Loudwater Combined School

Computing Curriculum – Progression of Knowledge

	FS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Computing systems and networks	To explore technology. To use different digital devices. To recognise that you can access content on a digital device. To recognise a selection of digital devices. To recognise the basic parts of a computer, e.g. mouse, screen, and keyboard. To select a digital device to fulfil a specific task, e.g. to take a photo.	**Technology around us** To know that technology is something that can help us. To identify examples of technology. To explain how examples of technology help us. To recognise that a computer is an example of technology. To recognise that choices are made when using technology. To explain why rules are needed when using technology.	**Information technology around us** To recognise different types of computers used in school. To identify that a computer is a part of information technology. To recognise the features of information technology. To say how rules for using information technology can help us. To explain how information technology benefits us. To recognise that choices are made when using information technology.	**Connecting computers** To describe what an input is. To explain that a process acts on the inputs. To explain that an output is produced by the process. To identify ow changing the process can affect the output. To recognise that a digital device is made up of several parts. To recognise that computers can be connected to each other. To identify how devices in a network are connected with one another. To recognise that a network is made up of a number of components. To explain how information is passed through multiple connections. To identify the benefits of computer networks.	**The internet** To outline how information can be shared via the World Wide Web. To describe how to access the World Wide Web. To recognise that the World Wide Web is part of the internet. To explain that the global interconnection of networks is the internet. To evaluate the reliability of content and the consequences of unreliable content.	**Systems and searching** To recognise that a system is a set of interconnected parts which work together. To explain that computers can be connected together to form IT systems. To identify that data can be transferred between IT systems. To recognise inputs, processes, and outputs in large IT systems. To describe the role of a particular IT system in their lives. To relate that search engines are examples of large IT systems. To explain how search engines make money by selling targeted advertising space. To identify some of the limitations of search engines.	**Communication and collaboration** To recognise that data is transferred across networks using agreed protocols (methods) To recognise that connections between computers allow access to shared stored files. To explain that data is transferred in packets. To recognise computers connected to the internet allow people in different places to work together. To discuss the opportunities that technology offers for communication and collaboration. To explain which types of media can be shared through the internet. To explain that communicating and collaboration using the internet can be public or private.

Creating media	To explore technology. To use different digital devices. To repeat an action with technology to trigger a specific outcome. To recognise the success or failure of an action. To follow simple instructions to control a digital device. To recognise that we control computers.	**Digital painting** To explain what different freehand tools do. To recognise computers can be used to create art. To recognise a tool can be adjusted to suit my need. To decide when it's appropriate to use each tool. To consider impact of choices made. To compare painting using a computer with painting using brushes. **Digital writing** To recognise that a keyboard is used to enter text into a computer. To recognise that the Shift key changes the output of a key. To recognise that text can be changed. To recognise that text can be edited. To recognise that the appearance of text can be changed. To consider the impact of choices made.	**Digital photograph** To recognise that some digital devices can capture images using a camera. To talk about how to take a photograph. To recognise that photographs can be saved and viewed later. To make choices when composing my photograph. To recognise features of 'good' photographs. To identify how a photograph could be improved. To explain the effect of light on a photograph. To recognise that photographs can be change after they have been taken. To recognise that some images are not accurate. **Making music** To identify that computers can be used to play sounds of different instruments. To identify that the same pattern can be represented in different ways. To compare playing music on instruments with making music on a computer.	**Stop frame animation** To explain that an animation is made up of a sequence of images. To identify that a capturing device needs to be in a fixed position. To recognise that smaller movements create smoother animation. To explain the need for consistency in working. To explain the impact of adding other media to an animation. To explain that a project must be exported so that it can be shared. **Desktop publishing** To recognise how text and images can be used together to convey information. To define landscape and portrait as two different page orientations. To consider how different layouts can suit different purposes. To recognise that DTP pages can be structured with placeholders. To recognise how different font styles and effects are used for particular purposes. To consider the benefits of using a DTP application.	**Audio production** To identify that sound can be recorded. To identify that an input device is needed to record sound. To identify that output devices are needed to play audio. To recognise that recorded audio can be stored on a computer. To recognise that audio can be edited. To recognise that sound can be represented visually as a waveform. To recognise that audio can be layered so that multiple sounds can be played at the same time. To consider the results of editing choices made. **Photo editing** To recognise that digital images can be manipulated. To recognise that digital images can be changed for different purposes. To choose the most appropriate tool for a particular purpose. To consider the impact of changes made on the quality of the image.	**Video production** To explain the features of video as a visual media format. To recognise which devices can and can't record video. To explain the purpose of a storyboard. To recognise that filming techniques can be used to create different effects. To recognise the need to regularly review and reflect on a video project. To explain the limitations of editing video on a recording device. To identify that videos can be edited on a recording device or on a computer. To identify videos can be improved through and reshooting or editing. To recognise projects need to be exported to be shared. **Vector drawing** To identify that a vector drawing comprises separate objects. To recognise that each object in a drawing is in its own layer. To recognise that vector images can be scaled without impact on quality. To recognise that objects can be modified in groups. To explain how alignment and size guides can help create a more consistent drawing. To consider the impact of choices made.	**Web page creation** To recognise the relationship between HTML and visual display. To recognise that web pages can contain different media types. To recognise that web pages are written by people. To recognise that a website is a set of hyperlinked web pages. To recognise components of a web page layout. To consider the ownership and use of images (copyright). To recognise the need to preview pages (different screens / devices). To recognise the need for a navigation path. To recognise the implications of linking to content owned by others. **3D modelling** To explain that 3D models can be created on a computer. To recognise that a 3D environment can be viewed from different perspectives. To recognise that digital tools can be used to manipulate 3D objects. To show how placeholders can create holes in 3D objects. To recognise that artefacts can be broken down into a collection of 3D objects.

Programming	To explore technology. To repeat an action with technology to trigger a specific outcome. To recognise the success or failure of an action. To follow simple instructions to control a digital device. To recognise that we control computers. To input a short sequence of instructions to control a device.	**Moving a robot** To recall words that can be enacted. To explain what a given command does. To match a command to an outcome. To understand that a program is a set of commands that a computer can run. To recall that a series of instructions can be issued before they are enacted. **Programming animations** To predict the outcome of a command on a device. To list that commands can be used on a given device. To explain what a given command does. To match a command to an outcome. To recognise how to run a command (press a button). To choose a command for a given purpose. To understand that a program is a set of commands a computer can run. To recall that a series of instructions can be issued before they are enacted.	**Robot algorithms** To describe that a series of instructions is a sequence. To explain what happens when we change the order of instructions. To recall that a series of instructions can be issued before they are enacted. To recognise that you can predict the outcome of a program. **Programming quizzes** To describe a series of instructions as a 'sequence'. To recall that a series of instructions can be issued before they are enacted. To use logical reasoning to predict the outcome of a program.	**Sequencing sounds** To explain that programs start because of an input. To explain what a sequence is. To identify that a program includes sequences of commands. To identify that the sequence of a program is a process. To explain that the order of commands can affect a program's output. To identify that different sequences can achieve the same output. To identify that different sequences can achieve different outputs. **Events and actions in programs** To explain that programs start because of an input. To explain what a sequence is. To identify that a program includes sequences of commands. To identify that the sequence of a program is a process. To explain that the order of commands can affect a program's output. To identify that different sequences can achieve the same output. To identify that different sequences can achieve different outputs.	**Repetition in shapes** To relate what 'repeat' means. To identify everyday tasks that include repetition as part of a sequence, eg brushing teeth, dance moves. To explain that we can use a loop command in a program to repeat instructions. To identify patterns in sequence. To identify a loop within a program. To explain that in programming there are indefinite loops and count-controlled loops. To explain that an indefinite loop will run until the program is stopped. To explain that you can program a loop to stop after a specific number of times. To identify patterns in a sequence, eg 'step 3 times' means the same as 'step, step, step'. To justify when to use a loop and when not to. To explain the importance of instruction order in a loop. To recognise that not all tools enable more than one process to be run at once. **Repetition in games** As above	**Selection in physical computing** To explain that a condition can only be true or false. To relate that a count-controlled loop contains a condition. To compare a count-controlled loop with a condition-controlled loop. To explain that a condition-controlled loop will stop when a condition is met. To explain that when a condition is met, a loop will complete a cycle before it stops. To explain that selection can be used to branch the flow of a program. To explain that a loop can be used to repeatedly check whether a condition has been met. To explain the importance of instruction order in 'if...then...else...' statements. **Selection in quizzes** As above	**Variables in games** To define a 'variable' as something that is changeable. To identify examples of information that is variable, for example, a football score during a match. To explain that a variable can be used in a program, eg 'score'. To define a program variable as a placeholder in memory for a single value. To explain that a variable has a name and a value. To recognise that the value of a variable can be used by a program. To recognise that the value of a variable can be updated. To identify that variables can hold numbers (integers) or letters (strings). To define the way that a variable is changed. To recognise that a variable can be set as a constant (fixed value). To explain the importance of setting up a variable at the start of a program (initialisation). To explain that there is only one value for a variable at any one time. To explain that if you change the value of a variable, you cannot access the previous value (cannot undo). To explain that if you read a variable, the value remains. To explain that the name of a variable is meaningless to the computer.

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Data and information		**Grouping data** To identify that objects can be counted. To recognise that information can be presented. To recognise that information can be presented in different ways.	**Pictograms** To use a tally chart to collect data. To compare objects that have been grouped by attribute. To suggest appropriate headings for tally charts and pictograms. To use a computer program to present information in different ways. To explain that we can present information using a computer. To give simple examples of why some information should not be shared.	**Branching databases** To investigate questions with yes/no answers. To identify attributes that you can ask yes/no questions about. To select an attribute to separate objects into two similarly sized groups. To explain that a branching database is an identification tool. To recognise that a data set can be structured using yes/no questions. To explain that a well-structured branching database will enable you to identify objects using fewer questions. To relate two levels of a branching database using AND. To suggest real-world applications for branching databases.	**Data logging** To suggest questions that can be answered using a table of data. To identify data that can be logged over time. To identify that sensors are input devices. To recognise that a sensor can be used as an input device for data collection. To explain that a data logger captures 'data points' from sensors over time.	**Flat file databases** To explain that a computer program can be used to organise data. To explain that tools can be used to select data to answer questions. To outline how ordering data allows us to answer some questions. To outline how operands can be used to filter data. To outline how 'AND' and 'OR' can be used to refine data selection. To explain that computer programs can be used to compare data visually. To explain that we present information to communicate a message.	**Introduction to spreadsheets** To identify questions that can be answered using spreadsheet data. To explain what an item of data is in a spreadsheet. To outline that there are different software tools to work with data. To explain how the data type determines how a spreadsheet can process the data. To explain that formulas can be used to produce calculated data. To recognise cells can be linked. To explain why data should be organised in a spreadsheet. To recognise that a cell's value automatically updates when the value in a linked cell is changed. To evaluate results in comparison to the question asked.