This unit progresses learner's knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. It builds on learners previous understanding of images from the Digital Photography Year 2 unit. Following this unit, learners will further develop their video editing skills in Year 5.
Adaptations	

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Unit Summer 2	**Branching Databases**
Summary	Building and using branching databases to group objects using yes/no questions
NC Objectives	- Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Teacher Subject Knowledge Required	A branching database is a collection of data organised in a tree structure using yes/no or true/false questions. In computer science, these are known as binary trees. You will also need to be familiar with the term 'attributes'. An attribute includes its name and a value. For example, a ball will have a colour, which might be red. 'Colour' is the attribute name, and 'red' is the attribute value. Learners may be familiar with the term 'property' introduced in Year 1 – 'Grouping data'. The terms 'property' and 'attribute' are interchangeable; however, 'property' has been used in resources designed for younger children to make them more accessible.
Hardware/Software required	j2data Pictogram, Branch, and Database tools (see https://www.j2e.com/jit5#branch
Key Vocabulary	Attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.
Progression	This unit progresses learners' knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from key stage 1. They will continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.
Adaptations	