ROYSTON ST JOHN BAPTIST CE PRIMARY SCHOOL

COMPUTING CURRICULUM

CONTENTS

OUR VISION

'Go and Do Likewise'

At Royston St John Baptist CE Primary School, we strive to create a secure and happy environment for all. We are a Christian community who delights in learning, inspires high aspirations and broadens experiences. We learn to love our neighbours as ourselves and stand up for what we believe is right. Through our values and actions, we bring hope into our community and to the future of our world.

Our Christian Vision

Our theological vision is rooted in the Parable of the Good Samaritan in which we should 'go and do likewise' Luke 10:37.

This theological vision underpins all that we do and inspires our curriculum drivers of coherence, curiosity, and challenge. Our work is driven by the values of compassion, forgiveness, and love.

Our dedicated team of staff provide a friendly, nurturing learning environment where pupils feel safe, valued, and secure. We work alongside parents, governance, and the wider community to provide a creative, balanced, and inspiring curriculum. Our door is always open. Parents are always welcome. We are keen for parents and carers to be involved in their child's learning and successes.
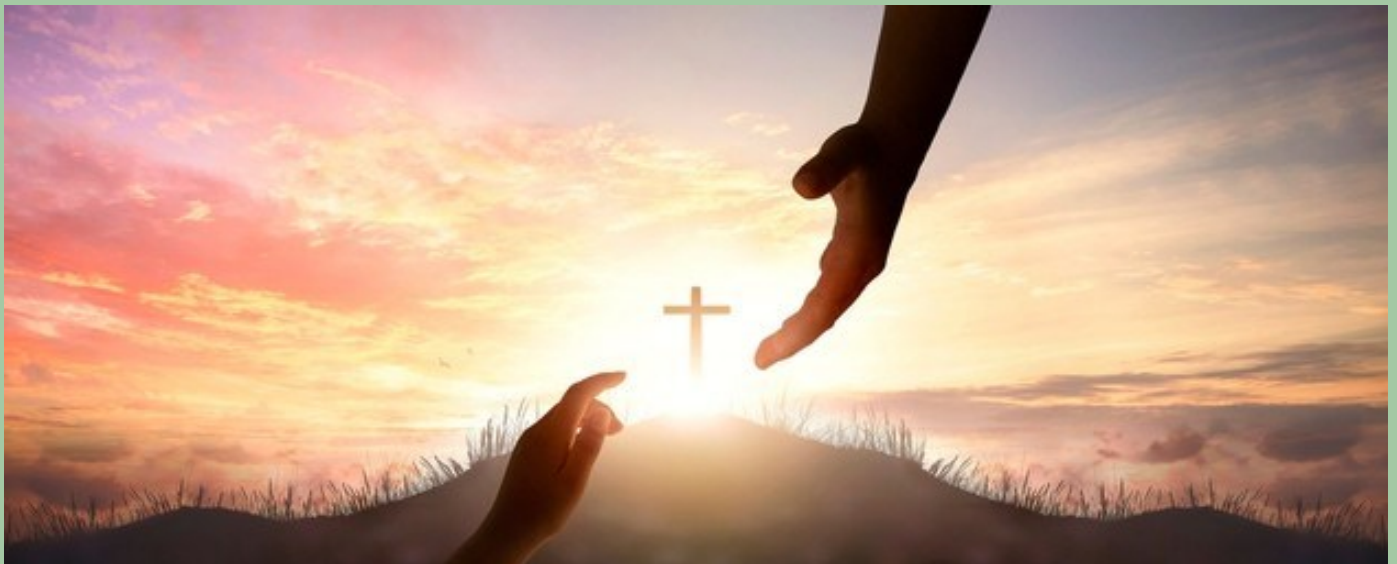
RATIONALE & INTENT

At Royston St John Baptist CE Primary School, we are guided by the National Curriculum for Computing (2014). The National Curriculum for computing aims to ensure that all children:

- *Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation.*

- *Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems.*

- *Can evaluate and apply information technology, including new or familiar technologies, analytically to solve problems.*

- *Are responsible, competent, confident and creative users of information and communication technology.*

Computing if taught as a discrete subject following the 'NCCE Teach Computing' scheme. Each unit follows a sequence of carefully planned lessons which build on prior knowledge and skills. At Royston St John Baptist CE Primary School, we strive to inspire and engage children so that they can take ownership of their learning, providing links to the wider curriculum where appropriate.

Technology is changing the lives of everyone. Through teaching computing, we equip children to participate in a rapidly-changing world where work and leisure activities are increasingly transformed by technology. It is our intention to enable children to find, explore, analyse, exchange and present information. We want children to know more, remember more and understand more in computing so that they leave primary school computer literate and ready for a technological world.

During lessons, children are exposed to high quality teaching and the necessary knowledge and vocabulary to help them learn and develop their work through modelled and guided learning, building up to independent working. They are encouraged to be reflective learners as they build on learning. Sometimes the learning can be a challenge and we foster a positive mindset, using our mistakes to further our learning.

Computing skills are a major factor in enabling children to be confident, creative and independent learners and it is our intention that children have every opportunity available to allow them to achieve this. Whether the children are resilient to learn a new skill or communicating new skills they have learnt to their peers and teacher, in every computing lesson our school values are imbedded. We want to ensure that children are aware of the possible risks when using the internet through specific online safety lessons.

Our vision is that these technologies will enrich the experiences of all pupils and that these resources will help to provide an environment that facilitates learning. Our aim is to enable all pupils and staff to be competent and independent users of ICT. We aim to use computing to motivate and inspire pupils and raise standards across the curriculum.

EARLY YEARS FOUNDATION STAGE

The roots of our Computing curriculum at Royston St John Baptist CE Primary School really being in the foundation stage through our 'Understanding the World' teaching. Understanding the World involves guiding children to make sense of their physical world and their community.

Our Early Years curriculum enhances children's personal experiences and increases their knowledge and sense of the modern world around them. We learn about computers and modern technology, and how we use them. Computers and technology are a part of our everyday life, and so it is really important that our children are confident with them. Computing is also important because it teaches us to problem solve and develop new ideas.

Our Early Years curriculum develops computational thinking skills, creating simple algorithms, and explore sequencing, equipping children with the skills and knowledge of modern technology that they need for their next step of learning and future life.

	Autumn	Spring	Summer
Key focus and key vocabulary	Introducing key pieces of technology in continuous provision. - Technology around us - **Technology** - **Keyboard** - **Telephone**	Introducing key pieces of technology in continuous provision. - Using Purple Mash on I-pads. - Staying safe online - **Purple Mash** - **Log -in** - **Internet**	Introducing key pieces of technology in continuous provision. - Programming robots. - Using iPads to take photos - **Beebot/Robot** - **Program** - **Photograph**
Curriculum objectives	To know what technology is used at home (TV, phone, computers.) **(UTW – past and present – links with differences between things in the past and now) –** *This also builds on from the nursery framework "UTW – exploring how things work")* To know what technology, we have in class and how it is used (computer, iPads, torches.) **(UTW – past and present – links with differences between things in the past and now)** *This also builds on from the nursery framework "UTW – exploring how things work")* To use a touchscreen device purposely. **(PD – fine motor)** To be able to use a keyboard to type numbers and familiar letters. **(PD – fine motor)** To be able to hold a computer mouse with their fingers on the correct buttons. **(PD – fine motor)**	To understand that in order to use Purple Mash we need a Log in and password. *This builds on from the nursery framework "UTW – exploring how things work"* To be able to enter their password with support from an adult. To know how to use the Mini Mash section of Purple Mash (navigating around and selecting activities.) To be able to select colours when painting on Purple Mash. **(EAD – experimenting with colour)** To know that the erase button will delete something that they no longer want or need. *This builds on from the nursery framework "UTW – exploring how things work"*	To be able to take photos using a digital device. *This builds on from the nursery framework "UTW – exploring how things work"* To be able to talk about what photos show (people, animals, outside etc.) **(C+L – speaking)** To be able to plan a route for a toy vehicle or robot. **(UTW – describe the environment using knowledge from maps)** To know how to make a floor robot move (pressing buttons and giving directions.) . **(UTW – describe the environment using knowledge from maps)** To be able to use the language or forwards, backwards and turn when programming a robot. **(C+L – speaking)** *This also builds on from the nursery framework "mathematics – discuss routes using words such as "in front, behind etc"*

YEAR ONE LEARNING JOURNEY
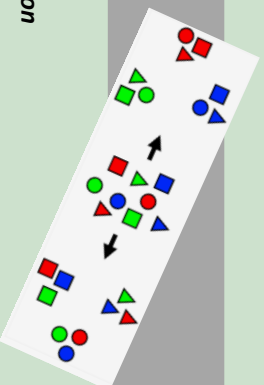
AUTUMN 1
Unit: Technology Around Us

Theme: Computing Systems and Networks

AUTUMN 2
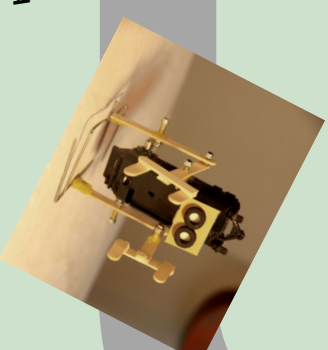Unit: Digital Painting

Theme: Creating Media

SPRING 1
Unit: Moving a Robot

Theme: Programming A

SPRING 2
Unit: Grouping Data

Theme: Data and Information

SUMMER 1
Unit: Digital Writing

Theme: Creating Media

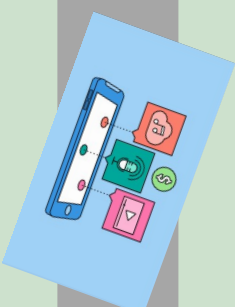## SUMMER 2
Unit: Programming Animations

Theme: Programming B

YEAR TWO LEARNING JOURNEY

AUTUMN 1

Unit: IT Around Us

Theme: Computing Systems and Networks

AUTUMN 2

Unit: Digital Photography

Theme: Creating Media

SPRING 1

Unit: Robot Algorithms

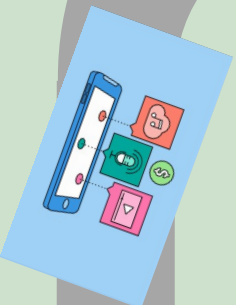Theme: Programming A

SPRING 2

Unit: Pictograms

Theme: Data and Information

SUMMER 1

Unit: Digital Music

Theme: Creating Media

SUMMER 2

Unit: Programming Quizzes

Theme: Programming B

PYTHON QUIZ

YEAR THREE LEARNING JOURNEY

AUTUMN 1
Unit: Connecting Computers

Theme: Computing Systems and Net-works

AUTUMN 2
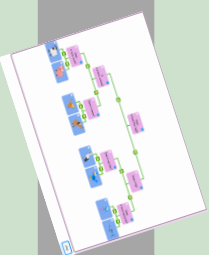Unit: Stop-Frame Animation

Theme: Creating Media

SPRING 2
Unit: Branching Databases

Theme: Data and Information

SPRING 1
Unit: Sequencing Sounds

Theme: Programming A

SUMMER 1
Unit: Desktop Publishing

Theme: Creating Media

SUMMER 2
Unit: Events and Actions in Programs

Theme: Programming B

YEAR FOUR LEARNING JOURNEY

AUTUMN 1

Unit: The Internet

Theme: Computing Systems and Networks
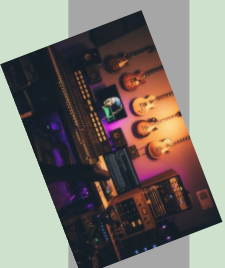
AUTUMN 2

Unit: Audio Production

Theme: Creating Media

SPRING 1

Unit: Repetition in Shapes

Theme: Programming A

SPRING 2

Unit: Data Logging

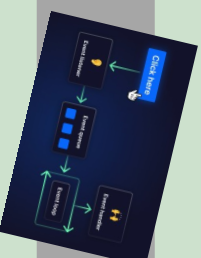**Theme: Data and Information**
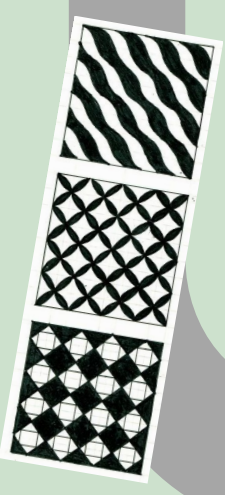
SUMMER 1

Unit: Photo Editing

Theme: Creating Media
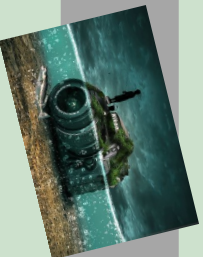
SUMMER 2

Unit: Repetition in Games

Theme: Programming B

YEAR FIVE LEARNING JOURNEY

AUTUMN 1

Unit: Systems and Searching

Theme: Computing Systems and Networks

AUTUMN 2

Unit: Video Production

Theme: Creating Media

SPRING 1

Unit: Selection in Physical Computing

Theme: Programming A

SPRING 2

Unit: Flat-File Databases

Theme: Data and Information

SUMMER 1

Unit: Introduction to Vector Graphics

Theme: Creating Media

SUMMER 2

Unit: Selection in Quizzes

Theme: Programming B

YEAR SIX LEARNING JOURNEY
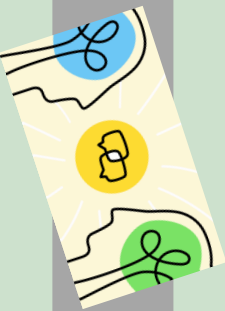
AUTUMN 1

Unit: Communication and Collaboration

Theme: Computing Systems and Networks

AUTUMN 2

Unit: Webpage Creation

Theme: Creating Media

SPRING 1

Unit: Variables in Games

Theme: Programming A

SPRING 2

Unit: Introduction to Spreadsheets

Theme: Data and Information

SUMMER 1

Unit: 3D Modelling

Theme: Creating Media

SUMMER 2

Unit: Sensing Movement

Theme: Programming B

micro:bit sensors

LONG TERM OVERVIEW

Year 1 Unit 1 – Computing Systems and Networks	
Title	*Technology Around Us*
Unit Introduction	*Learners will develop their understanding of technology and how it can help them in their everyday lives. They will start to become familiar with the different components of a computer by developing their keyboard and mouse skills. Learners will also consider how to use technology responsibly and who to ask for help if they see any content or comments online that make them feel uncomfortable.*
Key Vocabulary	*technology, computer, mouse, trackpad, keyboard, screen, double-click, typing*

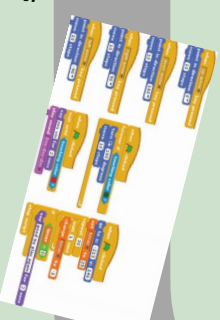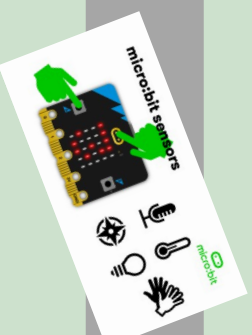| Year 1 Unit 2 – Creating Media	
Title	*Digital Painting*
Unit Introduction	*Learners will develop their understanding of a range of tools used for digital painting. They then use these tools to create their own digital paintings, while gaining inspiration from a range of artists' work. The unit concludes with learners considering their preferences when painting with and without the use of digital devices.*
Key Vocabulary	*paint program, tool, paintbrush, erase, fill, undo, shape tools, line tools, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers*

Year 1 Unit 3 – Programming A	
Title	*Moving a Robot*
Unit Introduction	*Learners will be introduced to early programming concepts. Learners will explore using individual commands, both with other learners and as part of a computer program. They will identify what each command for the floor robot does, and use that knowledge to start predicting the outcome of programs. The unit is paced to ensure time is spent on all aspects of programming, and builds knowledge in a structured manner. Learners are also introduced to the early stages of program design through the introduction of algorithms.*
Key Vocabulary	*Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program*

Year 1 Unit 4 – Data and Information	
Title	*Grouping Data*
Unit Introduction	*This unit introduces learners to data and information. Labelling, grouping, and searching are important aspects of data and information. Searching is a common operation in many applications, and requires an understanding that to search data, it must have labels. This unit of work focuses on assigning data (images) with different labels in order to demonstrate how computers are able to group and present data.*
Key Vocabulary	*object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same*

Year 1 Unit 5 – Creating Media

Title	*Digital Writing*
Unit Introduction	*Learners will develop their understanding of the various aspects of using a computer to create and manipulate text. They will become more familiar with using a keyboard and mouse to enter and remove text. Learners will also consider how to change the look of their text, and will be able to justify their reasoning in making these changes. Finally, learners will consider the differences between using a computer to create text, and writing text on paper. They will be able to explain which method they prefer and explain their reasoning for choosing this.*
Key Vocabulary	*word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing.*

Year 1 Unit 6 – Programming B

Title	*Programming Animations*
Unit Introduction	*Learners will be introduced to on-screen programming through ScratchJr. Learners will explore the way a project looks by investigating sprites and backgrounds. They will use programming blocks to use, modify, and create programs. Learners will also be introduced to the early stages of program design through the introduction of algorithms.*
Key Vocabulary	*ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.*

Year 2 Unit 1 – Computing Systems and Networks

Title	*Information Technology Around Us*
Unit Introduction	*Learners will develop their understanding of what information technology (IT) is and will begin to identify examples. They will discuss where they have seen IT in school and beyond, in settings such as shops, hospitals, and libraries. Learners will then investigate how IT improves our world, and they will learn about the importance of using IT responsibly.*
Key Vocabulary	*information technology (IT), computer, barcode, scanner/scan*

Year 2 Unit 2 – Creating Media

Title	*Digital Photography*
Unit Introduction	*Learners will learn to recognise that different devices can be used to capture photographs and will gain experience capturing, editing, and improving photos. Finally, they will use this knowledge to recognise that images they see may not be real.*
Key Vocabulary	*device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting*

Year 2 Unit 3 – Programming A

Title	Robot Algorithms
Unit Introduction	This unit develops learners' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Learners will use given commands in different orders to investigate how the order affects the outcome. They will also learn about design in programming. They will develop artwork and test it for use in a program. They will design algorithms and then test those algorithms as programs and debug them.
Key Vocabulary	instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition

Year 2 Unit 4 – Data and Information

Title	Pictograms
Unit Introduction	Learners will begin to understand what the term data means and how data can be collected in the form of a tally chart. They will learn the term 'attribute' and use this to help them organise data. They will then progress onto presenting data visually using software. Learners will use the data presented to answer questions.
Key Vocabulary	more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing

Year 2 Unit 5 – Creating Media

Title	Digital Music
Unit Introduction	In this unit, learners will listen to a variety of pieces of music and consider how music can make them think and feel. Learners will compare creating music digitally and non-digitally. Learners will look at patterns and purposefully create music.
Key Vocabulary	music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit

Year 2 Unit 6 – Programming B

Title	Programming Quizzes
Unit Introduction	This unit initially recaps on learning from the Year 1 ScratchJr unit 'Programming B – Programming animations'. Learners begin to understand that sequences of commands have an outcome, and make predictions based on their learning. They use and modify designs to create their own quiz questions in ScratchJr, and realise these designs in ScratchJr using blocks of code. Finally, learners evaluate their work and make improvements to their programming projects.
Key Vocabulary	sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code

Year 3 Unit 1 – Computing Systems and Networks	
Title	*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.*
Key Vocabulary	digital device, input, process, output, program, digital, non-digital, connection, network, switch, server, wireless access point, cables, sockets

Year 3 Unit 2 – Creating Media	
Title	*Stop-Frame Animation*
Unit Introduction	*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. This unit uses the context of Romans, but this can be adapted to suit your curriculum topics.*
Key Vocabulary	animation, flip book, stop⬚frame, frame, sequence, image, photograph, setting, character, events, onion skinning, consistency, evaluation, delete, media, import, transition

Year 3 Unit 3 – Programming A	
Title	*Sequencing Sounds*
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.*
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

Year 3 Unit 4 – Data and Information	
Title	*Branching Databases*
Unit Introduction	*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.*
Key Vocabulary	attribute, value, questions, table, objects, branching, database, objects, equal, even, separate, structure, compare, order, organise, selecting, information, decision tree.

Year 3 Unit 5 – Creating Media	
Title	Desktop Publishing
Unit Introduction	Learners will become familiar with the terms 'text' and 'images' and emojis and understand that they can be used to communicate messages offline and online. 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.
Key Vocabulary	text, images, advantages, disadvantages, communicate, font, style, landscape, portrait, orientation, placeholder, template, layout, content, desktop publishing, copy, paste, purpose, benefits.

Year 3 Unit 6 – Programming B	
Title	Events and Actions in Programs
Unit Introduction	This unit explores the links between events and actions, while consolidating prior learning relating to sequencing. Learners begin by moving a sprite in four directions (up, down, left, and right). They 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.
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.

Year 4 Unit 1 – Computing Systems and Networks	
Title	The Internet
Unit Introduction	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.
Key Vocabulary	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

Year 4 Unit 2 – Creating Media	
Title	Audio Animation
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 uses 'school news' as a context for the podcasts, but this can be changed to suit your curriculum.
Key Vocabulary	audio, microphone, speaker, headphones, input device, output device, sound, podcast, edit, trim, align, layer, import, record, playback, selection, load, save, export, MP3, evaluate, feedback

Year 4 Unit 3 – Programming A	
Title	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.
Key Vocabulary	Logo (programming environment), program, turtle, commands, code snippet, algorithm, design, debug, pattern, repeat, repetition, count-controlled loop, value, trace, decompose, procedure

Year 4 Unit 4 – Data and Information	
Title	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.
Key Vocabulary	data, table, layout, input device, sensor, logger, logging, data point, interval, analyse, dataset, import, export, logged, collection, review, conclusion

Year 4 Unit 5 – Creating Media	
Title	Photo Editing
Unit Introduction	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.
Key Vocabulary	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 4 Unit 6 – Programming B	
Title	*Repetition in Games*
Unit Introduction	*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.*
Key Vocabulary	*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*

Year 5 Unit 1 – Computing Systems and Networks	
Title	*Systems and Searching*
Unit Introduction	*Learners develop their understanding of computer systems and how information is transferred between systems and devices. Learners consider small-scale systems as well as large-scale systems. They explain the input, output, and process aspects of a variety of different real-world systems. Learners discover how information is found on the World Wide Web, through learning how search engines work (including how they select and rank results) and what influences searching, and through comparing different search engines.*
Key Vocabulary	*system, connection, digital, input, process, storage, output, search, search engine, refine, index, bot, ordering, links, algorithm, search engine optimisation (SEO), web crawler, content creator, selection, ranking*

Year 5 Unit 2 – Creating Media	
Title	*Video Production*
Unit Introduction	*Learners will learn how to create short videos by working in pairs or groups. As they progress through this unit, they will be exposed to topic-based language and develop the skills of capturing, editing, and manipulating video. Learners are guided with step-by-step support to take their idea from conception to completion. At the conclusion of the unit, learners have the opportunity to reflect on and assess their progress in creating a video.*
Key Vocabulary	*video, audio, camera, talking head, panning, close up, video camera, microphone, lens, mid-range, long shot, moving subject, side by side, angle (high, low, normal), static, zoom, pan, tilt, storyboard, filming, review, import, split, trim, clip, edit, reshoot, delete, reorder, export, evaluate, share*

Year 5 Unit 3 – Programming A	
Title	Selection in Physical Computing
Unit Introduction	In this unit, learners will use physical computing to explore the concept of selection in programming through the use of the Crumble programming environment. Learners will be introduced to a microcontroller (Crumble controller) and learn how to connect and program it to control components (including output devices — LEDs and motors). Learners will be introduced to conditions as a means of controlling the flow of actions in a program. Learners will make use of their knowledge of repetition and conditions when introduced to the concept of selection (through the 'if...then...' structure) and write algorithms and programs that utilise this concept. To conclude the unit, learners will design and make a working model of a fairground carousel that will demonstrate their understanding of how the microcontroller and its components are connected, and how selection can be used to control the operation of the model. Throughout this unit, learners will apply the stages of programming design.
Key Vocabulary	microcontroller, USB, components, connection, infinite loop, output component, motor, repetition, count-controlled loop, Crumble controller, switch, LED, Sparkle, crocodile clips, connect, battery box, program, condition, Input, output, selection, action, debug, circuit, power, cell, buzzer

Year 5 Unit 4 – Data and Information	
Title	Flat-File Databases
Unit Introduction	This unit looks at how a flat-file database can be used to organise data in records. Learners will use tools within a database to order and answer questions about data. They will create graphs and charts from their data to help solve problems. They will also use a real-life database to answer a question, and present their work to others.
Key Vocabulary	database, data, information, record, field, sort, order, group, search, value, criteria, graph, chart, axis, compare, filter, presentation

Year 5 Unit 5 – Creating Media	
Title	Introduction to Vector Graphics
Unit Introduction	In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.
Key Vocabulary	vector, drawing tools, object, toolbar, vector drawing, move, resize, colour, rotate, duplicate/copy, zoom, select, align, modify, layers, order, copy, paste, group, ungroup, reuse, reflection

Year 5 Unit 6 – Programming B

Title	Selection in Quizzes
Unit Introduction	Learners will develop their knowledge of 'selection' by revisiting how 'conditions' can be used in programming, and then learning how the 'if… then… else…' structure can be used to select different outcomes depending on whether a condition is 'true' or 'false'. They represent this understanding in algorithms, and then by constructing programs in the Scratch programming environment. They learn how to write programs that ask questions and use selection to control the outcomes based on the answers given. They use this knowledge to design a quiz in response to a given task and implement it as a program. To conclude the unit, learners evaluate their program by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.
Key Vocabulary	selection, condition, true, false, count-controlled loop, outcomes, conditional statement, algorithm, program, debug, question, answer, task, design, input, implement, test, run, setup, operator

Year 6 Unit 1 – Computing Systems and Networks

Title	Communication and Collaboration
Unit Introduction	In this unit learners explore how data is transferred over the internet. Learners initially focus on addressing, before they move on to the makeup and structure of data packets. Learners then look at how the internet facilitates online communication and collaboration; they complete shared projects online and evaluate different methods of communication. Finally, they learn how to communicate responsibly by considering what should and should not be shared on the internet.
Key Vocabulary	communication, protocol, data, address, Internet Protocol (IP), Domain Name Server (DNS), packet, header, data payload, chat, explore, slide deck, reuse, remix, collaboration, internet, public, private, one-way, two-way, one-to-one, one-to-many

Year 6 Unit 2 – Creating Media

Title	Web-Page Creation
Unit Introduction	Learners will be introduced to creating websites for a chosen purpose. Learners identify what makes a good web page and use this information to design and evaluate their own website using Google Sites. Throughout the process, learners pay specific attention to copyright and fair use of media, the aesthetics of the site, and navigation paths.
Key Vocabulary	website, web page, browser, media, Hypertext Markup Language (HTML), logo, layout, header, media, purpose, copyright, fair use, home page, preview, evaluate, device, Google Sites, breadcrumb trail, navigation, hyperlink, subpage, evaluate, implication, external link, embed.

Year 6 Unit 3 – Programming A	
Title	Variables in Games
Unit Introduction	This unit explores the concept of variables in programming through games in Scratch. First, learners find out what variables are and relate them to real-world examples of values that can be set and changed. Then they use variables to create a simulation of a scoreboard. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, learners experiment with variables in an existing project, then modify them, before they create their own project. In Lesson 4, learners focus on design. Finally, in Lesson 6, learners apply their knowledge of variables and design to improve their games in Scratch
Key Vocabulary	variable, change, name, value, set, design, event, algorithm, code, task, artwork, program, project, code, test, debug, improve, evaluate, share, assign, declare

Year 6 Unit 4 – Data and Information	
Title	Introduction to Spreadsheets
Unit Introduction	This unit introduces the learners to spreadsheets. They will be supported in organising data into columns and rows to create their own data set. Learners will be taught the importance of formatting data to support calculations, while also being introduced to formulas and will begin to understand how they can be used to produce calculated data. Learners will be taught how to apply formulas that include a range of cells, and apply formulas to multiple cells by duplicating them. Learners will use spreadsheets to plan an event and answer questions. Finally, learners will create charts, and evaluate their results in comparison to questions asked.
Key Vocabulary	data, collecting, table, structure, spreadsheet, cell, cell reference, data item, format, formula, calculation, spreadsheet, input, output, operation, range, duplicate, sigma, propose, question, data set, organised, chart, evaluate, results, sum, comparison, software, tools

Year 6 Unit 5 – Creating Media	
Title	3D Modelling
Unit Introduction	Learners will develop their knowledge and understanding of using a computer to produce 3D models. Learners will initially familiarise themselves with working in a 3D space, moving, resizing, and duplicating objects. They will then create hollow objects using placeholders and combine multiple objects to create a model of a desk tidy. Finally, learners will examine the benefits of grouping and ungrouping 3D objects, then go on to plan, develop, and evaluate their own 3D model of a building.
Key Vocabulary	TinkerCAD, 2D, 3D, shapes, select, move, perspective, view, handles, resize, lift, lower, recolour, rotate, duplicate, group, cylinder, cube, cuboid, sphere, cone, prism, pyramid, placeholder, hollow, choose, combine, construct, evaluate, modify

Year 6 Unit 6 – Programming B	
Title	Sensing Movement
Unit Introduction	This unit is the final KS2 programming unit and brings together elements of all the four programming constructs: sequence from Year 3, repetition from Year 4, selection from Year 5, and variables (introduced in Year 6 – 'Programming A'. It offers pupils the opportunity to use all of these constructs in a different, but still familiar environment, while also utilising a physical device — the micro: bit. The unit begins with a simple program for pupils to build in and test within the new programming environment, before transferring it to their micro:bit. Pupils then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth. Design features prominently in this unit. A design template is introduced in Lesson 3, initially scaffolded to give pupils the opportunity to create code from a given design. In Lesson 4 that scaffolding is gradually reduced, then in Lesson 5, pupils create their own design, using the same template. In the final lesson, pupils will apply their knowledge of the programming constructs and use their design to create their own micro:bit-based step counter.
Key Vocabulary	Micro:bit, MakeCode, input, process, output, flashing, USB, trace, selection, condition, if then else, variable, random, sensing, accelerometer, value, compass, direction, navigation, design, task, algorithm, step counter, plan, create, code, test, debug