



St John's C.E. Primary School

Computing Progression of Skills



Shaping lives. Shaping futures.

“Start Children off on the way they should go, and even when they are old, they will not turn from it.”

Proverbs 22:6

Progression of Skills through Computing

During their time at St. John's, children will work through their computing skills throughout the year and then apply what they have learnt with an end unit. These skills will then set them up for the next academic year's work.

Core Strands

Computing Systems and Networks
Creating Media
Data and Information
Programming

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Digital Literacy	Information Technology	Computer Science	Information Technology	Information Technology	Computer Science
1	Technology around us	Digital Painting	Moving a Robot	Grouping Data	Digital Writing	Programming Animations
2	Information Technology Around Us	Digital Photography	Robot Algorithms	Pictograms	Making Music	An introduction to Quizzes
3	Connecting Computers	Stop Frame Animation	Sequence in Music	Branching Databases	Desktop Publishing	Events and Actions
4	The Internet	Audio Editing	Repetition in Shapes	Data Logging	Photo Editing	Repetition in Games
5	Sharing Information	Video Editing	Selection in Physical Computing	Flat-File Databases	Vector Drawing	Selection in Quizzes
6	Communication	Web Page Creation	Variables in Games	Introduction to Spreadsheets	3D Modelling	Sensing

These units have been created to ensure the children are building and consolidating on their previous skills as well as progressing further and learning new skills.

The Progressions of Skills Ladder for Computing clearly establishes the opportunities for skills acquisition throughout the Key Stages as indicated below.

Progression Overview

Children will start their computing skills at St. John's by learning the basics such as turning on and off a netbook, how a keyboard and mouse works as well as how to open a program. Without these basic skills, children will not be able to access computers or netbooks in their future. From here, the children will learn how to design and create their own work, edit others, save their work in multiple places amongst other information technology skills.



From this basic understanding, the children will then move onto computer science skills. This is where the children will learn what happens behind the computer screen. They gain an understanding of how computers work, what algorithms are and why computers need them. The children will build their understanding up through the year groups to enable them to go from understanding the process to designing and debugging their own.

Progression of Key Skills

Termly Overview Computing – Progression of Skills						
	Autumn		Spring		Summer	
	Digital literacy	Information technology	Computer science	Information technology	Information technology	Computer science
Year 1	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.	For this unit learners would benefit from being introduced to the keyboard and mouse (taught in previous unit). Learners should be familiar with: - How to switch their device on - Username - Passwords	This unit progresses students' 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.	This unit will introduce pupils to data and information. It will introduce pupils to the concept of labelling and grouping objects based on their properties. Pupils will develop their understanding that objects can be given labels, which is fundamental to their future learning concerning databases and spreadsheets. In addition, pupils will begin to improve their ability to use dragging and dropping skills on a device.	This unit progresses students' 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.	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.
Year 2	This unit progresses students' knowledge and understanding of technology and how they interact with it beyond school. Learners will also build on their knowledge of using technology safely and responsibly, and begin to consider the implications of the choices that they make.	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.	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. This unit progresses students' knowledge and understanding of algorithms and how they are implemented as programs on digital devices. Pupils will spend time looking at how the order of commands affects outcomes. Pupils will use this knowledge and logical reasoning to trace programs and predict outcomes.	This unit progresses students' knowledge and understanding of grouping data.	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. 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.	This unit progresses learners' knowledge and understanding of instructions in sequences and the use of logical reasoning to predict outcomes.
Year 3	This unit progresses students' knowledge and understanding of technology by focussing 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.	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.	This unit assumes that learners will have some prior experience of programming; the KS1 NCCE units cover floor robots and ScratchJr. However, experience of other languages or environments may also be useful.	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.	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.	This unit assumes that learners will have some prior experience of programming. The key stage 1 National Centre for Computing Education units focus on floor robots and ScratchJr, however experience of other languages or environments may also be useful. The Year 3 – Programming A unit introduces the Scratch programming environment and the concept of sequences.



Year 4	This unit progresses students' knowledge and understanding of networks in Year 3.	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.	This unit progresses students' knowledge and understanding of programming. 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.	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.	Learners should have experience of making choices on a tablet/computer. They should be able to navigate within an application. This unit progresses students' skills through editing digital images and considering the impact that editing can have on an image. Learners will also consider how editing can be used appropriately for different scenarios, and create and evaluate 'fake' images, combining all of their new skills.	This unit assumes that learners will have some prior experience of programming. The KS1 NCCE units cover floor robots and ScratchJr, and Scratch is introduced in the Year 3 programming units. However, experience of other languages or environments may also be useful.
Year 5	This unit progresses learners' knowledge and understanding of computing systems and online collaborative working.	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. By the end of this unit, learners will have developed the skills required to plan, record, edit, and share a video.	This unit assumes that learners will have prior experience of programming using block-based construction (eg Scratch) and understand the concepts of sequence and repetition. The National Centre for Computing Education key stage 1 units focus on floor robots and ScratchJr, however, experience of other languages or environments may also be useful.	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.	This unit progresses students' knowledge and understanding of digital painting and has some links to desktop publishing in which learners used digital images. They are now creating the images that they could use in desktop publishing documents.	This unit assumes that learners will have prior experience of programming using block-based construction (eg Scratch), understand the concepts of 'sequence' and 'repetition', and have some experience of using 'selection'. Ideally, 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'.
Year 6	This unit progresses students' knowledge and understanding of computing systems and online collaborative working.	This unit progresses students' knowledge and understanding of the following: digital writing, digital painting, desktop publishing, digital photography, photo editing, and vector drawing.	This unit assumes that pupils will have some prior experience of programming in Scratch. Specifically, they should be familiar with the programming constructs of sequence, repetition, and selection. These constructs are covered in the Year 3, 4, and 5 National Centre for Computing Education programming units respectively. Each year group includes at least one unit that focuses on Scratch.	This unit progresses students' knowledge and understanding of data, and teaches them how to organise and modify data within spreadsheets.	This unit progresses students' knowledge and understanding of creating 3D graphics using a computer. Prior to undertaking this unit, learners should have worked with 2D graphics applications.	This unit presumes that learners are already confident in their understanding of sequence, repetition and selection independently within programming. If learners are not yet ready for this, you may wish to revisit earlier programming units where these constructs are introduced.



Progression of Unit Outcomes

Termly Overview Computing – Unit Outcomes						
	Autumn		Spring		Summer	
	Digital literacy	Information technology	Computer science	Information technology	Information technology	Computer science
Year 1	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.	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.	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. 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.	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.	During this unit, learners will develop their understanding of the various aspects of using a computer to create and manipulate text. Learners 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.	This unit introduces learners 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.
Year 2	In this unit, learners will look at information technology at school and beyond, in settings such as shops, hospitals, and libraries. Learners will investigate how information technology improves our world, and they will learn about using information technology responsibly.	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.	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.	This unit introduces the learners to the term 'data'. Learners will begin to understand what data means and how this 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.	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.	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.



Year 3	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.	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.	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.	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.	During this unit, learners will become familiar with the terms 'text' and 'images' and understand that they can be used to communicate messages. They will use desktop publishing software and consider careful choices of font size, colour and type to edit and improve premade documents. Learners will be introduced to the terms 'templates', 'orientation', and 'placeholders' and begin to understand how these can support them in making their own template for a magazine front cover. They will start to add text and images to create their own pieces of work using desktop publishing software. Learners will look at a range of page layouts thinking carefully about the purpose of these and evaluate how and why desktop publishing is used in the real world.	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.
Year 4	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.	In this unit, learners will initially examine devices capable of recording digital audio, which will include identifying the input device (microphone) and output devices (speaker or headphones) if available. 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 is the first of the two programming units in Year 4, and looks at repetition and loops within programming. Pupils will create programs by planning, modifying, and testing commands to create shapes and patterns. They will use Logo, a text-based programming language.	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.	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.	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.



Year 5	In this unit, learners will develop their understanding of computer systems and how information is transferred between systems and devices. Learners will consider small-scale systems as well as large-scale systems. They will explain the input, output, and process aspects of a variety of different real-world systems. Learners will also take part in a collaborative online project with other class members and develop their skills in working together online.	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.	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 components (including output devices — LEDs and motors) through the application of their existing programming knowledge. Learners will be introduced to conditions as a means of controlling the flow of actions, and explore how these can be used in algorithms and programs through the use of an input device (push switch). Learners will make use of their knowledge of repetition and conditions when introduced to the concept of selection	This unit looks at how a flat-file database can be used to organise data in records. Pupils use tools within a database to order and answer questions about data. They create graphs and charts from their data to help solve problems. They use a real-life database to answer a question, and present their work to others.	In this unit learners will find out that vector images are made up of shapes. They will learn how to use the different drawing tools and how images are created in layers. They will explore the ways in which images can be grouped and duplicated to support them in creating more complex pieces of work. This unit is planned using the Google Drawings app.	In this unit, pupils 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 using 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
			(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 incorporate 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, pupils will apply the stages of programming design.			by identifying how it meets the requirements of the task, the ways they have improved it, and further ways it could be improved.
Year 6	In this unit, the class will learn about the World Wide Web as a communication tool. First, they will learn how we find information 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. They will then investigate different methods of communication, before focusing on internet-based communication. Finally, they will evaluate which methods of internet communication to use for particular purpose.	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.	This unit explores the concept 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. In Lessons 2, 3, and 5, which follow the Use-Modify-Create model, pupils will experiment with variables in an existing project, then modify them, then they will create their own project. In Lesson 4, pupils will focus on design. Finally, in Lesson 6, pupils will apply their knowledge of variables and design to improve their game in Scratch.	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 graphs and charts, and evaluate their results in comparison to questions asked.	During this unit, 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, including combining 3D objects to make a house and examining the differences between working digitally with 2D and 3D graphics. Learners will progress to making accurate 3D models of physical objects, such as a pencil holder, which include using 3D objects as placeholders. Finally, learners will examine the need to group 3D objects, then go on to plan, develop, and evaluate their own 3D model of a photo frame.	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 learners 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 learners to build in and test in the programming environment, before transferring it to their micro:bit. Learners then take on three new projects in Lessons 2, 3, and 4, with each lesson adding more depth.



End of Year Assessment Statements

Year 1

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
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
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
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 writing on a computer with writing on paper
To choose a command for a given purpose
To show that a series of commands can be joined together
To identify the effect of changing a value
To explain that each sprite has its own instructions
To design the parts of a project
To use my algorithm to create a program



Year 2

To recognise the uses and features of information technology
To identify information technology in the home
To identify information technology beyond school
To explain how information technology benefits us
To show how to use information technology safely
To recognise that choices are made when using information technology
To know what devices can be used to take photographs
To use a digital device to take 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 images can be changed
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 (series of commands)
To explain that programming projects can have code and artwork
To design an algorithm
To create and debug a program that I have written
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
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
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



Year 3

To explain how digital devices function
To identify input and output devices
To recognise how digital devices can change the way 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
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
To explore a new programming environment
I can identify that each sprite is controlled by the commands I choose
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
To create questions with yes/no answers
To identify the object attributes needed to collect relevant data
To create a branching database
To identify objects using a branching database
To explain why it is helpful for a database to be well structured
To compare the information shown in a pictogram with a branching database
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
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



Year 4

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
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
To identify that sound can be digitally recorded:
To use a digital device to record sound:
To explain that a digital recording is stored as a file:
To explain that audio can be changed through editing:
To show that different types of audio can be combined and played together:
To evaluate editing choices made:
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 program into parts
To create a program that uses count-controlled loops to produce a given outcome
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 use data collected over a long duration to find information
To identify the data needed to answer questions
To use collected data to answer questions
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
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 which 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



Year 5

To explain that computers can be connected together to form systems
To recognise the role of computer systems in our lives
To recognise how information is transferred over the internet
To explain how sharing information online lets people in different places work together
To contribute to a shared project online
To evaluate different ways of working together online
To recognise video as moving pictures, which can include audio
To identify digital devices that can record video
To capture video using a digital device
To recognise the features of an effective video
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
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, eg number of times
To conclude 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 controllable system that includes selection
To use a form to record information
To compare paper and computer-based databases
To outline how grouping and then sorting data allows us to answer questions
To explain that tools can be used to select specific data
To explain that computer programs can be used to compare data visually
To apply my knowledge of a database to ask and answer real-world questions
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 evaluate my vector drawing
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 which uses selection
To create a program which uses selection
To evaluate my program



Year 6

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
To recognise how we communicate using technology
To evaluate different methods of online communication
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
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
To identify questions which can be answered using data
To explain that objects can be described using data
To explain that formula can be used to produce calculated data
To apply formulas to data, including duplicating
To create a spreadsheet to plan an event
To choose suitable ways to present data
To use a computer to create and manipulate three-dimensional (3D) digital objects
To compare working digitally with 2D and 3D graphics
To construct a digital 3D model of a physical object
To identify that physical objects can be broken down into a collection of 3D shapes
To design a digital model by combining 3D objects
To develop and improve a digital 3D model
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 an 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

