



Newbald Primary School

Computing

Framework
Year 3&4





Key Concepts



Within Computing, pupils will develop a deep understanding of key concepts and second order concepts. These key concepts have been carefully considered and identified as the core knowledge, skills and confidence to engage with technology required to successfully achieve in a digital world. The Key concepts are revisited and developed as the pupils move through the school to ensure the knowledge, skills and confidence to engage with technology are firmly embed within the long-term memory. All concepts encompass the three strands of computing: Computer Science, Digital literacy and Information technology.

Key Concepts:

- **Programming:** (interpreting, creating and evaluating algorithms, programming to accomplish specific goals, detecting and correcting errors)
- **Computing systems and networks:** (systems, networks and how they are used, the internet, hardware and software)
- **Data and information:** (collecting, analysing, evaluating, presenting data and information)
- **Creating media:** (design and development, communicating and collaborating online, evaluating online content, respectful and responsible communication, presenting, creating content)

As part of the work on each key concept, children also explore and learn about:

- The effective use of tools
- The impact of technology
- Safety, E-Safety and security



Cycle A	Class 2	Class 3	Class 4
Autumn 1	Florence Nightingale & Mary Seacole Creating Media - Digital Painting (Year 1) https://teachcomputing.org/curriculum/key-stage-1/creating-media-digital-painting 	Prehistoric Britain Programming B - Events and Actions (Year 3) https://teachcomputing.org/curriculum/key-stage-2/programming-b-events-and-actions 	Ancient Egypt Programming B - Selection in Quizzes (Year 5) https://teachcomputing.org/curriculum/key-stage-2/programming-b-selection-in-quizzes 
Autumn 2	Australia & Oceania Creating Media - Making Music (Year 2) https://teachcomputing.org/curriculum/key-stage-1/creating-media-making-music 	The Victorians Data and Information - Branching Databases (Year 3) https://teachcomputing.org/curriculum/key-stage-2/data-and-information-branching-databases 	Europe Creating Media - Vector Drawing (Year 5) https://teachcomputing.org/curriculum/key-stage-2/creating-media-vector-drawing 
Spring 1	Weather & Climate Programming B - An Introduction to Quizzes (Year 2) https://teachcomputing.org/curriculum/key-stage-1/programming-b-an-introduction-to-quizzes 	India & Asia Programming B - Repetition in Games (Year 4) https://teachcomputing.org/curriculum/key-stage-2/programming-b-repetition-in-games 	The Tudors Creating Media - Webpage (Year 6) https://teachcomputing.org/curriculum/key-stage-2/creating-media-web-page-creation 
Spring 2	Explorers Programming B - Introduction to Animation (Year 1) https://teachcomputing.org/curriculum/key-stage-1/programming-b-introduction-to-animation 	England & The UK Computer Systems and Networks - The Internet (Year 4) https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-the-internet 	Mountains Data and Information - Flat File Data (Year 5) https://teachcomputing.org/curriculum/key-stage-2/data-and-information-flat-file-databases 
Summer 1	Local Area - Yorkshire Data and Information - Grouping Data (Year 1) https://teachcomputing.org/curriculum/key-stage-1/data-and-information-grouping-data 	Coasts Creating Media - Animation (Year 3) https://teachcomputing.org/curriculum/key-stage-2/creating-media-animation 	Britain Since 1945 Computer Systems and Networks - Sharing Information (Year 5) https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-sharing-information 
Summer 2	Inventors & Inventions Computer Systems and Networks - IT Around Us (Year 2) https://teachcomputing.org/curriculum/key-stage-1/computing-systems-and-networks-it-around-us 	The Anglo Saxons & Vikings Creating Media - Photo Editing (Year 4) https://teachcomputing.org/curriculum/key-stage-2/creating-media-photo-editing 	Britain Since 1945 Programming B - Sensing (Year 6) https://teachcomputing.org/curriculum/key-stage-2/programming-b-sensing 



Cycle B	Class 2	Class 3	Class 4
Autumn 1	Transport Through Time Data and Information - Pictograms (Year 2) https://teachcomputing.org/curriculum/key-stage-1/data-and-information-pictograms 	World War 2 Creating Media - Audio Editing (Year 4) https://teachcomputing.org/curriculum/key-stage-2/creating-media-audio-editing 	World War 1 Data and Information - Spreadsheets (Year 6) https://teachcomputing.org/curriculum/key-stage-2/data-and-information-spreadsheets 
Autumn 2	Polar Regions Creating Media - Digital Writing (Year 1) https://teachcomputing.org/curriculum/key-stage-1/creating-media-digital-writing 	USA & North America Computer Systems and Networks - Connecting Computers (Year 3) https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-connecting-computers 	Brazil & South America Programming A - Selection in Physical Computing (Year 5) https://teachcomputing.org/curriculum/key-stage-2/programming-a-selection-in-physical-computing 
Spring 1	Great Fire of London Computer Systems and Networks - Technology around us (Year 1) https://teachcomputing.org/curriculum/key-stage-1/computing-systems-and-networks-technology-around-us 	The Romans Programming A - Repetition in Shapes (Year 4) https://teachcomputing.org/curriculum/key-stage-2/programming-a-repetition-in-shapes 	Ancient Greece Programming A - Variables in Games (Year 6) https://teachcomputing.org/curriculum/key-stage-2/programming-a-variables-in-games 
Spring 2	Pirates & The Ocean Programming A - Moving a Robot (Year 1) https://teachcomputing.org/curriculum/key-stage-1/programming-a-moving-a-robot 	Volcanoes, Earthquakes & Natural Disasters Programming A - Sequence in Music (Year 3) https://teachcomputing.org/curriculum/key-stage-2/programming-a-sequence-in-music 	Human Rights Activists Creating Media - Video Editing (Year 5) https://teachcomputing.org/curriculum/key-stage-2/creating-media-video-editing 
Summer 1	An Island Home(Scotland) Programming A - Robot Algorithms (Year 2) https://teachcomputing.org/curriculum/key-stage-1/programming-a-robot-algorithms 	Forests Data and Information - Data Logging (Year 4) https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging 	The Mayan Civilisation Creating Media - 3D Modelling (Year 6) https://teachcomputing.org/curriculum/key-stage-2/creating-media-3d-modelling 
Summer 2	Creating Media - Digital Photography (Year 2) https://teachcomputing.org/curriculum/key-stage-1/creating-media-digital-photography 	The Middle Ages Creating Media - Desktop Publishing (Year 3) https://teachcomputing.org/curriculum/key-stage-2/creating-media-desktop-publishing 	Maps & Rivers Computer Systems and Networks - Communication (Year 6) https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-communication 



Class 3 - Year 3 & 4 Vocabulary



Year 3 & 4 Vocabulary Cycle A

Prehistoric Britain Programming B - Events and actions in programs	The Victorians Data and Information - Branching databases	India & Asia Programming B - Repetition in games
motion, event, sprite, algorithm, logic, move, resize, extension block, pen up, set up, pen, design, action, debugging, errors, setup, code, test, debug, actions.	attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.	Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.
England & The UK Computing systems and networks - Connecting computers - The internet	Coasts Creating Media - Stopframe animation	The Anglo Saxons & Vikings Creating Media - Photo editing
internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts	animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.	image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.

Year 3 & 4 Vocabulary Cycle B

World War 2 Creating Media - Audio production	USA & North America Computing systems and networks - Connecting computers	The Romans Programming A - Repetition in shapes
audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback.	digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets	Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count- controlled loop, value, trace, decompose, procedure.
Volcanoes, Earthquakes & Natural Disasters Programming A - Sequencing sounds	Forests Data and Information - Data logging	Middle Ages Creating Media - Desktop publishing
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.	data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.	text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.

Class 3 Cycle A

	Class 3	
Autumn 1	Prehistoric Britain	Programming B - events and actions
Autumn 2	Victorians	Data and information - Branching databases
Spring 1	India and Asia	Programming B - Repetition in games
Spring 2	England and the UK	Computer systems and networks - The internet
Summer 1	Coasts	Creating media - animation
Summer 2	Anglo Saxons and Vikings	Creating media - photo editing

Prehistoric Britain

Programming B - Events and Actions in Programs

<https://teachcomputing.org/curriculum/key-stage-2/programming-b-events-and-actions>



This unit explores the links between events and actions, whilst consolidating prior learning relating to sequencing. Learners will begin by moving a sprite in four directions (up, down, left and right). They will then explore movement within the context of a maze, using design to choose an appropriately sized sprite. This unit also introduces programming extensions, through the use of pen blocks. Learners are given the opportunity to draw lines with sprites and change the size and colour of lines. The unit concludes with learners designing and coding their own maze tracing program.

Lesson	Brief overview	Learning objectives
1 Moving a sprite	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.	To explain how a sprite moves in an existing project - I can explain the relationship between an event and an action - I can choose which keys to use for actions and explain my choices - I can identify a way to improve a program
2 Maze movement	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.	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
3 Drawing lines	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.	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

4 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.	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
5 Debugging movement	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.	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
6 Making a project	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.	To design and create a maze-based challenge - I can make design choices and justify them - I can implement my design - I can evaluate my project

Vocabulary:

Prehistoric Britain

Programming B - Events and actions in programs

motion, event, sprite,
algorithm, logic, move,
resize, extension block, pen up, set up, pen, design,
action, debugging, errors, setup, code, test, debug, actions.



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	Describe the genre of the project, for example, a musical instrument	Describe the purpose of the project, for example, to create sounds when keys are pressed	Describe the needs of the audience of the project, for example, the keys will show which one you pressed to help you remember
Knowledge	- Rename a sprite - Choose a backdrop and costumes - Create an algorithm that associates a sound with an event - Understand that algorithms have a sequence	- Choose a name that describes the action of the sprite - Choose relevant backdrops and costumes - Create an algorithm for each sprite - Explain what sequence means and demonstrate it in an algorithm	- Identify the attributes of the sprite, for example, code, costume, and sound - Change the appearance of the sprite and backdrop in response to user input - Identify aspects of the algorithm that can be reused for subsequent sprites - Give multiple examples of sequences including in algorithms
Implementation	- Translate their design into code for an individual sprite - Talk about the sequence of their code	- Adapt their code for additional named sprites - Explain why the code is in that particular sequence	- Include additional code that enhances the function of the program and reflects design choices - Explain what each bit of code does and why it is in that particular sequence
Evaluation	Run their code successfully and it meets elements of the task	Run their code and identify if it meets the requirements of the task	Run their code and explain how it meets the requirements of the task

Victorians

Data and information - Branching databases

<https://teachcomputing.org/curriculum/key-stage-2/data-and-information-branching-databases>



Learners will develop their understanding of what a branching database is and how to create one. They will use yes/no questions to gain an understanding of what attributes are and how to use them to sort groups of objects. Learners will create physical and on-screen branching databases. To conclude the unit, they will create an identification tool using a branching database, which they will test by using it. They will also consider real-world applications for branching databases. For this unit, both you and your learners will need access to the j2data Pictogram, Branch, and Database tools (see <https://www.j2e.com/jit5#branch> or similar).

Lesson	Brief overview	Learning objectives
1 Yes or no questions	Learners will start to explore questions with yes/no answers, and how these can be used to identify and compare objects. They will create their own yes/no questions, before using these to split a collection of objects into groups.	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
2 Making groups	Learners will develop their understanding of using questions with yes/no answers to group objects more than once. They will learn how to arrange objects into a tree structure and will continue to think about which attributes the questions are related to.	To identify the attributes needed to collect data about an object - I can select an attribute to separate objects into groups - I can create a group of objects within an existing group - I can arrange objects into a tree structure
3 Creating a branching database	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/no answers. Learners will show that their branching database works through testing.	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

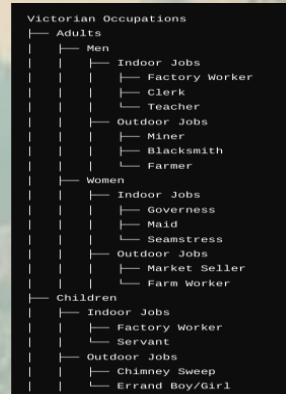
4 Structuring a branching database	Learners will continue to develop their understanding of how to create a well-structured database. They will use attributes to create questions with yes/no answers, and will apply these to given objects. Learners will compare the efficiency of different branching databases, and will be able to explain why questions need to be in a specific order.	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 - I can explain that questions need to be ordered carefully to split objects into similarly sized groups
5 Planning a branching database	Learners will independently plan a branching database by creating a physical representation of one that will identify different types of dinosaur. They will continue to think about the attributes of objects to write questions with yes/no answers, which will enable them to separate a group of objects effectively. Learners will then arrange the questions and objects into a tree structure, before testing the structure.	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
6 Making a dinosaur identifier	Learners will independently create a branching database to identify different types of dinosaur, based on the paper-based version that they created in Lesson 5. They will then work with a partner to test that their database works, before considering real-world applications for branching databases.	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

Vocabulary:

The Victorians

Data and Information - Branching databases

attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.





Victorians

Unit: Data and information - Branching databases



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Asking questions	• Suggests what topic they want to ask a question about • Chooses a relevant question that can be answered using a data logger	• Suggests questions that require data from at least one sensor to answer them • Suggests questions that require data to be collected over time to answer them	• Suggests questions that require data from more than one sensor and/or time frame to answer them
Collecting data	• Identifies what time of day they need to collect data • Chooses the most relevant place a data logger could be set up	• Identifies a suitable time frame to collect data to answer their question • Identifies where the data logger needs to be placed to answer their question • Identifies which sensor(s) needs to be used to answer their question	• Suggests the time frame that will offer the most varied data • Evaluates the most effective place to collect data
Viewing data	• Uses software to view collected data • Recognises some data points in their data	• Uses software to view relevant data • Recognises how some data points are different	• Uses zoom features to look at sections of data more closely • Describes the differences in data points
Findings	• Recognises changes in a graph • Identifies the part of the graph that could help them answer their question	• Makes statements about what their data shows • Uses their collected data to answer their question	• Identifies the parts of their data most relevant to answering their question • Suggests other questions that their data could answer

India and Asia

Programming B - Repetition in games

<https://teachcomputing.org/curriculum/key-stage-2/programming-b-repetition-in-games>

Learners will explore the concept of repetition in programming using the Scratch environment. The unit begins with a Scratch activity similar to that carried out in Logo in Programming unit A, where learners can discover similarities between two environments. Learners look at the difference between count-controlled and infinite loops and use their knowledge to modify existing animations and games using repetition. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.

Learners will need to have access to Scratch for this unit. The online version of Scratch runs via a web browser and can be accessed on desktops, laptops and tablets. You may want to consider setting up a teacher account, to create logins for learners to save and access their projects. If internet connectivity is an issue in school, Scratch can be accessed offline via the Scratch app.



Lesson	Brief overview	Learning objectives
1 Using loops to create shapes	In the first lesson, learners look at real-life examples of repetition, and identify which parts of instructions are repeated. Learners then use Scratch, a block-based programming environment, to create shapes using count-controlled loops. They consider what the different values in each loop signify, then use existing code to modify and create new code, and work on reading code and predicting what the output will be once the code is run.	To develop the use of count-controlled loops in a different programming environment - I can list an everyday task as a set of instructions including repetition - I can predict the outcome of a snippet of code - I can modify a snippet of code to create a given outcome
2 Different loops	In this lesson, learners look at different types of loops: infinite loops and count-controlled loops. They practise using these within Scratch and think about which might be more suitable for different purposes.	To explain that in programming there are infinite loops and count-controlled loops - I can modify loops to produce a given outcome - I can choose when to use a count-controlled and an infinite loop - I can recognise that some programming languages enable more than one process to be run at once
3 Animate your name	In this lesson, learners create designs for an animation of the letters in their names. The animation uses repetition to change the costume (appearance) of the sprite. The letter sprites will all animate together when the event block (green flag) is clicked. When they have designed their animations, the learners will program them in Scratch. After programming, learners then evaluate their work, considering how effectively they used repetition in their code.	To develop a design that includes two or more loops which run at the same time - I can choose which action will be repeated for each object - I can explain what the outcome of the repeated action should be - I can evaluate the effectiveness of the repeated sequences used in my program

4 Modifying a game	In this lesson, learners look at an existing game and match parts of the game with the design. They make changes to a sprite in the existing game to match the design. They then look at a completed design, and implement the remaining changes in the Scratch game. They add a sprite, re-use and modify code blocks within loops, and explain the changes made.	To modify an infinite loop in a given program - I can identify which parts of a loop can be changed - I can explain the effect of my changes - I can re-use existing code snippets on new sprites
5 Designing a game	In this lesson, learners look at a model project that uses repetition. They then design their own games based on the model project, producing designs and algorithms for sprites in the game. They share these designs with a partner and have time to make any changes to their design as required.	To design a project that includes repetition - I can evaluate the use of repetition in a project - I can select key parts of a given project to use in my own design - I can develop my own design explaining what my project will do
6 Creating your games	In this lesson, learners build their games, using the designs they created in Lesson 5. They follow their algorithms, fix mistakes, and refine designs in their work as they build. They evaluate their work once it is completed, and showcase their games at the end.	To create a project that includes repetition - I can refine the algorithm in my design - I can build a program that follows my design - I can evaluate the steps I followed when building my project

Vocabulary:

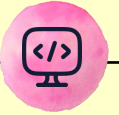
India & Asia Programming B - Repetition in games

Scratch, programming, sprite, blocks, code, loop, repeat, value, infinite loop, count-controlled loop, costume, repetition, forever, animate, event block, duplicate, modify, design, algorithm, debug, refine, evaluate.



India and Asia

Unit: Programming B - Repetition in games



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	Outline the main requirements of the task	Detail the specific requirements of the task	Describe the key steps required to complete the task
Design	- Choose a sprite and a backdrop - Create an algorithm for the sprites that uses repetition	- Choose relevant sprites and backdrops for a game - Create an algorithm that includes show, hide, and move blocks - Create an algorithm that includes relevant sound blocks	- Identify how additional sprites may need to be modified to enhance the game, for example, use wait blocks to stagger the timing of sprites appearing - Identify aspects of the algorithm that can be reused for additional sprites
Code	Translate their design into code for an individual sprite	- Create additional sprites and copy code over to those sprites - Modify their code for additional sprites	Include additional code that enhances the function of the game and reflects design choices
Running the code	Run their code successfully and it meets elements of the task	Run their code and identify whether it meets the requirements of the task	Run their code and explain how it meets the requirements of the task

England and the UK

Computer systems and networks - The internet



<https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-the-internet>

Learners will apply their knowledge and understanding of networks, to appreciate the internet as a network of networks which need to be kept secure. They will learn that the World Wide Web is part of the internet, and will be given opportunities to explore the World Wide Web for themselves in order to learn about who owns content and what they can access, add, and create. Finally, they will evaluate online content to decide how honest, accurate, or reliable it is, and understand the consequences of false information.

You will need digital devices for learners to interact with during this unit, with access to the internet. Chrome Music Lab is used in one lesson to demonstrate content which can be produced on the World Wide Web.

Lesson	Brief overview	Learning objectives
1 Connecting networks	Learners will explore how a network can share messages with another network to form the internet. They will consider some of the network devices involved in this, such as routers, and will also discuss what should be kept in and out of a network to keep safe.	To describe how networks physically connect to other networks - I can describe the internet as a network of networks - I can demonstrate how information is shared across the internet - I can discuss why a network needs protecting
2 What is the internet made of?	Learners will describe the parts of a network and how they connect to each other to form the internet. They will use this understanding to help explain how the internet lets us view the World Wide Web and recognise that the World Wide Web is part of the internet which contains websites and web pages.	To recognise how networked devices make up the internet - I can describe networked devices and how they connect - I can explain that the internet is used to provide many services - I can recognise that the World Wide Web contains websites and web pages
3 Sharing information	Learners will explore what can be shared on the World Wide Web and where websites are stored. They will also explore how the World Wide Web can be accessed on a variety of devices.	To outline how websites can be shared via the World Wide Web (WWW) - I can explain the types of media that can be shared on the WWW - I can describe where websites are stored when uploaded to the WWW - I can describe how to access websites on the WWW

4 What is a website?	Learners will analyse a website and identify the key parts. They will then consider what content can be added to websites and what factors they should consider before adding content to a website. Finally, they will use a website which enables them to create their own content online.	To describe how content can be added and accessed on the World Wide Web (WWW) - I can explain what media can be found on websites - I can recognise that I can add content to the WWW - I can explain that internet services can be used to create content online
5 Who owns the web?	Learners will explore who owns the content on the World Wide Web (or 'web' for short). They will explore a variety of websites and will investigate what they can and cannot do with the content on them. They will also relate this to principles of ownership and sharing in the real world.	To recognise how the content of the WWW is created by people - I can explain that websites and their content are created by people - I can suggest who owns the content on websites - I can explain that there are rules to protect content
6 Can I believe what I read?	Learners will gain an appreciation of the fact that not everything they see on the internet is true, honest, or accurate. They will review images and decide whether or not they are real, before looking at why web searches can return ambiguous (and sometimes misleading) results. Finally, learners will complete a practical activity, demonstrating how quickly information can spread beyond their control.	To evaluate the consequences of unreliable content - I can explain that not everything on the World Wide Web is true - I can explain why some information I find online may not be honest, accurate, or legal - I can explain why I need to think carefully before I share or reshare content

Vocabulary:

England & The UK

Computing systems and networks - Connecting computers - The internet

internet, network, router, security, switch, server, wireless access point (WAP), website, web page, web address, routing, web browser, World Wide Web, content, links, files, use, download, sharing, ownership, permission, information, accurate, honest, content, adverts



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	Explain the key requirements of the task	Outline an approach to planning the task	Outline a detailed approach to planning the task
Knowledge	- Begin to describe the internet as a network of networks - Identify networked devices - Begin to recognise that the World Wide Web contains websites and web pages - Know examples of media that can be shared on the WWW - Begin to explain that websites and their content are created by people - Begin to understand that content on websites are owned by different people. - Begin to understand that there are rules to protect content - Know that some things on the World Wide Web are not true, honest or accurate - Begin to explain why I need to think carefully before I share or reshare content	- Describe the internet as a network of networks - Demonstrate how information is shared across the internet - describe networked devices and how they connect - explain that the internet is used to provide many services - recognise that the World Wide Web contains websites and web pages - explain the types of media that can be shared on the WWW - describe where websites are stored when uploaded to the WWW - explain that websites and their content are created by people - suggest who owns the content on websites - explain that there are rules to protect content - explain that not everything on the World Wide Web is true, honest or accurate - explain why I need to think carefully before I share or reshare content	- Describe in detail how the internet is a network of networks - Demonstrate and describe how information is shared across the internet - Explain how networked devices are connected - Explain and give examples of how the internet is used to provide many services - Know and explain that World Wide Web contains websites and web pages - Explain multiple types of media that can be shared on the WWW - Explain and describe where websites are stored when uploaded to the WWW - Know and Explain that websites and their content are created by people - Begin to understand the concept of copywrite and suggest who owns the content on websites - Explain that there are rules and laws to protect content - Explain that not everything on the World Wide Web is true, honest or accurate and demonstrate this - Is knowledgeable about e-safety and can explain why I need to think carefully before I share or reshare content
Implementation	- access websites on the WWW - add content to the WWW	- Can access websites on the WWW - Can add content to the WWW	- Can access specific websites on the WWW using advanced search tools, web addresses and hyperlinks - Can add detailed content to the WWW - Can use Wikis and/ or website editors to understand how websites can be changed by people
Evaluation	Evaluate how successful they were in meeting the task requirements	Identify how and why their project could be improved	Identify how and why their project could be improved giving examples and details about how this could be done

Coasts

Creating media - animation

<https://teachcomputing.org/curriculum/key-stage-2/creating-media-animation>

Learners will use a range of techniques to create a stop-frame animation. Next, they will apply those skills to create a story-based animation. This unit will conclude with learners adding other types of media to their animation, such as music and text.

A tablet is recommended for this unit to allow pupils to take photos and create animations on a single device. This unit uses screenshots from iMotion, an iPad app. Stop Motion Studio, an alternative app, can be used across most devices.



Lesson	Brief overview	Learning objectives
1 Can a picture move?	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.	To explain that animation is a sequence of drawings or photographs - I can draw a sequence of pictures - I can create an effective flip book—style animation - I can explain how an animation/flip book works
2 Frame by frame	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.	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
3 What's the story?	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.	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

4 Picture perfect	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.	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
5 Evaluate and make it great!	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.	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
6 Lights, camera, action!	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.	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

Vocabulary:

Coasts

Creating Media - Stop-frame animation

animation, flip book, stopframe, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition.



Coasts

Unit: Creating media - animation



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	Outline the broad requirements of the task	Explain the key requirements of the task	Outline an approach to planning the task
Design decisions	Storyboard contains pictures and notes related to the story	Storyboard has a clear beginning, middle, and end	Storyboard indicates what is needed to create the animation
Implementation	- Several frames used to create movement - The animation relates to a relevant story - Make some changes - Recognise that media can be added	- Movement is smooth - The animation follows the storyboard - Make some improvements - Add some additional media	- Movement is consistent throughout - The animation Includes flying objects - Identify improvements and make those changes - Use additional media to enhance the animation
Evaluation	Identify which elements of the task have been achieved	Evaluate how successful they were in meeting the task requirements	Identify how and why their project could be improved

Anglo Saxons and Vikings

Creating media - photo editing

<https://teachcomputing.org/curriculum/key-stage-2/creating-media-photo-editing>



Learners will develop their understanding of how digital images can be changed and edited, and how they can then be resaved and reused. They will consider the impact that editing images can have and evaluate the effectiveness of their choices.

The suggested software for this unit is Paint.net: <https://www.getpaint.net/download.html> which requires a download and is compatible with Windows devices. Other image editing software is available such as Pixlr, PhotoPea and Lunapic. When using alternate software, please ensure you check your school policies and procedures, as image searching may be possible, and there may be adverts on the website.

Lesson	Brief overview	Learning objectives
1 Changing digital images	In this lesson, you will introduce learners to the concept of editing images and discuss whether or not editing is ethical. They will go on to explore when we need to rotate and crop an image as well as how to use an image editor to make these changes. Learners will then discuss image composition.	To explain that the composition of digital images can be changed - I can improve an image by rotating it - I can explain why I might crop an image - I can use photo editing software to crop an image - I understand that editing images can be unethical
2 Recolouring	In this lesson, learners will look at the effect that different colours and filters can have on an image. They will choose appropriate effects to fit a scenario, and explain how they made their choices. They will then edit the images using different effects to suit two different scenarios.	To explain that colours can be changed in digital images - I can explain that different colour effects make you think and feel different things - I can experiment with different colour effects - I can explain why I chose certain colour effects
3 Cloning	In this lesson, learners will be introduced to the cloning tool and its use in both changing the composition of a photo and photo retouching. They will see how parts of a photo can be removed or duplicated using cloning. Learners will consider what parts of an image can be retouched and learn techniques to make this as unnoticeable as possible. Finally, they will consider when it is necessary to edit photographs in this way.	To explain how cloning can be used in photo editing - I can add to the composition of an image by cloning - I can identify how a photo edit can be improved - I can remove parts of an image using cloning

4 Combining	In this lesson, students learn how to use different tools to select areas of an image. Learners then use copy and paste within one image and between two images to produce a combined image. Finally, learners will consider when it's appropriate to edit an image and discuss some of the ethics around retouching photos.	To explain that images can be combined • I can experiment with tools to select and copy part of an image • I can use a range of tools to copy between images • I can explain why photos might be edited
5 Creating	In this lesson, learners will apply all the skills they have learnt in the unit so far. They will start by reviewing some images and considering what makes an image look real or made up. Learners will then plan their own image. They will choose from a selection of images, open them and edit them to create their own project.	To combine images for a purpose • I can describe the image I want to create • I can choose suitable images for my project • I can create a project that is a combination of other images
6 Evaluating	This lesson is the final lesson in the unit on photo editing. Learners will review the image that they created in Lesson 5. After they have reviewed their image, they will have the opportunity to make changes to their image based on their review. Learners will then add text to their image to complete it as a publication.	To evaluate how changes can improve an image • I can review images against a given criteria • I can use feedback to guide making changes • I can combine text and my image to complete the project

Vocabulary:

The Anglo Saxons & Vikings Creating Media - Photo editing

image, edit, digital, crop, rotate, undo, save, adjustments, effects, colours, hue, saturation, sepia, vignette, image, retouch, clone, select, combine, made up, real, composite, cut, copy, paste, alter, background, foreground, zoom, undo, font.



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	Outline the broad requirements of the task	Explain the key requirements of the task	Outline an approach to planning the task
Design decisions	- Describe the scene they intend to create - Suggest words that relate to their chosen scene	- Identify the types of image needed in relation to their chosen theme - Outline how the images will be used together - Suggest colours and effects that might suit their scene	- Explain how images need to work together to create a realistic scene - Identify the steps needed to create their scene
Implementation	- Make attempts to combine images using copy and paste - Add text to their publication	- Select images and combine them into one - Use a range of tools to create their image - Add relevant text to their publication	- Purposefully combine images - Fine tune their work using suitable editing tools and zoom - Make considered choices when positioning and formatting their text
Evaluation	Describe what was successful and unsuccessful in their work	Evaluate how successful they were in meeting the task requirements	Evaluate and reflect on the impact that changes have made on an image

Class 3 Cycle B

Autumn 1	World War 2	Creating media - Audio editing
Autumn 2	USA and North America	Computer systems and networks - Connecting computers
Spring 1	The Romans	Programming A - Repetition in shape
Spring 2	Volcanoes, Earthquakes and Natural Disasters	Programming A - Sequence in music
Summer 1	Forests	Data and information - Data logging
Summer 2	Middle Ages	Creating media - Desktop publishing

World War II

Creating media - Audio editing



<https://teachcomputing.org/curriculum/key-stage-2/creating-media-audio-editing>

Unit introduction

Learners will identify the input device (microphone) and output devices (speaker or headphones) required to work with sound digitally. Learners will discuss the ownership of digital audio and the copyright implications of duplicating the work of others. In order to record audio themselves, learners will use Audacity to produce a podcast, which will include editing their work, adding multiple tracks, and opening and saving the audio files. Finally, learners will evaluate their work and give feedback to their peers.

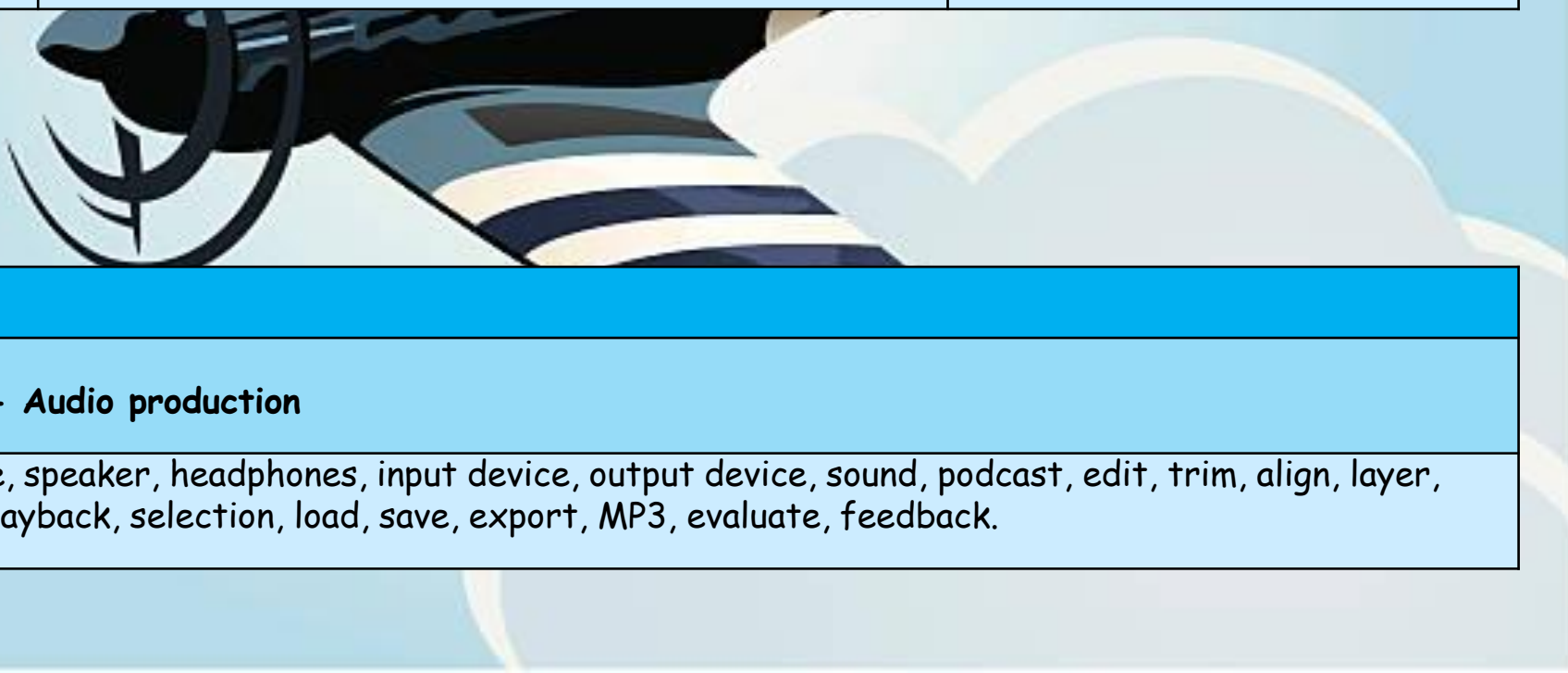
This unit presumes the use of laptops or desktops (with microphones and headphones) and the free program Audacity (<https://audacityteam.org/download>), but other audio recording apps are available if you wish to use tablets. It's advisable to use headphones in a classroom setting, as they make it easier for learners to hear their recordings whilst also reducing the overall background noise.

Throughout this unit, there are opportunities to model actions for the learners in Audacity, or to demonstrate a concept through an animated screen recording. Pedagogically, it is more beneficial to model the concepts for the learners, which allows for easier questioning and understanding. We recommend that you use the screen recordings to see what needs to be modelled, but give a live demonstration within the lesson. However, the recordings are provided on the slides if you wish to use them instead.



Lesson	Brief overview	Learning objectives
1. Recording sound	In this lesson, learners will identify the input devices used to record sound and output devices needed to listen to it. They will then record their voices using a computer, and reflect on what makes a good audio recording. Lastly, learners will consider ownership and copyright issues related to recordings.	To identify that sound can be recorded - I can identify the input and output devices used to record and play sound - I can use a computer to record audio - I can explain that the person who records the sound can say who is allowed to use it
2. Editing audio	In this lesson, learners will record and re-record their voices to improve their recordings. They will edit the recordings, removing long pauses and mistakes. Learners will also listen to a range of podcasts and identify the features of a podcast.	To explain that audio recordings can be edited - I can re-record my voice to improve my recording - I can inspect the soundwave view to know where to trim my recording - I can discuss what sounds can be added to a podcast
3. Planning a podcast	In this lesson, learners will record their voices and then import and align sound effects to create layers in their recordings. Learners will learn how to save their work so it remains editable. They will then plan their own podcast which they will work on in future lessons.	To recognise the different parts of creating a podcast project - I can explain how sounds can be combined to make a podcast more engaging - I can save my project so the different parts remain editable - I can plan appropriate content for a podcast

4. Creating a podcast	In this lesson, learners will record the voice tracks for their podcast. They will review their recordings and re-record if necessary. Learners will edit, trim, and align their voice recordings, and then save their project so they can continue working on it in the next lesson.	To apply audio editing skills independently - I can record content following my plan - I can review the quality of my recordings - I can improve my voice recordings
5. Combining audio	In this lesson, learners will develop their podcast further by adding content such as sound effects and background music. The audio will be layered with their existing voice recordings and exported as an audio file.	To combine audio to enhance my podcast project - I can open my project to continue working on it - I can arrange multiple sounds to create the effect I want - I can explain the difference between saving a project and exporting an audio file
6. Evaluating podcasts	In this lesson, learners will evaluate their own podcasts and that of others. After looking at the evaluation, learners will decide if they can improve their podcast and then make any changes they have chosen.	To evaluate the effective use of audio - I can listen to an audio recording to identify its strengths - I can suggest improvements to an audio recording - I can choose appropriate edits to improve my podcast



Vocabulary:

World War 2

Creating Media - Audio production

audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback.



World War II

Unit: Creating media - Audio editing



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	Outline the broad requirements of the task	Explain the key requirements of the task	Outline an approach to planning the task
Design decisions	- Outline the key message of their podcast - List some sounds to include	- Explain the key information that the podcast will include - Identify the types of sound that will be included - Include intro, main content, and outro sections in the plan	- Use the plan to identify where different types of sound will be used in their podcast - Outline why selected sounds will add to the podcast's key message
Implementation	- Voice is recorded and some speech is recognisable - Additional audio is imported - Use editing tools to trim the excess from the start and end of recordings - Arrange tracks so that they are played in order - Additional audio is layered	- Voice recordings are clear and relevant - Appropriate audio is imported - Use editing tools to remove some unneeded sounds or pauses - Additional audio is appropriately placed to play alongside the voice recording - Appropriate volume is set on all tracks	- Voice recordings are consistent in tone, pace, and volume - Imported audio complements voice recordings - Use editing tools to remove or correct the spoken content - Different tracks start and stop unobtrusively - The layering of sounds compliments the whole project
Evaluation	Identify which elements of the task have been achieved	Evaluate how successful they were in meeting the task requirements	Identify how and why their project could be improved

USA and North America

Computer systems and networks - Connecting computers

<https://teachcomputing.org/curriculum/key-stage-2/computing-systems-and-networks-connecting-computers>



Unit introduction

Learners will develop their understanding of digital devices, with an initial focus on inputs, processes, and outputs. They will also compare digital and non-digital devices. Next, learners will be introduced to computer networks, including devices that make up a network's infrastructure, such as wireless access points and switches. Finally, learners will discover the benefits of connecting devices in a network.

You will need digital devices for learners to interact with during this unit. Lesson 3 requires digital devices with a painting application. Lesson 6 includes a 'network tour', which involves learners identifying key parts of your school network. You will therefore need access to your school's server, switch, and wireless access points.

Lesson	Brief overview	Learning objectives
1 How does a digital device work?	This lesson introduces the concepts of input, process, and output. These concepts are fundamental to all digital devices.	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
2 What parts make up a digital device?	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.	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
3 How do digital devices help us?	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.	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

4 How am I connected?	Many digital devices are now connected to other digital devices, eg 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. This lesson introduces the concept of connections and moving information between connected devices. Learners will learn to explain how and why computers are joined together to form networks.	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
5 How are computers 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.	To explore how digital devices can be connected • I can recognise that a computer network is made up of a number of devices • I can demonstrate how information can be passed between devices • I can explain the role of a switch, server, and wireless access point in a network
6 What does our school network look like?	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.	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

Vocabulary:

USA & North America

Computing systems and networks - Connecting computers

digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets



USA and North America

Unit: Computer systems and networks - Connecting computers



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	• Explain the key requirements of the task	• Outline an approach to planning the task	• Outline a detailed approach to planning the task
Knowledge	• Begin to identify some digital devices that accept inputs and outputs • Begin to understand that some passwords are more secure than others • Identify some input and output devices • Begin to explain how I use digital devices for different activities • Recognise at least one similarity and difference between using digital devices and using non-digital tools • Begin to explain the role of a switch, server, and wireless access point in a network	• Explain that digital devices accept inputs and outputs • Explain what makes a secure password • Classify input and output devices • Explain how I use digital devices for different activities • Recognise similarities and differences between using digital devices and using non-digital tools • Explain how messages are passed through multiple connections • Discuss why we need a network switch • Explain the role of a switch, server, and wireless access point in a network	• Explain with clear insight that digital devices accept inputs and outputs • Explain what makes a secure password giving examples of both secure and less secure passwords • Classify accurately input and output devices • Explain how I use digital devices for multiple activities • Recognise multiple similarities and differences between using digital devices and using non-digital tools • Explain in increasing detail how messages are passed through multiple connections • Discuss why we need a network switch • Explain the role of a switch, server, and wireless access point in a network
Implementation	• Can follow a simple process • Can design a simple digital device • Begin to recognise different connections • Recognise that a computer network is made up of more than one device • Begin to identify how devices in a network are connected together • Begin to identify networked devices around me • Begin to identify the benefits of computer networks	• can describe and follow a process • design a digital device • recognise different connections • Recognise that a computer network is made up of a number of devices • Demonstrate how information can be passed between devices • Identify how devices in a network are connected together • Identify networked devices around me • Identify the benefits of computer networks	• can describe and follow a detailed process • design a digital device • recognise different connections • Recognise that a computer network is made up of a number of devices, naming many devices • Demonstrate and describe how information can be passed between devices • Identify and explain how devices in a network are connected together • Identify multiple networked devices around me • Identify many benefits and drawbacks of computer networks
Evaluation	• Evaluate how successful they were in meeting the task requirements	• Identify how and why their project could be improved	• Identify how and why their project could be improved giving examples and details about how this could be done

The Romans

Programming A - Repetition in shape

<https://teachcomputing.org/curriculum/key-stage-2/programming-a-repetition-in-shapes>



Unit introduction

Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language. This unit is the first of the two programming units in Year 4, and looks at repetition and loops within programming.

You can use either a tablet, desktop or laptop computer for this unit. Logo software should be installed or accessible online, for example:

You can use Turtle Academy online at turtleacademy.com/playground

You can download FMSLogo from fmslogo.sourceforge.net

Note: The activities will be easier to complete on a laptop or desktop computer as there is more screen area available.

Lesson	Brief overview	Learning objectives
1 Programming a screen turtle	This lesson will introduce pupils to programming in Logo. Logo is a text-based programming language where pupils type commands that are then drawn on screen. Pupils will learn the basic Logo commands, and will use their knowledge of them to read and write code.	To identify that accuracy in programming is important - I can program a computer by typing commands - I can explain the effect of changing a value of a command - I can create a code snippet for a given purpose
2 Programming letters	In this lesson, pupils will create algorithms (a precise set of ordered instructions, which can be turned into code) for their initials. They will then implement these algorithms by writing them in Logo commands to draw the letter. They will debug their code by finding and fixing any errors that they spot.	To create a program in a text-based language - I can use a template to draw what I want my program to do - I can write an algorithm to produce a given outcome - I can test my algorithm in a text-based language
3 Patterns and repeats	In this lesson, pupils will first look at examples of patterns in everyday life. They will recognise where numbers, shapes, and symbols are repeated, and how many times repeats occur. They will create algorithms for drawing a square, using the same annotated diagram as in Lesson 2. They will use this algorithm to program a square the 'long' way, and recognise the repeated pattern within a square. Once they know the repeated pattern, they will use the repeat command within Logo to program squares the 'short' way.	To explain what 'repeat' means - I can identify repetition in everyday tasks - I can identify patterns in a sequence - I can use a count-controlled loop to produce a given outcome

4 Using loops to create shapes	In this lesson, pupils will work with count-controlled loops in a range of contexts. First, they will think about a real-life example, then they will move on to using count-controlled loops in regular 2D shapes. They will trace code to predict which shapes will be drawn, and they will modify existing code by changing values within the code snippet.	To modify a count-controlled loop to produce a given outcome - I can identify the effect of changing the number of times a task is repeated - I can predict the outcome of a program containing a count-controlled loop - I can choose which values to change in a loop
5 Breaking things down	In this lesson, pupils will focus on decomposition. They will break down everyday tasks into smaller parts and think about how code snippets can be broken down to make them easier to plan and work with. They will learn to create, name, and call procedures in Logo, which are code snippets that can be reused in their programming.	To decompose a task into small steps - I can identify 'chunks' of actions in the real world - I can use a procedure in a program - I can explain that a computer can repeatedly call a procedure
6 Creating a program	In the final lesson, pupils will apply the skills that they have learnt in this unit to create a program containing a count-controlled loop. Over the course of the lesson, they will design wrapping paper using more than one shape, which they will create with a program that uses count-controlled loops. They will begin by creating the algorithm, either as an annotated sketch, or as a sketch and algorithm, and then implement it as code. They will debug their work throughout, and evaluate their programs against the original brief.	To create a program that uses count-controlled loops to produce a given outcome - I can design a program that includes count-controlled loops - I can make use of my design to write a program - I can develop my program by debugging it

Vocabulary:

The Romans Programming A - Repetition in shapes

Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure.



The Romans

Unit: Programming A - Repetition in shape



Assessment Criteria:

	Emerging [1]	Expected [2]	Exceeding [3]
Task	Outline the main requirements of the task	Detail the specific requirements of the task	Describe the key steps required to complete the task
Design	- Choose a sprite and a backdrop - Create an algorithm for the sprites that uses repetition	- Choose relevant sprites and backdrops for a game - Create an algorithm that includes show, hide, and move blocks - Create an algorithm that includes relevant sound blocks	- Identify how additional sprites may need to be modified to enhance the game, for example, use wait blocks to stagger the timing of sprites appearing - Identify aspects of the algorithm that can be reused for additional sprites
Code	Translate their design into code for an individual sprite	- Create additional sprites and copy code over to those sprites - Modify their code for additional sprites	Include additional code that enhances the function of the game and reflects design choices
Running the code	Run their code successfully and it meets elements of the task	Run their code and identify whether it meets the requirements of the task	Run their code and explain how it meets the requirements of the task
Evaluation	Identify elements of the task that have been achieved	Evaluate how successful they were in meeting the task requirements	Identify how and why their project could be improved

Volcanoes, Earthquakes and Natural Disasters

Programming A - Sequence in music

<https://teachcomputing.org/curriculum/key-stage-2/programming-a-sequence-in-music>



Unit introduction

This unit explores the concept of sequencing in programming through Scratch. It begins with an introduction to the programming environment, which will be new to most learners. They will be introduced to a selection of motion, sound, and event blocks which they will use to create their own programs, featuring sequences. The final project is to make a representation of a piano. The unit is paced to focus on all aspects of sequences, and make sure that knowledge is built in a structured manner. Learners also apply stages of program design through this unit.

Lesson	Brief overview	Learning objectives
1. Introduction to Scratch	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.	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
2. Programming sprites	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.	To identify that commands have an outcome - I can identify that each sprite is controlled by the commands I choose - I can choose a word which describes an on-screen action for my plan - I can create a program following a design
3. Sequences	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.	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

4. Ordering commands	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.	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
5. Looking good	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.	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
6. Making an instrument	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.	To create a project from a task description - 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

Vocabulary:

Volcanoes, Earthquakes & Natural Disasters

Programming A - Sequencing sounds

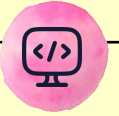
Scratch, programming, blocks, commands, code, sprite, costume, stage, backdrop, motion, turn, point in direction, go to, glide, sequence, event, task, design, run the code, order, note, chord, algorithm, bug, debug, code.



Volcanoes, Earthquakes and Natural Disasters

Unit: Programming A - Sequence in music

Assessment Criteria:



	Emerging [1]	Expected [2]	Exceeding [3]
Task	Describe the genre of the project, for example, a musical instrument	Describe the purpose of the project, for example, to create sounds when keys are pressed	Describe the needs of the audience of the project, for example, the keys will show which one you pressed to help you remember
Design	- Rename a sprite - Choose a backdrop and costumes - Create an algorithm that associates a sound with an event - Understand that algorithms have a sequence	- Choose a name that describes the action of the sprite - Choose relevant backdrops and costumes - Create an algorithm for each sprite - Explain what sequence means and demonstrate it in an algorithm	- Identify the attributes of the sprite, for example, code, costume, and sound - Change the appearance of the sprite and backdrop in response to user input - Identify aspects of the algorithm that can be reused for subsequent sprites - Give multiple examples of sequences including in algorithms
Code	- Translate their design into code for an individual sprite - Talk about the sequence of their code	- Adapt their code for additional named sprites - Explain why the code is in that particular sequence	- Include additional code that enhances the function of the program and reflects design choices - Explain what each bit of code does and why it is in that particular sequence
Running the code	Run their code successfully and it meets elements of the task	Run their code and identify if it meets the requirements of the task	Run their code and explain how it meets the requirements of the task
Evaluation	Identify elements of the task that have been achieved	Evaluate how successful they were in meeting the task requirements	Identify how and why their project could be improved

Forests

Data and information - Data logging

<https://teachcomputing.org/curriculum/key-stage-2/data-and-information-data-logging>



Unit introduction

In this unit, learners will consider how and why data is collected over time. Learners will consider the senses that humans use to experience the environment and how computers can use special input devices called sensors to monitor the environment. Learners will collect data as well as access data captured over long periods of time. They will look at data points, data sets, and logging intervals. Learners will spend time using a computer to review and analyse data. Towards the end of the unit, learners will pose questions and then use data loggers to automatically collect the data needed to answer those questions.

This unit is designed around the use of a TTS data logger. If you don't have access to data loggers, a lot of the activities can be completed using tablet computers and apps such as Arduino Science Journal. Whichever data logging solution you have available, you should be able to address the learning objectives in the unit.

Lesson	Brief overview	Learning objectives
1 Answering questions	Learners will consider what data can be collected and how it is collected. They will think about data being collected over time. Learners will also think about questions that can and can't be answered using available data, and reflect on the importance of collecting the right data to answer questions.	To explain that data gathered over time can be used to answer questions - I can choose a data set to answer a given question - I can suggest questions that can be answered using a given data set - I can identify data that can be gathered over time
2 Data collection	Learners will build on the idea of collecting data over time, and be introduced to the idea of collecting data automatically using computers such as data loggers. They will also be introduced to the concept that computers can capture data from the physical world using input devices called 'sensors'. Learners will establish that sensors can be connected to data loggers, which can automatically collect data while not attached to a computer.	To use a digital device to collect data automatically - I can explain what data can be collected using sensors - I can use data from a sensor to answer a given question - I can identify that data from sensors can be recorded
3 Logging	Learners will explore how data loggers work. They will record data at set moments in time and draw parallels with the data points that a data logger captures at regular intervals. Learners will use data loggers away from a computer, then they will connect the loggers to a computer and download the data.	To explain that a data logger collects 'data points' from sensors over time - I can recognise that a data logger collects data at given points - I can identify the intervals used to collect data - I can talk about the data that I have captured

4 Analysing data	Learners will open an existing data file and use software to find out key information. They will analyse a data file which is a five-hour log of hot water cooling to room temperature.	To recognise how a computer can help us analyse data - I can view data at different levels of detail - I can sort data to find information - I can explain that there are different ways to view data
5 Data for answers	Learners will think about questions that can be answered using collected data. They will choose a question to focus on and then plan the data logging process that they need to complete. After learners have completed their plan, they will set up the data loggers to check that their plan will work. This setting up is designed to ensure that the data collection will work, and that learners will have data to use in the next lesson.	To identify the data needed to answer questions - I can propose a question that can be answered using logged data - I can plan how to collect data using a data logger - I can use a data logger to collect data
6 Answering my question	Learners will access and review the data that they have collected using a data logger. They will then use the data collected to answer the question that they selected in the previous lesson. Learners will also reflect on the benefits of using a data logger.	To use data from sensors to answer questions - I can interpret data that has been collected using a data logger - I can draw conclusions from the data that I have collected - I can explain the benefits of using a data logger

Vocabulary:

Forests

Data and Information - Data logging

data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion.



Forests

Unit: Data and information - Data logging

Assessment Criteria:



	Emerging [1]	Expected [2]	Exceeding [3]
Asking questions	• Suggests what topic they want to ask a question about • Chooses a relevant question that can be answered using a data logger	• Suggests questions that require data from at least one sensor to answer them • Suggests questions that require data to be collected over time to answer them	• Suggests questions that require data from more than one sensor and/or time frame to answer them
Collecting data	• Identifies what time of day they need to collect data • Chooses the most relevant place a data logger could be set up	• Identifies a suitable time frame to collect data to answer their question • Identifies where the data logger needs to be placed to answer their question • Identifies which sensor(s) needs to be used to answer their question	• Suggests the time frame that will offer the most varied data • Evaluates the most effective place to collect data
Viewing data	• Uses software to view collected data • Recognises some data points in their data	• Uses software to view relevant data • Recognises how some data points are different	• Uses zoom features to look at sections of data more closely • Describes the differences in data points
Findings	• Recognises changes in a graph • Identifies the part of the graph that could help them answer their question	• Makes statements about what their data shows • Uses their collected data to answer their question	• Identifies the parts of their data most relevant to answering their question • Suggests other questions that their data could answer

Middle Ages

Creating media - Desktop publishing

<https://teachcomputing.org/curriculum/key-stage-2/creating-media-desktop-publishing>



Unit introduction

Learners will become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.

The suggested application for this unit is Adobe Spark. To use Spark accounts are needed for learners. A guide to creating accounts is provided in lesson 2. Adobe Spark is web based and can be used on tablets, desktops and laptops.

Lesson	Brief overview	Learning objectives
1. Words and pictures	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.	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
2. Can you edit it?	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.	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
3. Great template!	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.	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

4. Can you add content?	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.	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
5. Lay it out	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.	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
6. Why 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.	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

Vocabulary:

Middle Ages

Creating Media - Desktop publishing

text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.



Middle Ages

Unit: Creating media - Desktop publishing

Assessment Criteria:



	Emerging [1]	Expected [2]	Exceeding [3]
Task	• Explain that a document author has decisions to make • Provide one advantage and disadvantage of using text, images or emojis online.	• Describe how different challenges require different solutions • Give an example of when using text, images or emojis online could be misinterpreted.	• Outline an approach to completing a task • Explain why using text, images or emojis online can be misinterpreted.
Design decisions	• Recognise that text and images can be laid out in different formats	• Choose an appropriate layout for a given scenario	• Explain why that layout is most suited to the scenario
Implementation	• Use some placeholders to divide the page • Add some amounts of text	• Use placeholders appropriately to divide the page (magazine) • Add text and images • Format some of the text	• Change the background colours • Add images • Include word art • Change text, including resizing, colours, and font types • Place images appropriately on the page
Evaluation	• Identify which elements of the task have been achieved	• Evaluate how successful they were in meeting the task requirements	• Identify how and why their project could be improved