Launton Church of England Primary School

Computing Disciplinary Knowledge Progression KS1

	Computing systems and Networks	Creating Media	Programming A	Data and information	Creating media	Programming B
Year group 1	<u>Technology around us</u> - explain how these technology examples help us - explain technology as something that helps us - locate examples of technology in the classroom - name the main parts of a computer - switch on and log into a computer - use a mouse to click and drag - click and drag to make objects on a screen - use a mouse to create a picture - use a mouse to open a program - save my work to a file - say what a keyboard is for - type my name on a computer - delete letters - open my work from a file	<u>Digital Painting</u> - draw lines on a screen and explain which tools I used - make marks on a screen and explain which tools I used - use the paint tools to draw a picture - make marks with the square and line tools - use the shape and line tools effectively - use the shape and line tools to recreate the work of an artist - choose appropriate shapes - create a picture in the style of an artist - make appropriate colour choices - choose appropriate paint tools and colours to recreate the work of an artist - say which tools were helpful and why - I know that different paint tools do different jobs	<u>Moving a Robot</u> - match a command to an outcome - predict the outcome of a command on a device - run a command on a device - follow an instruction - give directions - recall words that can be acted out - compare forwards and backwards movements - predict the outcome of a sequence involving forwards and backwards commands - start a sequence from the same place - compare left and right turns - experiment with turn and move commands to move a robot - predict the outcome of a sequence involving up to four commands - choose the order of commands in a	<u>Grouping data</u> - describe objects using labels - identify the label for a group of objects - match objects to groups - count a group of objects - count objects - group objects - describe an object - describe a property of an object - find objects with similar properties - count how many objects share a property - group objects in more than one way - group similar objects - choose how to group objects - describe groups of objects - record how many objects are in a group - compare groups of objects - decide how to group objects to answer a	<u>Digital writing</u> - identify and find keys on a keyboard - open a word processor - recognise keys on a keyboard - enter text into a computer - use backspace to remove text - use letter, number, and space keys - explain what the keys that I have learnt about already do - identify the toolbar and use bold, italic, and underline - type capital letters - change the font - select all of the text by clicking and dragging - select a word by double-clicking - decide if my changes have improved my writing - say what tool I used to change the text	<u>Programming animations</u> - compare different programming tools - find which commands to move a sprite - use commands to move a sprite - run my program - use a Start block in a program - use more than one block by joining them together - change the value - find blocks that have numbers - say what happens when I change a value - add blocks to each of my sprites - delete a sprite - show that a project can include more than one sprite - choose appropriate artwork for my project - create an algorithm for each sprite - decide how each sprite will move

	- use the arrow keys to move the cursor - discuss how we benefit from these rules - give examples of some of these rules - identify rules to keep us safe and healthy when we are using technology in and beyond the home	- change the colour and brush sizes - make dots of colour on the page - use dots of colour to create a picture in the style of an artist on my own - explain that pictures can be made in lots of different ways - say whether I prefer painting using a computer or using paper - spot the differences between painting on a computer and on paper	sequence - debug my program - explain what my program should do - identify several possible solutions - plan two programs - use two different programs to get to the same place	question - record and share what I have found	- use 'undo' to remove changes - explain the differences between typing and writing - make changes to text on a computer - say why I prefer typing or writing	- add programming blocks based on my algorithm - test the programs I have created - use sprites that match my design
Year group 2	<u>IT Around Us</u> - describe some uses of computers - identify examples of computers - identify that a computer is a part of IT - identify examples of IT - identify that some IT can be used in more than one way - sort school IT by what it's used for - find examples of information technology - sort IT by where it is found - talk about uses of information technology	<u>Digital Photography</u> - explain what I did to capture a digital photo - recognise what devices can be used to take photographs - talk about how to take a photograph - explain the process of taking a good photograph - explain why a photo looks better in portrait or landscape format - take photos in both landscape and portrait format - discuss how to take a good photograph - identify what is wrong with a photograph - improve a	<u>Robot Algorithmns</u> - choose a series of words that can be enacted as a sequence - follow instructions given by someone else - give clear instructions - show the difference in outcomes between two sequences that consist of the same commands - use an algorithm to program a sequence on a floor robot - use the same instructions to create different algorithms - compare my prediction to the program outcome - follow a sequence	<u>Pictograms</u> - compare totals in a tally chart - record data in a tally chart - represent a tally count as a total - enter data onto a computer - use a computer to view data in a different format - use pictograms to answer simple questions about objects - explain what the pictogram shows - organise data in a tally chart - use a tally chart to create a pictogram - answer 'more than'/'less than' and	<u>Digital Music</u> - describe music using adjectives - identify simple differences in pieces of music - say what I do and don't like about a piece of music - create a rhythm pattern - explain that music is created and played by humans - play an instrument following a rhythm pattern - connect images with sounds - relate an idea to a piece of music - use a computer to experiment with pitch	<u>Programming Quizes</u> - identify that a program needs to be started - identify the start of a sequence - show how to run my program - change the outcome of a sequence of commands - match two sequences with the same outcome - predict the outcome of a sequence of commands - build the sequences of blocks I need - decide which blocks to use to meet the design - work out the actions

	- demonstrate how IT devices work together - recognise common types of technology - say why we use IT - list different uses of information technology - say how rules can help keep me safe - talk about different rules for using IT - explain the need to use IT in different ways - identify the choices that I make when using IT - use IT for different types of activities	photograph by retaking it - experiment with different light sources - explain why a picture may be unclear - explore the effect that light has on a photo - apply a range of photography skills to capture a photo - identify which photos are real and which have been changed - recognise which photos have been changed	- predict the outcome of a sequence - explain the choices I made for my mat design - identify different routes around my mat - test my mat to make sure that it is usable - create an algorithm to meet my goal - explain what my algorithm should achieve - use my algorithm to create a program - plan algorithms for different parts of a task - put together the different parts of my program - test and debug each part of the program	'most/least' questions about an attribute - create a pictogram to arrange objects by an attribute - tally objects using a common attribute - choose a suitable attribute to compare people - collect the data I need - create a pictogram and draw conclusions from it - give simple examples of why information should not be shared - share what I have found out using a computer - use a computer program to present information in different ways	- explain how my music can be played in different ways - identify that music is a sequence of notes - refine my musical pattern on a computer - add a sequence of notes to my rhythm - create a rhythm which represents an animal I've chosen - create my animal's rhythm on a computer - explain how I changed my work - listen to music and describe how it makes me feel - review my work	of a sprite in an algorithm - choose backgrounds for the design - choose characters for the design - create a program based on the new design - build sequences of blocks to match my design - choose the images for my own design - create an algorithm - compare my project to my design - debug my program - improve my project by adding features

,

Launton Church of England Primary School

Computing Curriculum Porgression Lower KS2

	Computing systems and Networks	Creating Media	Programming A	Data and information	Creating media	Programming B
Year group 3	<u>Connecting Computers</u> - explain that digital devices accept inputs - explain that digital devices produce outputs - follow a process - classify input and output devices - describe a simple process - design a digital device - explain how I use digital devices for different activities - recognise similarities between using digital devices and non-digital tools - suggest differences between using digital devices and non-digital tools - discuss why we need a network switch - explain how messages are passed through multiple connections - recognise different connections	<u>Stop Frame animation</u> - create an effective flip book—style animation - draw a sequence of pictures - explain how an animation/flip book works - create an effective stop-frame animation - explain why little changes are needed for each frame - predict what an animation will look like - break down a story into settings, characters and events - create a storyboard - describe an animation that is achievable on screen - evaluate the quality of my animation - review a sequence of frames to check my work - use onion skinning to help me make small	<u>Sequencing Sounds</u> - explain that objects in Scratch have attributes (linked to) - identify the objects in a Scratch project (sprites, backdrops) - recognise that commands in Scratch are represented as blocks - choose a word which describes an on-screen action for my plan - create a program following a design - identify that each sprite is controlled by the commands I choose - create a sequence of connected commands - explain that the objects in my project will respond exactly to the code - start a program in different ways - combine sound commands - explain what a	<u>Branching Databases</u> - create two groups of objects separated by one attribute - investigate questions with yes/no answers - make up a yes/no question about a collection of objects - arrange objects into a tree structure - create a group of objects within an existing group - select an attribute to separate objects into groups - group objects using my own yes/no questions - select objects to arrange in a branching database - test my branching database to see if it works - compare two branching database structures - create yes/no questions using given	<u>Desktop Publishing</u> - explain the difference between text and images - identify the advantages and disadvantages of using text and images - recognise that text and images can communicate messages clearly - change font style, size, and colours for a given purpose - edit text - explain that text can be changed to communicate more clearly - create a template for a particular purpose - define the term 'page orientation' - recognise placeholders and say why they are important - choose the best locations for my content - make changes to content after I've	<u>Events and Actions in Porgrams</u> - choose which keys to use for actions and explain my choices - explain the relationship between an event and an action - identify a way to improve a program - choose a character for my project - choose a suitable size for a character in a maze - program movement - choose blocks to set up my program - consider the real world when making design choices - use a programming extension - build more sequences of commands to make my design work - choose suitable keys to turn on additional features - identify additional

	- demonstrate how information can be passed between devices - explain the role of a switch, server, and wireless access point in a network - recognise that a computer network is made up of a number of devices - identify how devices in a network are connected together - identify networked devices around me - identify the benefits of computer networks	changes between frames - evaluate another learner's animation - explain ways to make my animation better - improve my animation based on feedback	sequence is - order notes into a sequence - build a sequence of commands - decide the actions for each sprite in a program - make design choices for my artwork - identify and name the objects I will need for a project - implement my algorithm as code - relate a task description to a design	attributes - explain that questions need to be ordered carefully to split objects into similarly sized groups - create a physical version of a branching database - create questions that will enable objects to be uniquely identified - independently create questions to use in a branching database - create a branching database that reflects my plan - suggest real-world uses for branching databases - work with a partner to test my identification tool	added it - paste text and images to create a magazine cover - choose a suitable layout for a given purpose - identify different layouts - match a layout to a purpose - compare work made on desktop publishing to work created by hand - identify the uses of desktop publishing in the real world - say why desktop publishing might be helpful	features (from a given set of blocks) - match a piece of code to an outcome - modify a program using a design - test a program against a given design - evaluate my project - implement my design - make design choices and justify them
Year group 4	<u>The Internet</u> - demonstrate how information is shared across the internet - describe the internet as a network of networks - discuss why a network needs protecting - describe networked devices and how they connect - explain that the internet is used to provide many services - recognise that the World Wide Web contains websites and web pages	<u>Audio Production</u> - explain that the person who records the sound can say who is allowed to use it - identify the input and output devices used to record and play sound - use a computer to record audio - discuss what sounds can be added to a podcast - inspect the soundwave view to know where to trim my recording - re-record my voice to improve my recording	<u>Repitition in Shapes</u> - create a code snippet for a given purpose - explain the effect of changing a value of a command - program a computer by typing commands - test my algorithm in a text-based language - use a template to create a design for my program - write an algorithm to produce a given outcome - identify everyday tasks that include repetition as part of a sequence, eg brushing	<u>Data Logging</u> - choose a data set to answer a given question - identify data that can be gathered over time - suggest questions that can be answered using a given data set - explain what data can be collected using sensors - identify that data from sensors can be recorded - use data from a sensor to answer a given question - identify the intervals used to collect data	<u>Photo Editing</u> - explain why I might crop an image - improve an image by rotating it - use photo editing software to crop an image - experiment with different colour effects - explain that different colour effects make you think and feel different things - explain why I chose certain colour effects - add to the composition of an image by cloning - identify how a photo	<u>Repetition in Games</u> - list an everyday task as a set of instructions including repetition - modify a snippet of code to create a given outcome - predict the outcome of a snippet of code - choose when to use a count-controlled and an infinite loop - modify loops to produce a given outcome - recognise that some programming languages enable more than one process to be run at once

	- describe how to access websites on the WWW - describe where websites are stored when uploaded to the WWW - explain the types of media that can be shared on the WWW - explain that internet services can be used to create content online - explain what media can be found on websites - recognise that add content to the WWW - explain that there are rules to protect content - explain that websites and their content are created by people - suggest who owns the content on websites - explain that not everything on the World Wide Web is true - explain why I need to think carefully before I share or reshare content - explain why some information I find online may not be honest, accurate, or legal	- explain how sounds can be combined to make a podcast more engaging - plan appropriate content for a podcast - save my project so the different parts remain editable - improve my voice recordings - record content following my plan - review the quality of my recordings - arrange multiple sounds to create the effect I want - explain the difference between saving a project and exporting an audio file - open my project to continue working on it - choose appropriate edits to improve my podcast - listen to an audio recording to identify its strengths - suggest improvements to an audio recording	teeth, dance moves - identify patterns in a sequence - use a count-controlled loop to produce a given outcome - choose which values to change in a loop - identify the effect of changing the number of times a task is repeated - predict the outcome of a program containing a count-controlled loop - explain that a computer can repeatedly call a procedure - identify 'chunks' of actions in the real world - use a procedure in a program - design a program that includes count-controlled loops - develop my program by debugging it - make use of my design to write a program	- recognise that a data logger collects data at given points - talk about the data that I have captured - explain that there are different ways to view data - sort data to find information - view data at different levels of detail - plan how to collect data using a data logger - propose a question that can be answered using logged data - use a data logger to collect data - draw conclusions from the data that I have collected - explain the benefits of using a data logger - interpret data that has been collected using a data logger	edit can be improved - remove parts of an image using cloning - experiment with tools to select and copy part of an image - explain why photos might be edited - use a range of tools to copy between images - choose suitable images for my project - create a project that is a combination of other images - describe the image I want to create - combine text and my image to complete the project - review images against a given criteria - use feedback to guide making changes	- choose which action will be repeated for each object - evaluate the effectiveness of the repeated sequences used in my program - explain what the outcome of the repeated action should be - explain the effect of my changes - identify which parts of a loop can be changed - re-use existing code snippets on new sprites - develop my own design explaining what my project will do - evaluate the use of repetition in a project - select key parts of a given project to use in my own design - build a program that follows my design - evaluate the steps I followed when building my project - refine the algorithm in my design

Launton Church of England Primary School

Computing Curriculum Porgression Upper KS2

	Computing systems and Networks	Creating Media	Programming A	Data and Information	Creating Media	Programming B
Year group 5	<u>Systems and Searching</u> - describe that a computer system features inputs, processes, and outputs - explain that computer systems communicate with other devices - explain that systems are built using a number of parts - explain the benefits of a given computer system - identify tasks that are managed by computer systems - identify the human elements of a computer system - compare results from different search engines - make use of a web search to find specific information - refine my web search - explain why we need tools to find things online	<u>Video Production</u> - compare features in different videos - explain that video is a visual media format - identify features of videos - experiment - capture video using a range of filming techniques - review how effective my video is - suggest filming techniques for a given purpose - create and save video content - decide which filming techniques I will use - outline the scenes of my video - explain how to improve a video by reshooting and editing - select the correct tools to make edits to my video - store, retrieve, and export my recording to a computer with different camera angles - identify and find	<u>Selection in Physical Computing</u> - create a simple circuit and connect it to a microcontroller - explain what an infinite loop does - program a microcontroller to make an LED switch on - connect more than one output component to a microcontroller - design sequences that use count-controlled loops - use a count-controlled loop to control outputs - design a conditional loop - explain that a condition is either true or false - program a microcontroller to respond to an input - explain that a condition being met can start an action - identify a condition and an action in my project	<u>Flat File Databases</u> - create a database using cards - explain how information can be recorded - order, sort, and group my data cards - choose which field to sort data by to answer a given question - explain what a field and a record is in a database - navigate a flat-file database to compare different views of information - combine grouping and sorting to answer specific questions - explain that data can be grouped using chosen values - group information using a database - choose multiple criteria to answer a given question - choose which field and value are required to answer a given question - outline how 'AND'	<u>Introcuction to Vector Graphics</u> - discuss how vector drawings are different from paper-based drawings - experiment with the shape and line tools - recognise that vector drawings are made using shapes - explain that each element added to a vector drawing is an object - identify the shapes used to make a vector drawing - move, resize, and rotate objects I have duplicated -I can explain how alignment grids and resize handles can be used to improve consistency - modify objects to create a new image - use the zoom tool to help me add detail to my drawings - change the order of layers in a vector drawing	<u>Selection in Quizes</u> - identify conditions in a program - modify a condition in a program - recall how conditions are used in selection - create a program with different outcomes using selection - identify the condition and outcomes in an 'if... then… else...' statement - use selection in an infinite loop to check a condition - design the flow of a program which contains 'if… then… else…' - explain that program flow can branch according to a condition - show that a condition can direct program flow in one of two ways - identify the outcome of user input in an algorithm - outline a given task

	- recognise the role of web crawlers in creating an index - relate a search term to the search engine's index - explain that a search engine follows rules to rank results - give examples of criteria used by search engines to rank results - order a list by rank - describe some of the ways that search results can be influenced - explain how search engines make money - recognise some of the limitations of search engines	features on a digital video recording device - make use of a microphone - evaluate my video and share my opinions - make edits to my video and improve the final outcome - recognise that my choices when making a video will impact on the quality of the final outcome	- use selection (an 'if…then…' statement) to direct the flow of a program - create a detailed drawing of my project - describe what my project will do - identify a real-world example of a condition starting an action - test and debug my project - use selection to produce an intended outcome - write an algorithm that describes what my model will do	and 'OR' can be used to refine data selection - explain the benefits of using a computer to create charts - refine a chart by selecting a particular filter - select an appropriate chart to visually compare data - ask questions that will need more than one field to answer - present my findings to a group - refine a search in a real-world context	- identify that each added object creates a new layer in the drawing - use layering to create an image - copy part of a drawing by duplicating several objects - recognise when I need to group and ungroup objects - reuse a group of objects to further develop my vector drawing - compare vector drawings to freehand paint drawings - create a vector drawing for a specific purpose - reflect on the skills I have used and why I have used them .	- use a design format to outline my project - implement my algorithm to create the first section of my program - share my program with others - test my program - extend my program further - identify the setup code I need in my program - identify ways the program could be improved
Year group 6	<u>Communication and Collaboration</u> - describe how computers use addresses to access websites - explain that internet devices have addresses - recognise that data is transferred using agreed methods - explain that all data transferred over the internet is in packets - explain that data is transferred over networks in packets - identify and explain	<u>Webpage Creation</u> - discuss the different types of media used on websites - explore a website - I know that websites are written in HTML - draw a web page layout that suits my purpose - recognise the common features of a web page - suggest media to include on my page - describe what is meant by the term 'fair use' - find copyright-free	<u>Variables in Games</u> - explain that the way a variable changes can be defined - identify examples of information that is variable - identify that variables can hold numbers or letters - explain that a variable has a name and a value - identify a program variable as a placeholder in memory for a single value - recognise that the	<u>Introduction to Spreadsheets</u> - collect data - enter data into a spreadsheet - suggest how to structure my data - apply an appropriate format to a cell - choose an appropriate format for a cell - explain what an item of data is - construct a formula in a spreadsheet - explain which data types can be used in calculations	<u>3D Modelling</u> - add 3D shapes to a project - move 3D shapes relative to one another - view 3D shapes from different perspectives - lift/lower 3D objects - recolour a 3D object - resize an object in three dimensions - duplicate 3D objects - group 3D objects - rotate objects in three dimensions - accurately size 3D objects - combine a number of 3D objects	<u>Sensing Movement</u> - apply my knowledge of programming to a new environment - test my program on an emulator - transfer my program to a controllable device - determine the flow of a program using selection - identify examples of conditions in the real world - use a variable in an if, then, else statement to select the flow of a program

	the main parts of a data packet - explain that the internet allows different media to be shared - recognise how to access shared files stored online - send information over the internet in different ways - explain how the internet enables effective collaboration - identify different ways of working together online - recognise that working together on the internet can be public or private - choose methods of communication to suit particular purposes - explain the different ways in which people communicate - identify that there are a variety of ways to communicate over the internet - compare different methods of communicating on the internet - decide when I should and should not share information online - explain that communication on the internet may not be private	images - say why I should use copyright-free images - add content to my own web page - evaluate what my web page looks like on different devices and suggest/make edits - preview what my web page looks like - describe why navigation paths are useful - explain what a navigation path is - make multiple web pages and link them using hyperlinks - create hyperlinks to link to other people's work - evaluate the user experience of a website - explain the implication of linking to content owned by others	value of a variable can be changed - decide where in a program to change a variable - make use of an event in a program to set a variable - recognise that the value of a variable can be used by a program - choose the artwork for my project - create algorithms for my project - explain my design choices - choose a name that identifies the role of a variable - create the artwork for my project - test the code that I have written - identify ways that my game could be improved - share my game with others - use variables to extend my game	- identify that changing inputs changes outputs - apply a formula to multiple cells by duplicating it - calculate data using different operations - create a formula which includes a range of cells - apply a formula to calculate the data I need to answer questions - explain why data should be organised - use a spreadsheet to answer questions - produce a chart - suggest when to use a table or chart - use a chart to show the answer to questions	- show that placeholders can create holes in 3D objects - analyse a 3D model - choose objects to use in a 3D model - combine objects in a design - construct a 3D model based on a design - explain how my 3D model could be improved - modify my 3D model to improve it	- experiment with different physical inputs - explain that checking a variable doesn't change its value - use a condition to change a variable - explain the importance of the order of conditions in else, if statements - modify a program to achieve a different outcome - use an operand (e.g. <>=) in an if, then statement - decide what variables to include in a project - design the algorithm for my project - design the program flow for my project - create a program based on my design - test my program against my design - use a range of approaches to find and fix bugs