



Curriculum design choices and rationale

Subject			
Computing			
Unit of work	Year group	Unit	Rationale
Explore devices in their environment	R	Computing Systems and networks	Know the functions of hardware/ software within their classroom. Children will begin to familiarise themselves with a range a software and hardware within their environments. This will prepare them for accessing all areas of computing throughout the primary curriculum.
Use paint programs to create a range of images	R	Creating Media	Know that pictures can be drawn digitally. Children will learn how to use drawing features on a desktop computer and tablet. This learning will prepare children to confidently use software in Year 1.
Counting and sorting	R	Data and Information	Sort objects. Children will sort a range of objects that will help them to count, develop their mouse skills and interpret information. This learning will be developed in Year 1 and will prepare children for creating pictograms in Year 2.
Tinker and testing using the BeeBots	R	Programming	Create simple algorithms. Children will tinker and test using bee bots. They will develop their computational language through play. These skills will prepare children to develop their knowledge of algorithms in Year 1.
<u>Technology around us</u> Recognising technology in school and using it responsibly.	1	Computing Systems and networks	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. This unit directly precedes the Y2 Computer systems and networks unit, IT around us
<u>Digital painting</u>	1	Creating Media	Learners should be familiar with:



Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally.			• How to switch their device on • Usernames • Passwords Children will build on their knowledge from Year R and gain confidence in order to develop their information technology skills in Year 2. For an introduction to keyboard and mouse skills, learners may benefit from completing the Year 1 Computing Systems & Networks unit prior to this unit.
Digital writing Using a computer to create and format text, before comparing to writing non-digitally.	1	Creating Media	This unit progresses the learners' knowledge and understanding of using computers to create and manipulate digital content, focussing on using a word processor. The learners will develop their ability to find and use the keys on a keyboard in order to create digital content. The learners are then introduced to manipulating the resulting text, making cosmetic changes, and justifying their reason for making these changes. Following this unit, learners will further develop their digital writing skills in the Year 3 – 'Desktop publishing' unit and the Year 6 – 'Web page development' unit.
Grouping data Exploring object labels, then using them to sort and group objects by properties.	1	Data and Information	Learners will develop their understanding that objects can be given labels, which is fundamental to their future learning concerning databases and spreadsheets. In addition, learners will begin to improve their ability to use dragging and dropping skills on a device. Following this unit, in year 2, learners will present data graphically in pictograms.
Programming A – Moving a robot Writing short algorithms and programs for floor robots, and predicting program outcomes.	1	Programming	This unit build on knowledge gained in Year R and prepares learners for Programming B and Year 2 programming units. This unit progresses learners' knowledge and understanding of giving and following instructions. It moves from giving instructions to each other to giving instructions to a robot by programming it, with increasing confidence.
Programming B – Animations Designing and programming the movement of a character on screen to tell stories.	1	Programming	This unit progresses learners' knowledge and understanding of programming and follows on from 'Programming A – Moving a robot', where children will have learned to program a floor robot using instructions.



<u>IT around us</u> Identifying IT and how its responsible use improves our world in school and beyond.	2	Computing Systems and networks	This unit progresses learners' understanding of technology and how they interact with it. They will develop this understanding to become familiar with the term information technology and will be able to identify common features of IT. This unit also builds on the learners' understanding of using technology safely and responsibly from Year 1 and prepares them for Connecting Computers in Year 3.
<u>Digital photography</u> Capturing and changing digital photographs for different purposes.	2	Creating Media	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.
<u>Making music</u> Using a computer as a tool to explore rhythms and melodies, before creating a musical composition.	2	Creating Media	This unit progresses students' knowledge through listening to music and considering how music can affect how we think and feel. Learners will then purposefully create rhythm patterns and music. Children will use these skills in Year 4- Audio Editing and Year 5- Video Editing.
<u>Pictograms</u> Collecting data in tally charts and using attributes to organise and present data on a computer.	2	Data and Information	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.
<u>Programming A – Robot algorithms</u> Creating and debugging programs, and using logical reasoning to make predictions	2	Programming	In advance of the lessons in this Year 2 unit, learners should have had some experience of creating short programs using floor robots and predicting the outcome of a simple program. This unit progresses learners' knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Learners will spend time looking at how the order of commands affects outcomes. Learners will use this knowledge and logical reasoning to trace programs and predict outcomes.
<u>Programming B – Programming quizzes</u> Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz.	2	Programming	This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.



Connecting computers Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks.	3	Computing Systems and networks	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 in Year 4.
Animation Capturing and editing digital still images to produce a stop-frame animation that tells a story	3	Creating Media	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.
Desktop publishing Creating documents by modifying text, images, and page layouts for a specified purpose.	3	Creating Media	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.
Branching databases Building and using branching databases to group objects using yes/no questions.	3	Data and Information	This unit progresses learners' knowledge and understanding of the categories of data handling, with a particular focus on implementation. It builds on their knowledge of data and information from Key Stage 1. They will continue to develop their understanding of attributes and begin to construct and interrogate branching databases as a means of displaying and retrieving information.
Programming A – Sequence in music Creating sequences in a block-based programming language to make music.	3	Programming	This unit progresses learners' knowledge and understanding of floor robots and block -based coding language from Key Stage 1.
Programming B – Events and actions Writing algorithms and programs that use a range of events to trigger sequences of actions.	3	Programming	The Year 3 — Programming A unit introduces the Scratch programming environment and the concept of sequences. This unit progresses learners' knowledge and understanding of that learning and develops there coding skills, ready for Year 4.



<u>The Internet</u> Recognising the internet as a network of networks including the WWW, and why we should evaluate online content.	4	Computing Systems and networks	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.
<u>Photo editing</u> Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled.	4	Creating Media	This unit progresses students' knowledge and understanding of digital photography and using digital devices to create media. Following this unit, learners will further develop their image editing skills in Year 5 – Vector drawing.
<u>Audio editing</u> Capturing and editing audio to produce a podcast, ensuring that copyright is considered	4	Creating Media	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.
<u>Data logging</u> Recognising how and why data is collected over time, before using data loggers to carry out an investigation	4	Data and Information	This unit progresses pupils' knowledge and understanding of data (from previous year groups) and how it can be collected over time to answer questions. The unit also introduces the idea of automatic data collection.
<u>Programming A – Repetition in shapes</u> Using a text-based programming language to explore count-controlled loops when drawing shapes.	4	Programming	This unit progresses students' knowledge and understanding of programming from previous year groups. It progresses from the sequence of commands in a program to using count-controlled loops. Pupils will create algorithms and then implement those algorithms as code.
<u>Programming B – Repetition in games</u> Using a block-based programming language to explore count-controlled and infinite loops when creating a game.	4	Programming	This unit progresses students' knowledge and understanding of programming. Learners build on knowledge gained in Year 3 and the Programming A- Repetition in shapes.



Sharing information Identifying and exploring how information is shared between digital systems.	5	Computing Systems and networks	This unit progresses learners' knowledge and understanding of computing systems and online collaborative working. This unit directly builds on previous Computing System and Network units of work.
Vector drawing Creating images in a drawing program by using layers and groups of objects.	5	Creating Media	This unit progresses students' knowledge and understanding of digital painting and has some links to desktop publishing in which learners used digital images. It builds on knowledge gained from Year 4- Digital Photography. They are now creating the images that they could use in desktop publishing documents. This unit prepares learners for Year 6- 3D modelling.
Video editing Planning, capturing, and editing video to produce a short film.	5	Creating Media	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.
Flat-file databases Using a database to order data and create charts to answer questions.	5	Data and Information	This unit progresses pupils' 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. It moves on to demonstrate how a database can help us display data visually, and how real-life databases can be used to help us solve problems. Finally, the pupils create a presentation showing understanding and application of all the tools used within the unit.
Programming A – Selection in physical computing Exploring conditions and selection using a programmable microcontroller.	5	Programming	This unit progresses pupils' knowledge and understanding of programming using block-based construction (eg Scratch) and understand the concepts of sequence and repetition.
Programming B – Selection in quizzes Exploring selection in programming to design and code an interactive quiz.	5	Programming	This unit progresses pupils' knowledge 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 – Selection in physical computing' before undertaking this unit, as this will provide them with the required knowledge of 'selection'.



Communication Recognising how the WWW can be used to communicate and be searched to find information.	6	Computing Systems and networks	This unit progresses students' knowledge and understanding of computing systems and online collaborative working.
3D Modelling Planning, developing, and evaluating 3D computer models of physical objects.	6	Creating Media	This unit progresses students' knowledge and understanding of creating 3D graphics using a computer. It builds on Vector Drawing from Year 5.
Web page creation Designing and creating webpages; giving consideration to copyright, aesthetics, and navigation.	6	Creating Media	This unit progresses students' knowledge and understanding of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing.
Spreadsheets Answering questions by using spreadsheets to organise and calculate data.	6	Data and Information	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.
Programming A – Variables in games Exploring variables when designing and coding a game.	6	Programming	This unit builds on knowledge gained from previous programming units. This unit progresses students' knowledge and understanding of variables in programming through games in Scratch. First, pupils will learn what variables are, and relate them to real-world examples of values that can be set and changed. Pupils will then use variables to create a simulation of a scoreboard.
Programming B – Sensing Designing and coding a project that captures inputs from a physical device.	6	Programming	This unit progresses students' knowledge and understanding of confidently being able to sequence, repetition and selection independently within programming. Children are now ready to access Year 7 learning objectives and will be able to draw on their learning across the core 3 areas of computing: Computer Science, Information Technology and Digital Literacy.