Computer science Digital literacy Information technology

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
1	Technology around us NC 1.4, 1.5 & 1.6	Digital painting NC 1.4	Moving a robot NC 1.1, 1.2, 1.3, 1.5	Grouping data 1.4, 1.6	Digital writing NC 1.4, 1.6	Programming Animations NC 1.1, 1.2, 1.3, 1.4
	Recognising technology in school and using it responsibly. 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	Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally. 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	Writing short algorithms and programs for floor robots, and predicting program outcomes. 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	Exploring object labels, then using them to sort and group objects by properties. 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	Using a computer to create and format text, before comparing to writing non-digitally To use a computer to write To add and remove text on a computer To identify the look of text can be changed on a computer To make careful choices when changing text To explain why I used the tools I chose To compare writing on a computer with writing on paper	Designing and programming the movement of a character on screen to tell stories 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
2	Information technology around us NC 1.4, 1.5 & 1.6	Digital photography NC 1.4, 1.5	Robot algorithms NC 1.1, 1.2, 1.3, 1.5	Pictograms NC 1.4, 1.6	Making music NC 1.4	An introduction to Quizzes N.C 1.1, 1.2, 1.3
	Identifying IT and how its responsible use improves our world in school and beyond. 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	Capturing and changing digital photographs for different purposes. 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	Creating and debugging programs, and using logical reasoning to make predictions. 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)	Collecting data in tally charts and using attributes to organise and present data on a computer. 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	Using a computer as a tool to explore rhythms and melodies, before creating a musical composition 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	Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz 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 show how to use information technology safely To recognise that choices are made when using information technology	To recognise that images can be changed	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 people can be described by attributes To explain that we can present information using a computer	To review and refine our computer work	To decide how my project can be improved
3	Connecting computers NC 2.2, 2.4, 2.6	Stop-frame animation NC 2.6	Sequence in music NC 2.1, 2.2, 2.3, 2.6	Branching databases NC 2.6	Desktop publishing NC 2.5, 2.6	Events and actions in programs NC 2.1, 2.2, 2.3, 2.6
	Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks. 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	Capturing and editing digital still images to produce a stop-frame animation that tells a story. 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	Creating sequences in a block-based programming language to make music 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	Building and using branching databases to group objects using yes/no questions. 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	Creating documents by modifying text, images, and page layouts for a specified purpose. 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	Writing algorithms and programs that use a range of events to trigger sequences of actions 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
4	The Internet NC 2.4, 2.5, 2.6, 2.7	Audio editing NC 2.5, 2.6, 2.7	Repetition in shapes NC 2.1, 2.2, 2.3, 2.6	Data logging NC 2.2, 2.6	Photo editing NC 2,5, 2,6, 2.7	Repetition in games NC 2.1, 2.2, 2.3, 2.6
	Recognising the internet as a network of networks including the WWW, and why we should evaluate online content. 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	Capturing and editing audio to produce a podcast, ensuring that copyright is considered. 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:	Using a text-based programming language to explore count-controlled loops when drawing shapes. 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	Recognising how and why data is collected over time, before using data loggers to carry out an investigation. 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	Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled 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	Using a block-based programming language to explore count-controlled and infinite loops when creating a game . 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 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 show that different types of audio can be combined and played together: To evaluate editing choices made:	To decompose a program into parts To create a program that uses count-controlled loops to produce a given outcome	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 recognise that not all images are real To evaluate how changes can improve an image	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
5	Sharing information NC 2.1, 2,2, 2.4, 2.6, 2.7	Video editing NC 2.5, 2.6, 2.7	Selection in physical computing NC 2.1, 2.2, 2.3, 2.6	Flat-file databases NC 2.6, 2.7	Vector drawing NC 2.7	Selection in quizzes NC 2.1, 2.2, 2.3, 2.6
	Identifying and exploring how information is shared between digital systems. 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	Planning, capturing, and editing video to produce a short film 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	Exploring conditions and selection using a programmable microcontroller 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	Using a database to order data and create charts to answer questions. 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	Creating images in a drawing program by using layers and groups of objects. 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	Exploring selection in programming to design and code an interactive quiz. 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
6	Communication NC 2.1, 2.4, 2.5, 2.6, 2.7	Web page creation NC 2.5, 2.6, 2.7	Variables in games NC 2.1, 2.2, 2.3, 2.6	Introductions to spreadsheets NC 2.6	3D modelling NC 2.6, 2.7	Sensing NC 2.1, 2.2, 2.3, 2.6
	Recognising how the WWW can be used to communicate and be searched to find information. To identify how to use a search engine To describe how search engines select results	Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation. To review an existing website and consider its structure To plan the features of a web page	Exploring variables when designing and coding a game. To define a 'variable' as something that is changeable To explain why a variable is used in a program	Answering questions by using spreadsheets to organise and calculate data. To identify questions which can be answered using data To explain that objects can be described using data	Planning, developing, and evaluating 3D computer models of physical objects. To use a computer to create and manipulate three-dimensional (3D) digital objects	Designing and coding a project that captures inputs from a physical device. To create a program to run on a controllable device To explain that selection can control the flow of a program

	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 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 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 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 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 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

- Computer science. This is the scientific and practical study of computation: what can be computed, how to compute it, and how computation may be applied to the solution of problems.
- Information technology is concerned with how computers work, and how they may be applied to the storage, retrieval, transmission and manipulation of data.
- Digital literacy is the ability to effectively, responsibly, safely and critically navigate, evaluate and create digital artefacts using a range of digital technologies. The creation of digital artefacts will be integral to much of the learning of computing. Digital artefacts can take many forms, including digital images, computer programs, spreadsheets and 3D animations.

Taxonomy strand	**Description**
Algorithms	Being able to comprehend, design, create, and evaluate algorithms
Programming	Writing software to allow computers to solve problems
Data and Information	How data is stored, organised, and used to represent real-world artefacts and scenarios
Computer systems	What is a computer, how do its constituent parts function together as a whole

Networks	Understand how networks can be used to retrieve and share information and come with associated risks
Creating media	Select and create a range of media including text, images, sounds and video
Design and development	The activities involved in planning, creating and evaluating computing artefacts
Effective use of tools	Use software tools to support computing work
Impact of technology	How individuals, systems, and society interact with computer systems
Safety and security	Understanding risks when using technology and how to protect individuals and systems