Computing LONG TERM PLAN

KS1 & KS2 Computing ANNUAL OVERVIEW

LABURNUM PRIMARY SCHOOL & NURSERY
CHALLENGE • ACHIEVE • RESPECT • EFFORT

Laburnum Primary School follows the NCCE (National Centre for Computing Education) Teach Computing Curriculum (https://teachcomputing.org/curriculum)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1 Key Stage 1	Computing systems and networks-Technology around us	Creating media-Digital painting	Creating Media-Digital writing Using a keyboard		Data and information-Grouping data	Programming A-Moving a robot
Year 2 Key Stage 1	Computing systems and networks-IT around us	Programming A-Robot algorithms	Creating media-Digital photography	Data and information-Pictograms	Creating media-Making music	Programming B-An introduction to quizzes
Year 3 Key Stage 2	Creating media-Animation	Computing systems and networks-Connecting computers	Creating media-Desktop publishing	Data and information-branching databases	Programming A-Sequence in music	Programming B-Events and actions
Year 4 Key Stage 2	Computing systems and networks-The internet	Creating media-Audio editing	Creating media-Photo editing	Data and information-Data logging	Programming A-Repetition in shapes	Programming B-Repetition in games
Year 5 Key Stage 2	Computing systems and networks-Sharing information	Creating media-Vector drawing	Creating media-Video editing	Data and information-Flat file databases	Programming A-Selection in physical computing (Crumble)	Programming B-Selection in quizzes
Year 6 Key Stage 2	Computing systems and networks-Communication	Creating media-3D modelling	Creating media-Web page creation	Data and information-Spreadsheets	Programming A-Variables in games	Programming B-Sensing (MicroBits)

Due to equipment being borrowed through our local Computing Hub being available at different times, the UKS2 programming units can be taught at any point during the year, but must be done in order.

Online safety

Online safety should not only be taught as discrete lessons but also embedded into all areas of the curriculum. Time should be dedicated to covering online safety each half term. For opportunities to link it to other lessons please see document Embedding online safety on the shared drive.

The following sites could be useful: Resources Archive | Childnet 8-10s | CEOP Education E-safety for schools | NSPCC Learning ProjectEVOLVE - Resources

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YEAR 1

<table>
<tr><th></th><th>Unit Title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="3">Year 1

Autumn 1</td><td rowspan="3">Computing systems and networks – Technology around us (teachcomputing.org)</td><td>In this unit, learners will develop their understanding of technology and how it can help us. 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.

Learning objectives:
To identify technology
To identify a computer and its main parts
To use a mouse in different ways
To use a keyboard to type
To use the keyboard to edit text
To create rules for using technology responsibly</td><td>▪ Paint

▪ Alternatives could be Paint 3D or Paintz.app</td></tr>
<tr><td>Progression</td><td colspan="2">Curriculum links</td></tr>
<tr><td>As this is a Year 1 unit, no prior knowledge is assumed.
This unit progresses students' knowledge and understanding of technology and how they interact with it in school. Learners will build their knowledge of parts of a computer and develop the basic skills needed to effectively use a computer keyboard and mouse.</td><td colspan="2"><u>Computing</u>
▪ Recognise common uses of information technology beyond school
▪ Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
▪ Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</td></tr>
</table>

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<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="2">Year 1

Autumn 2</td><td rowspan="2">Creating media – Digital painting (teachcomputing.org)</td><td>During this unit, learners 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.

Learning objectives:
To describe what different freehand tools do
To use the shape tool and the line tools
To make careful choices when painting a digital picture
To explain why I chose the tools I used
To use a computer on my own to paint a picture
To compare painting a picture on a computer and on paper</td><td>▪ Paint

You should be familiar with:
▪ The Paint programme
▪ The art of Piet Mondrian and Henri Matisse (or another appropriate artist)</td></tr>
<tr><td colspan="2"><table>
<tr><th>Progression</th><th>Curriculum links</th></tr>
<tr><td>Learners should be familiar with:
▪ How to switch their device on
▪ Usernames
▪ Passwords</td><td>Computing
▪ Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
Art and Design
Pupils should be taught:
▪ To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space
▪ About the work of a range of artists, craft makers, and designers, describing the differences and similarities between different practices and disciplines and making links to their own work</td></tr>
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<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 1

Spring 1 and 2</td><td>Creating media – Digital writing (teachcomputing.org)</td><td>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.

This unit is designed to last one half term, however by adding in keyboard skill practice at the beginning of every unit you can extend the unit and make it last one term.

Learning objectives:
To use a computer to write
To add and remove text on a computer
To identify that the look of text can be changed on a computer
To make careful choices when changing text
To explain why I used the tools that I chose
To compare typing on a computer to writing on paper</td><td>▪ Word

Website and resources for teaching typing
▪ Computing KS2 - Dance Mat Typing - BBC Bitesize
▪ Sky Chase - Arcademics
▪ Touch Typing for Children Lesson Pack | KS1 | Twinkl
▪ Learn Touch Typing Free - TypingClub
▪ Typing Games - Fun Keyboarding Games Online (kidztype.com)</td></tr>
<tr><td></td><td></td><td>Progression
Learners should be familiar with:
▪ How to switch their device on
▪ Usernames
▪ Passwords
Following this unit, learners will further develop their digital writing skills in the Year 3 – ‘Desktop publishing’ unit</td><td>Curriculum links
Computing
▪ Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
▪ Use technology safely and respectfully, keeping personal information private
English
▪ Write sentences by:
▪ saying out loud what they are going to write about
▪ composing a sentence orally before writing it
▪ sequencing sentences to form short narratives</td></tr>
</table>

<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 1

Summer 1</td><td>Data and information – Grouping data (teachcomputing.org)</td><td colspan="2">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.

Learning objectives:
To label objects
To identify that objects can be counted
To describe objects in different ways
To count objects with the same properties
To compare groups of objects
To answer questions about groups of objects</td><td>▪ A way to save work should be decided upon. This could be onto their Elm Drive or uploading to dojo.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td><td></td></tr>
<tr><td></td><td></td><td>Learners will develop their understanding that objects can be given labels, which is fundamental to their future learning concerning databases and spreadsheets. Following this unit, in year 2, learners will present data graphically in pictograms.</td><td>Computing
▪ Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
▪ Use technology safely and respectfully
▪ I know that work I create belongs to me
▪ I can name my work so that others know it belongs to me</td><td></td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="3">Year 1

Summer 2</td><td rowspan="3">Programming A – Robot algorithms (teachcomputing.org)</td><td>This unit introduces learners 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 floor robot command does and use that knowledge to start predicting the outcome of programs. Learners are also introduced to the early stages of program design through the introduction of algorithms.

Learning objectives:
To explain what a given command will do
To act out a given word
To combine forwards and backwards commands to make a sequence
To combine four direction commands to make sequences
To plan a simple program
To find more than one solution to a problem</td><td>▪ Bee-Bot</td></tr>
<tr><td>Progression</td><td colspan="2">Curriculum links</td></tr>
<tr><td></td><td colspan="2">Computing
▪ Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
▪ Create and debug simple programs
▪ Use logical reasoning to predict the behaviour of simple programs
▪ Recognise common uses of information technology beyond school</td></tr>
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YEAR 2

<table>
<tr><th></th><th>Unit Title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 2

Autumn 1</td><td>Computing systems and networks – IT around us (teachcomputing.org)</td><td>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.

Learning objectives:
To recognise the uses and features of information technology
To identify the uses of information technology in the school
To identify information technology beyond school
To explain how information technology helps us
To explain how to use information technology safely
To recognise that choices are made when using information technology</td><td>▪ Computers
▪ Examples of other IT; Laptops, tablets
▪ Examples of devices made to work with IT: printers, scanners, speakers or webcam.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses learners' understanding of technology and how they interact with it. This unit also builds on the learners' understanding of using technology safely and responsibly.</td><td>Computing
▪ Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
▪ Recognise common uses of information technology beyond school
▪ Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies</td></tr>
</table>

<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 2

Autumn 2</td><td>Programming A – Robot algorithms (teachcomputing.org)</td><td>This unit develops pupils' understanding of instructions in sequences and the use of logical reasoning to predict outcomes. Pupils will use given commands in different orders to investigate how the order affects the outcome. Pupils 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.

Learning objectives:
To describe a series of instructions as a sequence
To explain what happens when we change the order of instructions
To use logical reasoning to predict the outcome of a program
To explain that programming projects can have code and artwork
To design an algorithm
To create and debug a program that I have written</td><td>▪ Bee-Bot</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>In advance of the lessons in this Year 2 unit, pupils should have had some experience of creating short programs and predicting the outcome of a simple program.</td><td>Computing
▪ Understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
▪ Create and debug simple programs
▪ Use logical reasoning to predict the behaviour of simple programs
▪ Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.

▪</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="2">Year 2

Spring 1</td><td rowspan="2">Creating media – Digital photography (teachcomputing.org)</td><td>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.

Learning objectives:
To use a digital device to take a photograph
To make choices when taking a photograph
To describe what makes a good photograph
To decide how photographs can be improved
To use tools to change an image
To recognise that photos can be changed</td><td>▪ Computers
▪ Digital cameras (on specific lessons it might be good to borrow cameras from other classes)
▪ You could also use ipads to take photos.
▪ https://pixlr.com/x/ (make yourself familiar with this editing website before teaching)</td></tr>
<tr><td colspan="2"><table>
<tr><th>Progression</th><th>Curriculum links</th></tr>
<tr><td>This unit begins the learners' understanding of how photos are captured and can be manipulated for different purposes. Following this unit, learners will develop their photo editing skills in Year 4.</td><td>Computing
▪ Use technology purposefully to create, organise, store, manipulate, and retrieve digital content
▪ Recognise common uses of information technology beyond school
▪ Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
Art and design
▪ To develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form, and space.</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 2

Spring 2</td><td>Data and information – Pictograms (teachcomputing.org)</td><td>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 in the form of pictograms and finally block diagrams. Learners will use the data presented to answer questions.

Learning Objectives:
To recognise that we can count and compare objects using tally charts
To recognise that objects can be represented as pictures
To create a pictogram
To select objects by attribute and make comparisons
To recognise that people can be described by attributes
To explain that we can present information using a computer</td><td>▪ JIT5 (j2e.com)</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses students’ knowledge and understanding of grouping data. It builds on the Year 1 Data and Information unit where learners labelled objects and grouped them based on different properties. In Year 3 learners develop their understanding of attributes (properties) using branching databases to structure data according to different object attributes.</td><td>Pictograms will be taught in Maths during Spring1/2 so this will link well. This unit can be moved forward or back to coincide with teaching in Maths.

Computing
▪ use technology purposefully to create, organise, store, manipulate and retrieve digital content
▪ use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies
Maths
▪ identify and represent numbers using objects and pictorial representations including the number line, and use the language of: ‘equal to’, ‘more than’, ‘less than’ (‘fewer’), ‘most’, ‘least’
▪ interpret and construct simple pictograms, tally charts, block diagrams and simple tables
▪ ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity
▪ ask and answer questions about totalling and comparing categorical data</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 2

Summer 1</td><td>Creating media – Making music (teachcomputing.org)</td><td>In this unit, learners will be using a computer to create music. They 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.

Learning objectives:
To say how music can make us feel
To identify that there are patterns in music
To describe how music can be used in different ways
To show how music is made from a series of notes
To create music for a purpose
To review and refine our computer work</td><td>▪ Computers
▪ Chrome Music Lab - Song Maker (chromeexperiments.com) (familiarise yourself with this before teaching)

Teachers should also be familiar with Music terminology.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>Learners should have experience of making choices on a tablet/computer, and they should be able to navigate within an application. Learners should also have some experience of patterns.</td><td>Computing:
▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content
Music:
▪ Play tuned and untuned instruments musically
▪ Listen with concentration and understanding to a range of high-quality live and recorded music
create, select and combine sounds using the inter-related dimensions of music</td></tr>
</table>

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<tr><th></th><th>Unit title</th><th colspan="2">Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 2

Summer 2</td><td>Programming B – An introduction to quizzes (teachcomputing.org)</td><td colspan="2">This planning for this unit refers to an app called ScratchJr. Previously Y2 have been using Scratch online, on a computer, so we will aim to continue with this. 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, and create these designs in Scratch using blocks of code.

Learning objectives:
To explain that a sequence of commands has a start
To explain that a sequence of commands has an outcome
To create a program using a given design
To change a given design
To create a program using my own design
To decide how my project can be improved</td><td>▪ Computers
▪ Scratch accounts for each child linked to a teacher account (for help to set this up talk to AJ)</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td><td></td></tr>
<tr><td></td><td></td><td>This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.</td><td>Computing
▪ Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
▪ Create and debug simple programs
▪ Use logical reasoning to predict the behaviour of simple programs
▪ Use technology purposefully to create, organise, store, manipulate and retrieve digital content</td><td></td></tr>
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YEAR 3

<table>
<tr><th></th><th>Unit Title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="2">Year 3

Autumn 1</td><td rowspan="2">Creating media – Animation (teachcomputing.org)</td><td>Learners will use a range of techniques to create a stop-frame animation using tablets. 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.
Learning objectives:
To explain that animation is a sequence of drawings or photographs
To relate animated movement with a sequence of images
To plan an animation
To identify the need to work consistently and carefully
To review and improve an animation
To evaluate the impact of adding other media to an animation</td><td>▪ All available iPads (classroom and PE)
▪ iMotion app

This can be linked to your current unit in English or History.</td></tr>
<tr><td colspan="2"><table>
<tr><th>Progression</th><th>Curriculum links</th></tr>
<tr><td>This unit progresses students' knowledge and understanding of using digital devices to create media, exploring how they can create stop-frame animations. Following this unit, learners will further develop their video editing skills in Year 5.</td><td>Computing
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
▪ use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Literacy
▪ Pupils should be taught to: draft and write by: in narratives, creating settings, characters and plot
▪ Pupils should be taught to: proof-read for spelling and punctuation errors</td></tr>
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<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 3

Autumn 2</td><td>Computing systems and networks – Connecting computers (teachcomputing.org)</td><td>In this unit 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.

Learning objectives:
To explain how digital devices function
To identify input and output devices
To recognise how digital devices can change the way that we work
To explain how a computer network can be used to share information
To explore how digital devices can be connected
To recognise the physical components of a network</td><td>▪ Digital devices for children to interact with
▪ Paint application
▪ Access to the school's server, switch, and wireless access points.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses learners' knowledge and understanding of technology by focusing on digital and non-digital devices, and introducing the concept of computers connected together as a network. Following this unit, learners will explore the internet as a network of networks.</td><td>Computing
▪ use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration
▪ select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
Maths (Lesson 1)
▪ Number and place value: solve number problems and practical problems involving these ideas.
Art (Lesson 3)
▪ to improve their mastery of art and design techniques, including drawing, painting and sculpture with a range of materials [for example, pencil, charcoal, paint, clay]</td></tr>
</table>

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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 3

Spring 1</td><td>Creating media – Desktop publishing (teachcomputing.org)</td><td>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 (or something linked to your topic). 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.
Learning objectives:
To recognise how text and images convey information
To recognise that text and layout can be edited
To choose appropriate page settings
To add content to a desktop publishing publication
To consider how different layouts can suit different purposes
To consider the benefits of desktop publishing</td><td>▪ Despite planning recommending Adobe spark, as a school we use Google programmes. So the ideal application to use would be Google Drawing. https://docs.google.com/drawings
▪ Google account logins</td></tr>
<tr><td></td><td></td><td>Progression
This unit progresses learners’ knowledge and understanding of using digital devices to combine text and images building on work from the following units; Digital Writing Year 1, Digital painting Year 1, and Digital Photography Year 2.</td><td colspan="2">Curriculum links
Computing
▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 3

Spring 2</td><td>Data and information – Branching databases (teachcomputing.org)</td><td>During this unit, learners will develop their understanding of what a branching database is and how to create one. They will gain an understanding of what attributes are and how to use them to sort groups of objects by using yes/no questions. The learners will create physical and on-screen branching databases. Finally, they will evaluate the effectiveness of branching databases and will decide what types of data should be presented as a branching database.

Learning objectives:
To create questions with yes/no answers
To identify the object attributes needed to collect relevant data
To create a branching database
To explain why it is helpful for a database to be well structured
To identify objects using a branching database
To compare the information shown in a pictogram with a branching database</td><td>▪ J2Data (j2e.com) – then click on branch. Familiarise yourself with this before you teach.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses students' knowledge and understanding of presenting information. It builds on their knowledge of data and information from key stage 1. They continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.</td><td>Computing
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information
▪ Use technology safely, respectfully, and responsibly</td></tr>
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<tr><td>Year 3

Summer 1</td><td>Programming A – Sequence in music (teachcomputing.org)</td><td>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.

Learning objectives:
To explore a new programming environment
To identify that commands have an outcome
To explain that a program has a start
To recognise that a sequence of commands can have an order
To change the appearance of my project
To create a project from a task description</td><td>▪ Class set of headphones
▪ Depending on how to choose to teach computing, you may also need headphone splitters.
▪ Online Scratch accounts

Try to familiarise yourself with Scratch online so you are able to teach and debug.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit assumes that learners will have some prior experience of programming; floor robots, Scratch Jr or exposure to Scratch in Y2.</td><td>Computing
▪ Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</td></tr>
</table>

<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 3

Summer 2</td><td>Programming B – Events and actions (teachcomputing.org)</td><td>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.

Learning objectives:
To explain how a sprite moves in an existing project
To create a program to move a sprite in four directions
To adapt a program to a new context
To develop my program by adding features
To identify and fix bugs in a program
To design and create a maze-based challenge</td><td>▪ Scratch Online accounts (print these off individually for children to have easy access to)</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit builds on learning from the previous unit and also experience of programming from KS1.</td><td>Computing
▪ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</td></tr>
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YEAR 4

<table>
<tr><th></th><th>Unit Title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="2">Year 4

Autumn 1</td><td rowspan="2">Computing systems and networks – The Internet (teachcomputing.org)</td><td>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.

Learning objectives:
To describe how networks physically connect to other networks
To recognise how networked devices, make up the internet.
To outline how websites can be shared via the World Wide Web (WWW)
To describe how content can be added and accessed on the World Wide Web
To recognise how the content of the WWW is created by people
To evaluate the consequences of unreliable content</td><td>▪ Devices that can connect to the internet.</td></tr>
<tr><td colspan="2"><table>
<tr><th>Progression</th><th>Curriculum links</th></tr>
<tr><td>This unit progresses students' knowledge and understanding of networks in Year 3. In Year 5, they will continue to develop their knowledge and understanding of computing systems and online collaborative working.</td><td>Computing
▪ Understand computer networks including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information
▪ Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.
PSHE (Lesson 6)
▪ Evaluating content for honesty and accuracy</td></tr>
</table></td></tr>
</table>

<table>
<tr><th></th><th>Unit title</th><th colspan="2">Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 4

Autumn 2</td><td>Creating media – Audio editing (teachcomputing.org)</td><td colspan="2">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.

Learning objectives:
To identify that sound can be recorded
To explain that audio recordings can be edited
To recognise the different parts of creating a podcast project
To apply audio editing skills independently
To combine audio to enhance my podcast project
To evaluate the effective use of audio</td><td>▪ Class set of headphones (with mics or mics inbuilt into the computers)
▪ Splitters (depending on how you organise your teaching)
▪ Familiarise yourself with Audacity. There are demo videos but it is better if you live demonstrate.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td><td></td></tr>
<tr><td></td><td></td><td>This unit progresses students' knowledge and understanding of creating media, by focusing on the recording and editing of sound to produce a podcast. Following this unit, learners will explore combining audio with video in the 'Video editing' unit in Year 5.</td><td>Computing
▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information
▪ Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Science (Lesson 2)
▪ Sound: Find patterns between the volume of a sound and the strength of the vibrations that produced it
▪ Sound: Recognise that sounds get fainter as the distance from the sound source increases
English (Lesson 3)
▪ Writing – composition: Plan their writing by discussing and recording ideas
▪ Writing – draft and write by: In non-narrative material, using simple organisational devices [for example, headings and subheadings]
▪ Writing: Read aloud their own writing, to a group or the whole class, using appropriate intonation and controlling the tone and volume so that the meaning is clear</td><td></td></tr>
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<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 4

Spring 1</td><td>Creating media – Photo editing (teachcomputing.org)</td><td>In this unit, 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.

Learning objectives:
To explain that digital images can be changed
To change the composition of an image
To describe how images can be changed for different uses
To make good choices when selecting different tools
To recognise that not all images are real
To evaluate how changes can improve an image</td><td>▪ Paint on the desktop.</td></tr>
<tr><td></td><td></td><td colspan="2"><table>
<tr><th>Progression</th><th>Curriculum links</th></tr>
<tr><td>Learners should have experience of making choices on a tablet/computer. They should be able to navigate within an application.</td><td>Computing
▪ Use search technologies effectively
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
▪ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 4

Spring 2</td><td>Data and information – Data logging (teachcomputing.org)</td><td>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 could link with your statistics unit in maths and also with a science experiment!

Learning objectives:
To explain that data gathered over time can be used to answer questions
To use a digital device to collect data automatically
To explain that a data logger collects ‘data points’ from sensors over time
To recognise how a computer can help us analyse data
To identify the data needed to answer questions
To use data from sensors to answer questions</td><td>▪ Data loggers. I have had a look to make sure they work in the way we want, but it’s worth spending some time playing with them to ensure you know how they work and the best way to transfer data etc.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses learners’ knowledge and understanding of data and how it can be collected over time to answer questions. Specifically, it builds on the concept of answering questions with data which is first introduced in the KS1 data and information units.</td><td>Computing
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information
Science
▪ Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
▪ They should learn how to use new equipment, such as data loggers, appropriately. They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data.</td></tr>
</table>

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<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 4

Summer 1</td><td>Programming A – Repetition in shapes (teachcomputing.org)</td><td>Learners will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.

Learning objectives:
To identify that accuracy in programming is important
To create a program in a text-based language
To explain what ‘repeat’ means
To modify a count-controlled loop to produce a given outcome
To decompose a task into small steps
To create a program that uses count-controlled loops to produce a given outcome</td><td>▪ FMSLogo. Have a look at this yourself to familiarise yourself before teaching.
▪ Turtle Academy is an online alternative if required turtleacademy.com/playground</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses students’ knowledge and understanding of programming. It progresses from the sequence of commands in a program to using count-controlled loops.</td><td>Computing
▪ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 4

Summer 2</td><td>Programming B – Repetition in games (teachcomputing.org)</td><td colspan="2">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. Their final project is to design and create a game which uses repetition, applying stages of programming design throughout.

Learning objectives:
To develop the use of count-controlled loops in a different programming environment
To explain that in programming there are infinite loops and count-controlled loops
To develop a design that includes two or more loops which run at the same time
To modify an infinite loop in a given program
To design a project that includes repetition
To create a project that includes repetition</td><td>▪ Scratch Online accounts (print log on info off individually for children to have easy access to)</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units cover floor robots and Scratch, and Scratch is also introduced in the Year 3 programming units. Programming Unit A must be completed before this one, which will provide experience of FMSLogo or turtle academy.</td><td>Computing
▪ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.</td></tr>
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<table>
<tr><th></th><th>Unit Title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="2">Year 5

Autumn 1</td><td rowspan="2">Computing systems and networks – Sharing information (teachcomputing.org)</td><td>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.

Learning objectives:
To explain that computers can be connected together to form systems
To recognise the role of computer systems in our lives
To identify how to use a search engine
To describe how search engines select results
To explain how search results are ranked
To recognise why the order of results is important, and to whom</td><td>▪ Ensure children have access to their google accounts.</td></tr>
<tr><td colspan="2"><table>
<tr><th>Progression</th><th>Curriculum links</th></tr>
<tr><td>This unit progresses learners' knowledge and understanding of computing systems.</td><td>Computing
▪ Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</td></tr>
</table></td></tr>
</table>

<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="3">Year 5

Autumn 2</td><td rowspan="3">Creating media – Vector drawing (teachcomputing.org)</td><td>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.

Learning objectives:
To identify that drawing tools can be used to produce different outcomes
To create a vector drawing by combining shapes
To use tools to achieve a desired effect
To recognise that vector drawings consist of layers
To group objects to make them easier to work with
To apply what I have learned about vector drawings</td><td>▪ Google drawings
▪ Children will need their google account.
▪ An alternative online programme is Vectr</td></tr>
<tr><td>Progression</td><td colspan="2">Curriculum links</td></tr>
<tr><td>This unit progresses learners’ knowledge and understanding of digital painting and has some links to the Year 3 ‘Creating media – Desktop publishing’ unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents.</td><td colspan="2">Computing
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 5

Spring 1</td><td>Creating media – Video editing (teachcomputing.org)</td><td colspan="2">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.

Learning objectives:
To explain what makes a video effective
To use a digital device to record video
To capture video using a range of techniques
To create a storyboard
To identify that video can be improved through reshooting and editing
To consider the impact of the choices made when making and sharing a video</td><td>iPads as they have video capabilities.</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses learners’ knowledge and understanding of creating media by guiding them systematically through the process involved in creating a video. The unit builds on the Year 4 unit ‘Photo editing’ where composition is introduced and the Year 3 unit ‘Stop-frame animation’ where learners explored some of the features of video production.</td><td colspan="2">Computing
▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information
▪ Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 5

Spring 2</td><td>Data and information – Flat-file databases (teachcomputing.org)</td><td>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.

Learning objectives:
To use a form to record information
To compare paper and computer-based databases
To outline how you can answer questions by grouping and then sorting data
To explain that tools can be used to select specific data
To explain that computer programs can be used to compare data visually
To use a real-world database to answer questions</td><td>▪ J2 Data J2Data (j2e.com)
▪ https://www.expedia.co.uk/Flights</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit progresses learners’ knowledge and understanding of why and how information might be stored in a database, and looks at how tools within a database can help us to answer questions about our data.</td><td>Computing
▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 5

Summer 1</td><td>Programming A – Selection in physical computing (teachcomputing.org)</td><td>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.
Learning objectives:
To control a simple circuit connected to a computer
To write a program that includes count-controlled loops
To explain that a loop can stop when a condition is met
To explain that a loop can be used to repeatedly check whether a condition has been met
To design a physical project that includes selection
To create a program that controls a physical computing project</td><td>▪ Computers
▪ Crumble kit
▪ Crumble software</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit assumes that learners will have prior experience of programming using a block-based language (eg Scratch) and understand the concepts of sequence and repetition.</td><td>Computing
▪ Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information
Science – Electricity
▪ Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches, and buzzers
DT
▪ Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces, and computer-aided design
▪ Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining, and finishing], accurately
▪ Select from and use a wider range of materials and components, including construction materials, textiles, and ingredients, according to their functional properties and aesthetic qualities
▪ Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
▪ Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers, and motors]
▪ Apply their understanding of computing to program, monitor, and control their products</td></tr>
</table>

<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 5

Summer 2</td><td>Programming B – Selection in quizzes (teachcomputing.org)</td><td colspan="2">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.

Learning objectives:
To explain how selection is used in computer programs
To relate that a conditional statement connects a condition to an outcome
To explain how selection directs the flow of a program
To design a program that uses selection
To create a program that uses selection
To evaluate my program</td><td>▪ Scratch Online accounts (print log on info off individually for children to have easy access to)</td></tr>
<tr><td></td><td></td><td>Progression</td><td colspan="2">Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit assumes that learners will have prior experience of programming using block-based construction (e.g. Scratch), understand the concepts of ‘sequence’ and ‘repetition’, and have some experience of using ‘selection’. Learners will have completed Programming A unit before undertaking this unit.</td><td colspan="2">Computing
▪ design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
▪ select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</td></tr>
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<table>
<tr><th></th><th>Unit Title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="3">Year 6

Autumn 1</td><td rowspan="3">Computing systems and networks – Communication (teachcomputing.org)</td><td>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.

Learning objectives:
To explain the importance of internet addresses
To recognise how data is transferred across the internet
To explain how sharing information online can help people to work together
To evaluate different ways of working together online
To recognise how we communicate using technology
To evaluate different methods of online communication</td><td>▪ L4 uses other people's scratch projects. Please ensure you have their scratch logins.
▪ This unit uses google slides so please make sure children have access to their google accounts.
▪ Before this unit, double check your own subject knowledge and clarify subject specific terms.</td></tr>
<tr><td>Progression</td><td colspan="2">Curriculum links</td></tr>
<tr><td>This unit progresses learners' knowledge and understanding of computing systems and online collaborative working.</td><td colspan="2">▪ Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information
▪ Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact</td></tr>
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<tr><th></th><th>Unit title</th><th colspan="2">Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="3">Year 6

Autumn 2</td><td rowspan="3">Creating media – 3D Modelling (teachcomputing.org)</td><td colspan="2">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.

Learning objectives:
To recognise that you can work in three dimensions on a computer
To identify that digital 3D objects can be modified
To recognise that objects can be combined in a 3D model
To create a 3D model for a given purpose
To plan my own 3D model
To create my own digital 3D model</td><td>▪ Tinkercad https://www.tinkercad.com/join you will need to join beforehand.</td></tr>
<tr><td>Progression</td><td colspan="2">Curriculum links</td></tr>
<tr><td>Experience with 2d and 3D shapes through maths lessons.</td><td colspan="2">Computing
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information
▪ Use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact
Art and design
▪ To improve their mastery of art and design techniques, including drawing, painting, and sculpture with a range of materials
Design and technology
▪ Generate, develop, model, and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
Mathematics
▪ Recognise, describe, and build simple 3D shapes, including making nets</td></tr>
</table>

Computing LONG TERM PLAN

KS1 & KS2 Computing ANNUAL OVERVIEW

<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="3">Year 6

Spring 1</td><td rowspan="3">Creating media – Web page creation (teachcomputing.org)</td><td>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.

Learning objectives:
To review an existing website and consider its structure
To plan the features of a web page
To consider the ownership and use of images (copyright)
To recognise the need to preview pages
To outline the need for a navigation path
To recognise the implications of linking to content owned by other people</td><td>▪ Children will need their google accounts in order to access google sites.</td></tr>
<tr><td>Progression</td><td colspan="2">Curriculum links</td></tr>
<tr><td>This unit progresses students' knowledge and understanding of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing.</td><td colspan="2">▪ Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.
▪ use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour.</td></tr>
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Computing LONG TERM PLAN

KS1 & KS2 Computing ANNUAL OVERVIEW

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CHALLENGE • ACHIEVE • RESPECT • EFFORT

<table>
<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td rowspan="2">Year 6

Spring 2</td><td rowspan="2">Data and information – Spreadsheets (teachcomputing.org)</td><td>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.

Learning objectives:
To create a data set in a spreadsheet
To build a data set in a spreadsheet
To explain that formulas can be used to produce calculated data
To apply formulas to data
To create a spreadsheet to plan an event
To choose suitable ways to present data</td><td>▪ Children will need their google accounts in order to access google sheets and slides.
▪ Microsoft Excel can be used as an alternative.</td></tr>
<tr><td>Progression

This unit progresses students' knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets. Specifically, learners will have experienced data in tables and charts in the Y4 data logging and Y5 branching database units.</td><td colspan="2">Curriculum links

Computing
▪ Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information

Maths
▪ Solve problems involving addition, subtraction, multiplication, and division
▪ Interpret and construct pie charts and line graphs, and use these to solve problems
▪ Calculate and interpret the mean as an average</td></tr>
</table>

Computing LONG TERM PLAN

KS1 & KS2 Computing ANNUAL OVERVIEW

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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 6

Summer 1</td><td>Programming A – Variables in games (teachcomputing.org)</td><td>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.

Learning objectives:
To define a ‘variable’ as something that is changeable
To explain why a variable is used in a program
To choose how to improve a game by using variables
To design a project that builds on a given example
To use my design to create a project
To evaluate my project</td><td>▪ Scratch Online accounts (print log on info off individually for children to have easy access to)</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td></tr>
<tr><td></td><td></td><td>This unit assumes that learners have some prior experience of programming in Scratch. They should be familiar with the programming constructs of sequence, repetition, and selection. These are covered in the Year 3, 4, and 5 programming units.</td><td>Computing
▪ Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</td></tr>
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<tr><th></th><th>Unit title</th><th>Knowledge</th><th>Specific resources</th></tr>
<tr><td>Year 6

Summer 2</td><td>Programming B – Sensing (teachcomputing.org)</td><td colspan="2">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.

Learning objectives:
To create a program to run on a controllable device
To explain that selection can control the flow of a program
To update a variable with a user input
To use a conditional statement to compare a variable to a value
To design a project that uses inputs and outputs on a controllable device
To develop a program to use inputs and outputs on a controllable device</td><td>▪ Scratch Online accounts (print log on info off individually for children to have easy access to)
▪ A class set of micro:bits.
▪ makecode.microbit.org</td></tr>
<tr><td></td><td></td><td>Progression</td><td>Curriculum links</td><td></td></tr>
<tr><td></td><td></td><td>This unit presumes that pupils are already confident in their understanding of sequence, repetition and selection independently within programming. If pupils are not yet ready for this, you may wish to revisit earlier programming units where these constructs are introduced.</td><td>▪ Design, write, and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
▪ Use sequence, selection, and repetition in programs; work with variables and various forms of input and output
▪ Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
▪ Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information</td><td></td></tr>
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