Moorland Primary School – Progression of Knowledge and skills in Computing

Year 6	Computer Science	Digital Literacy	Information technology
Knowledge (Substantive) Topic: Computing systems and networks- communication & collaboration Topic: Creating media - webpages Topic: Programming A - variable in games Topic: Data & Information - Spreadsheets Topic: Creating Media – 3D modelling Topic: Programming B – sensing movement	1.To know that a 'variable' is something changeable and that it has a name and value. 2.To know how to improve a game by using variables. 3.To know how to make design choices to create & then evaluate a project. 4.To know that a data set can be created in a spreadsheet. 5.To know that formulas can produce calculated data 6.To know how to use a spreadsheet to answer questions 7.To know how to create a program to run on a controllable device and explain that selection can control the flow of the program 8.To know that conditional statements are used to compare a variable to a value 9.To know how to design and develop a program that uses inputs and outputs.	1.To know that there are different ways to communicate for different purposes. 2.To know that sharing information online can help people work together. 3.To know that 3D models can be created and modified for a given purpose and that objects can be combined in a 3D model. 4.To know how to plan and create digital 3D models	1.To know that internet addresses are important. 2.To know that data is transferred across the internet. 3.To know that websites are written in HTML 4.To know common features of a website. 5.To know how to add content to a web page, preview and evaluate what it looks like. 6.To know why navigation paths are needed on webpages.

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Year 6	Computer Science	Digital Literacy	Information technology
Skills (Disciplinary Knowledge) Topic: Computing systems and networks- communication & collaboration Topic: Creating media - webpages Topic: Programming A - variable in games Topic: Data & Information - Spreadsheets Topic: Creating Media – 3D modelling Topic: Programming B – sensing movement	1.Identify and explain program variables as a placeholder in memory for a single value. 2.Decide where in a program to change variables and make an event to set a variable. 3.Choose & create artwork & algorithms for a project and test the code that was written before sharing the game with others & identifying how it could be improved. 4.Collect and enter data in a spreadsheet 5. Choose and apply a format for a cell 6.Plan an event through a spreadsheet 7.Transfer program to a controllable device, determine the flow of a program and use a variable to select the flow of a program 8.Exaplin the importance of the order of conditions & modify a program to achieve a different outcome. 9.Create & test a program based on a designed algorithm and flow.	1.Identify & compare different ways of communicating over the internet. 2.Recognise that working together can be public or private and the internet enables effective collaboration in different ways. 3.Add, move, view, lift, recolour, resize, duplicate and rotate objects in three dimensions 4.Construct a 3D model, based on a design, and explain how to could be improved	1.Describe how computers use addresses to access websites and that internet devices have addresses. 2. Explain that data is transferred over the internet and networks in packets. 3.Explore and discuss different media used on websites 4.Draw a website layout and suggest media to include. 5.Critically evaluate own webpage and content. 6.Descirbe and explain navigation paths and make

			multiple webpages linked by hyperlinks.

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Year 5	Computer Science	Digital Literacy	Information technology
Knowledge (Substantive) Topic: Computing systems and networks – systems & searching Topic: Creating media - Video production Topic: Programming A – selection in physical computing Topic: Data & Information – Flat-file databases Topic: Creating Media –Vector graphics Topic: Programming B – selection in quizzes	1.To know how to control a simple circuit connected to a computer. 2.To know how to write a program that includes count-controlled loops with conditions. 3.To know how to design and create a program that includes selection and that controls a physical computing project. 4.To know how to record information on a form. 5.To know how to answer questions by grouping and sorting data using tools. 6.To know how selection is used in computer programs 7.To know how to connect a condition to an outcome through a conditional statement. 8.To know that section directs the flow of a program. 9.To know how to create program that uses selection.	1.To know how to use search engines 2.To know how and why search results are ranked 3.To know that digital devices can record video and what makes videos effective. 4.To know the impact of the choices made when making & sharing a video. 5.To know how to compare paper and computer-based databases. 6.To know how to use real-world databases.	1.To know that connected computers form systems and the role of these in our lives 2.To know how to use a range of filming techniques. 3.To know how to create a storyboard to video, reshoot and edit using different tools. 4.To know how to create a vector drawing by combing shapes 5.To know that vector drawings consist of layers. 6.To know that you can group objects to make them easier to work with.

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Year 5	Computer Science	Digital Literacy	Information technology
Skills (Disciplinary Knowledge) Topic: Computing systems and networks – systems & searching Topic: Creating media - Video production Topic: Programming A – selection in physical computing Topic: Data & Information – Flat-file databases Topic: Creating Media –Vector graphics Topic: Programming B – selection in quizzes	1.Creat a simple circuit and connect it to a microcontroller. 2.Deign sequences that use count controlled and conditional loops. 3.Create a project where a condition starts an action and uses selection to produce an intended outcome. 4.Create a database and order, sort and group data cards 5.Group information using a database and choose multiple criteria to answer a given question, outlining how 'AND' and 'OR' can be used to refine data selection. 6.Identify, modify and recall how conditions are used in a program. 7.Create a program with different outcomes using selection 8.Show that a condition can direct a program flow in 1 of 2 ways 9.Implment then evaluate an algorithm to create the first section of a program.	1.Make web searches, compare results and refine a web search. 2.Explain examples of criteria used to rank results and describe how results can be influenced. 3.Identfy and compare different features of a video & recording device. 4.Evaluate videos and share opinions 5.Explain and navigate a flat-file database to compare different views of information. 6.Ask questions, present findings and refine a search.	1.Describe and explain system features. 2.Capture and review a video. 3.Create, save, edit, store, retrieve and export a recording. 4.Experiment with shape, line & zoom tools to create a detailed vector drawing. 5.Use layering to create an image. 6.Copy by duplicating objects and group or ungroup objects.

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Year 4	Computer Science	Digital Literacy	Information technology
Knowledge (Substantive) Topic: Computing systems and networks – The Internet Topic: Creating media – Audio Production Topic: Programming A – Repetition in shapes Topic: Data & Information – Data logging Topic: Creating Media - photo editing Topic: Programming B – Repetition in games	1.To know that accuracy in programming is important 2.To know how to create a program in a text-based language 3.To know what 'repeat' means. 4.To know how to modify a count-controlled loop (& in Programming B – Repetition in games) 5.To know how to decompose a task into small steps 6.To know how to create a program that uses count-controlled loops to produce a given outcome. 7.To know that data gathered over time can be used to answer questions. 8.To know that digital data can be collected automatically by data-loggers. 9.To know that in programming there are infinite loops and count controlled loops. 10.To know how to design two or more loops that run at the same time.	1.To know that the content of the WWW is created by people. 2.To know how to evaluate the consequences of unreliable content. 3.To know how to propose a question that can be answered using logged data.	1.To know how networks connect. 2.To know how websites & media can be shared through the WWW. 3.To know that sound can be recorded and edited. 4.To know how to plan, record, save and review content for a podcast. 5.To know how to enhance a project by combining audio. 6.To know how to change the composition of a digital image. 7.To know that images can be combined, cloned and have their colours changed.

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	11.To know how to design a project that includes repetition.		**8.To know how to evaluate changes to improve an image.**

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Year 4	Computer Science	Digital Literacy	Information technology
Skills (Disciplinary Knowledge) Topic: Computing systems and networks – The Internet Topic: Creating media – Audio Production Topic: Programming A – Repetition in shapes Topic: Data & Information – Data logging Topic: Creating Media - photo editing Topic: Programming B – Repetition in games	1.Creat a code snippet for a given purpose by typing commands. 2.Write and test an algorithm to produce a given outcome. 3.Idenitfy everyday tasks that include repetition & use a count-controlled loop. 4.Identify the effect of changing the number of times a task is repeated and predict the outcomes of a program containing a count-controlled loop. (& in Programming B – Repetition in games) 5.Identify 'chunks' of actions and use a procedure in a program. 6.Design and develop a program that includes count-controlled loops. 7.Identify data that can be gathered over time and choose a data set to answer a given question. 8.Identify that data loggers collect data at given points and talk about data that has been captured.	1.Explain that websites and their content are created by people & explain that there are rules to protect content. 2.Explain that not everything on the WWW is true and that some information may not be honest, accurate or legal. 3.Draw conclusions and interpret data that has been collected.	1.Describe and demonstrate how information is shared across the internet as a network or networks. 2.Describe where websites & media are stored, uploaded & accessed and the WWW. 3.Identify and use the input and output devices to record & play sounds. 4.Plan, record and save a project and review the quality of the recording. 5.Arrange multiple sounds to create an effect. 6.Use photo editing software to crop, edit or rotate an image.

	9.Choose when to use a count-controlled & an infinite loop. **10.Choose which action will be repeated and explain the outcome of the repeated action.** **11.Develop a design and evaluate the use of repetition in the project.**		**7.Experiement with different colour effects and cloning tools.** **8.Combine text and images and review against a given criteria.**

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Year 3	Computer Science	Digital Literacy	Information technology
Knowledge (Substantive) Topic: Computing systems and networks – Connecting computers Topic: Creating media – Stop-frame animation Topic: Programming A – Sequencing sounds Topic: Data & Information – Branches databases Topic: Creating Media – Desktop publishing Topic: Programming B - Events & actions in programs	1.To know the objects in a new programming environment 2.To know that commands have outcomes. 3.To know that a program has a start. 4.To know how to change the appearance of a program 5.To know how to create a project from a task description. 6.To know how a program a sprite to moves in a project 7.To know how to adapt a program to a new context. 8.To know how to develop a program by adding features 9.To know how to identify and fix bugs in a program.	1.To know how to create yes/no questions. 2.To know the benefits of desktop publishing.	1.To know how digital devices function and recognise how they change the way we work. 2.To know that we use a computer network to share information. 3.To know how digital devices can be connected. 4.To know how to plan a sequence of moving images is animation 5.To know how to review & improve an animation by adding other media. 6.To know what attributes are needed to collect data about an object. 7.To know how to plan & create a well-structured branching database. 8.To know how text and images can be laid out and edited. 9.To know which page settings are appropriate.

	10.To know how to make design choices and justify them.		**10.To know how to add content & choose the layout of a desktop publication.** .

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Year 3	Computer Science	Digital Literacy	Information technology
Skills (Disciplinary Knowledge) Topic: Computing systems and networks – Connecting computers Topic: Creating media – Stop-frame animation Topic: Programming A – Sequencing sounds Topic: Data & Information – Branches databases Topic: Creating Media – Desktop publishing Topic: Programming B - Events & actions in programs	1.Idenitfy and explain objects in Scratch. 2.Create a program following a design to control a sprite by commands. 3.Start a program in different ways creating a correct sequence of connected commands. 4.Make design choices to decide the actions for the sprite and the sequence of commands. 5.Implement an algorithm as code and name the objects needed. 6.Demonstrate which keys to use for actions and explain choices. 7.Consider real world when making design choices. 8.Identify additional features and choose suitable keys to turn them on.	1.Investigate questions with yes/no answers & create groups of objects separated by one attribute 2.Identify why desktop publishing might be helpful & identify uses in the real world.	1.Explain that digital devices accept inputs and produce outputs and that we use digital devices for different activities. 2.Explain how messages are passed through multiple connections. 3.Explain the role of a switch, server and WAP and identify networked devices around me 4.Draw/create a storyboard and sequence of flip book animations 5.Evaluate animations and explain why other media was added. 6.Identify an attribute to separate objects into groups & arrange objects in a tree structure. 7.Create questions to use in a physical branching database that enable objects to be uniquely identified. 8.Identify how text and images are different and how they can be edited.

	9.Modify a program using a design and match code to an outcome. 10.Design, create and evaluate a maze-based challenge		9.Create a template for a particular purpose & define the term “page orientation”. 10.Paste text and images to create a magazine cover and make changes to content and layout.

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Year 2	Computer Science	Digital Literacy	Information technology
Knowledge (Substantive) Topic: Computing systems and networks – IT around us Topic: Creating media – Digital photography Topic: Programming A – Robot algorithms Topic: Data & Information - Pictograms Topic: Creating Media – Digital music Topic: Programming B – Programming quizzes	1.To know how to use an algorithm to program a sequence. 2.To know how to predict the outcome of a program. 3.To know the programming projects have code and artwork. 4.To know to create an algorithm to meet a goal. 5.To know how to test and debug parts of a program. 6.To know how to record data in a tally chart 7.To know that objects can be represented as pictures in a pictogram. 8.To know how to collect data, make comparisons and present information in a variety of ways. 9.To know that a sequence of commands has a start and an outcome.	1.To know how to use IT safely by making choices. 2.To know how to follow and give clear instructions 3.To know how to share what has been found out using a computer	1.To know the uses and features of information technology. 2.To know what school IT is used for and IT in the wider world. 3.To know how IT helps us. 4.To know how to use a digital device to take a photograph. 5.To know how to make choices to take a good photograph. 6.To know how photographs can be improved and how to use tools to change an image. 7.To know that photographs can be changed. 8.To know how music can make someone feel. 9.To know that music is created and played by humans. 10.To know that there are patterns in music that can be made by a computer.

	10.To know how to create and change a given design. 11.To know how to create an algorithm. 12.To know how to improve a project		11.To know how to create music for a purpose. 12.To know how to review and refine computer work

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Year 2	Computer Science	Digital Literacy	Information technology
Skills (Disciplinary Knowledge) Topic: Computing systems and networks – IT around us Topic: Creating media – Digital photography Topic: Programming A – Robot algorithms Topic: Data & Information - Pictograms Topic: Creating Media – Digital music Topic: Programming B – Programming quizzes	1.Explain what happens when the order of instructions is changed. 2.Logically reason the outcome of a program. 3.Explain design choices and identify different routes around a mat. 4.Design an algorithm and explain what it should achieve. 5.Create and debug a program that has been written. 6.Record data, represent a tally as a total and compare totals in a tally chart. 7.Enter and view data on a computer and explain what it shows. 8.Collect data, create pictograms and draw conclusions from it. 9.Identify the start & outcome of a sequence of commands. 10.Choose backgrounds & characters for a design.	1.identify rules for IT and how they keep people safe. 2.Choose a sequence of words that can be enacted as a sequence. 3.Present information on the computer in different ways.	1.Describe and identify examples and uses of computers as part of IT . 2.Sort school IT by its use and talk about where IT is found. 3.Demonstrate how IT devices work together. 4.Capture a digital photograph. 5.Explain why a photo looks better in portrait or landscape. 6.Experiemnt with light sources and tools to achieve a desired effect. 7.Recognise which photographs have been changed. 8.Describe music and identify simple differences in pieces 9.Create a rhythm pattern

	11.Create a program using own choice of images **12.Improve project by adding features & debugging**		**10.Use a computer to experiment with pitch and create sounds and musical patterns.** **11. Identify that music is a sequence of notes, and create a rhythm for a composed piece** **12.Explain how a piece has been changed and review own work**

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Year 1	Computer Science	Digital Literacy	Information technology
Knowledge (Substantive) Topic: Computing systems and networks – Technology around us Topic: Creating media – Digital painting Topic: Programming A – Moving a Robot Topic: Data & Information – Grouping Data Topic: Creating Media – Digital writing Topic: Programming B – Programming animations	1.To know what a given command will do. 2.To know how to act out a given word. 3.To know how to combine up to 4 commands to make a sequence 4.To know how to plan a simple program 5.To know how to find more than one solution to a problem. 6.To know how to give a series of commands joined together 7.To know the effect of changing a value 8.To know that each sprite has its own instructions	1.To know how to use technology safely and responsibly.	1.To know what technology is. 2.To know the main parts of a computer. 3.To know how to use a mouse in different ways.. 4.To know how to use a keyboard to type and edit text on a computer. 5. To know how to use shape, line & freehand tools. 6.To know how to make and explain tool choices 7.To know how to use a computer to paint pictures 8.To know how to label, describe and count objects. 9.To know how to compare groups of objects 10.To know how to answer questions about groups of objects 11.To know how to add, remove and change text on a computer.

	9.To know how to design parts of a project 10.To know how to use an algorithm to create a program		12.To know that the look of text can be changed on a computer. 13.To know how to use tools to change text 14.To know the difference between typing & writing

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Year 1	Computer Science	Digital Literacy	Information technology
Skills (Disciplinary Knowledge) Topic: Computing systems and networks – Technology around us Topic: Creating media – Digital painting Topic: Programming A – Moving a Robot Topic: Data & Information – Grouping Data Topic: Creating Media – Digital writing Topic: Programming B – Programming animations	1.Match a command to an outcome and run a command on a device. 2.Give directions and follow instructions 3.Predict the outcome of a sequence of up to 4 commands 4.Choose the order of commands in a sequence & explain what the program should do. 5.Plan and use two programs to get to the same place. 6.Use a start block, find commands to move a sprite, run a program 7.Find blocks that have numbers and say what happens when the value is changed 8.Delete a sprite and show that a project can include more than one 9.Create an algorithm for each sprite and decide how it will move	1.Identify rules for keeping us safe using technology.	1.Locate examples of technology in the classroom & explain that it helps us. 2.Switch on & log into a computer, name the parts. 3.Use a mouse to click & drag, create a picture and open a program. 4.Type name using keyboard, delete letters & save work. 5.Use paint tools to draw a picture 6.Choose appropriate shapes and colours to recreate the work of an artist. 7.Use dots of colour to create a picture in a given style 8.Describe, count, match and group objects. 9.Record how many objects in a group. 10.Answer questions and record and share results 11.Find keys on a keyboard, enter text, use back space & space keys. 12.Identify and use bold, italic, underline & capitals.

	10.Test programs and use sprites that match designs		**13.Select all text, change the font, 'undo' and say what tool is used for these.** **14.Compare typing on a computer to writing on paper**