



# Lacewood Primary School

## Knowledge and Skills Progression Plan for Computing

<b>Golden Threads</b>	Under the 'Golden Threads' Computing is organised into areas which we feel will provide coherence throughout the curriculum and support children in building knowledge and making learning stick. <div style="text-align: center; margin-top: 20px;"> <table border="1" style="margin: auto;"> <tr><td style="background-color: #d9ead3;">Digital Literacy</td></tr> <tr><td style="background-color: #f4cccc;">Information Technology</td></tr> <tr><td style="background-color: #fff2cc;">Computer Science</td></tr> </table> </div>						Digital Literacy	Information Technology	Computer Science
Digital Literacy									
Information Technology									
Computer Science									
<b>Computing</b>	<b>Key Stage 1</b>			<b>Key Stage 2</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>			
<b>Computer Systems and Networks</b>	Technology Around Us	IT Around Us	Connecting Computers	The Internet	Systems and Searching	Communication and Collaboration			
<b>Key Questions</b>	<b>What are the parts of a computer?</b> <b>What is a keyboard?</b> <b>What is a keyboard used for?</b> <b>What is a mouse? How do I use the mouse?</b> <b>Where is the screen/monitor?</b> <b>Why should I be careful when using technology?</b> <b>How can I look after the technology around me?</b>	<b>How is technology used in and beyond school?</b> <b>How can information technology can help us?</b> <b>How can we safely use information technology?</b> <b>What choices can I make whilst using information technology?</b>	<b>What are the functions of digital devices?</b> <b>What is the difference between input and output devices?</b> <b>How can digital devices change the way we work?</b> <b>How can computer networks share information?</b> <b>What are the physical components of a network?</b>	<b>How are networks connected?</b> <b>How can websites be shared?</b> <b>Where can content be accessed?</b> <b>How can new content be added?</b> <b>Is all content on the WWW reliable?</b>	<b>What are systems?</b> <b>How are computer systems used in day to day life?</b> <b>What is a search engine and how is it used?</b> <b>How are search results ranked?</b> <b>What is the importance of ranking search results?</b>	<b>What is the importance of internet addresses?</b> <b>How is data transferred across the internet?</b> <b>How can sharing information online help people work together?</b> <b>What are different ways of working together online?</b> <b>How can we communicate using technology?</b> <b>What different methods are there of online communication?</b>			
<b>Knowledge</b>	I know technology can be identified. I know a computer can be identified by its main parts. I know a mouse can be used for clicking.	I know information technology is used in and beyond school. I know information technology can help us. I know information technology must be used safely.	I know that digital devices have a set function. I know the difference between input and output devices. I know digital devices can change the way that we work.	I know networks physically connect to other networks. I know networked devices make up the internet. I know websites can be shared via the World Wide Web (WWW).	I know computers can be connected together to form systems. I know the role of computer systems in our lives. I know how to use a search engine.	I know the importance of internet addresses. I know data is transferred across the internet. I know sharing information online can help people to work together.			

	I know a keyboard can be used to type on a computer. I know there are rules for using technology responsibly.	I know choices are made when using information technology.	I know a computer network can be connected to share information. I know about the physical components of a network.	I know content can be added and accessed on the World Wide Web (WWW). I know the consequences of unreliable content.	I know search engines select results. I know search results are ranked. I know why the order of results is important, and to whom.	I know different ways of working together online. I know we communicate using technology. I know about different methods of online communication.
<b>Vocabulary</b>	Password Personal information Internet Username Log on	Cyber bullying Virus Avatars Appropriate Inappropriate Personal information	Secure Passwords Private Public Social media report	Email e-safety search engine online copyright	Data packets Domain IP address Router URL	Responsible Phishing Virus Anonymity verify
<b>IT Literacy</b>	Word 2graph/2question	Word	Powerpoint	Powerpoint	Excel	Excel
<b>Key Questions</b>	<p>What is a 'file'?</p> <p>How do I save a file?</p> <p>How do I open a file?</p> <p>Where is the backspace button on a keyboard?</p> <p>What does the backspace button do?</p> <p>Where is the space bar key on the keyboard?</p> <p>What does the spacebar do?</p> <p>Where is the enter button on the keyboard?</p> <p>What is the enter button used for?</p> <p>What happens when I double click the mouse?</p> <p>What is a 'font'?</p> <p>How do I change the font size?</p> <p>How can I change the colour of the font.</p>	<p>How can a mouse be clicked?</p> <p>How do I create a new folder?</p> <p>How do I form capital letters on a digital device?</p> <p>How can I spell check my work?</p> <p>Which buttons are my cursor keys?</p> <p>How can shapes be inserted?</p> <p>How can clip art be inserted?</p> <p>How can word art be inserted?</p>	<p>How can images be edited and inserted into a programme?</p> <p>What are the functions of the left and right clicks on the mouse?</p> <p>What are the punctuation keys?</p> <p>Which template would be suitable for (a given purpose)?</p> <p>How can slides be duplicated and arranged?</p> <p>How can we format slides by theme and colour?</p> <p>How can we modify, edit and delete text boxes?</p>	<p>How can I transfer media from one document to another using a shortcut?</p> <p>How do I save my work efficiently?</p> <p>How do I insert video files and sounds?</p> <p>What is a slide transition and how can I add them?</p> <p>Why and how are animations added?</p>	<p>What are the basic formatting skills of Microsoft office?</p> <p>What are the keyboard shortcuts and their purpose?</p> <p>What are columns, cells and rows?</p> <p>Why is data input accuracy important?</p> <p>What is the autosum function?</p> <p>What is a formula?</p>	<p>What keyboard shortcuts are effective?</p> <p>What is the purpose of the snipping tool?</p> <p>What is the format of cells?</p> <p>How can simple graphs be created from inputted data?</p> <p>How can data be filtered and sorted?</p>
<b>Knowledge</b>	I know files can be saved. I know files can be opened.	I know a mouse can be left clicked and right clicked. I know new folders can be created.	I know images can be edited and inserted into a programme.: colour	I know media can be copied and pasted from one document to another.	I know basic formatting can be used across Microsoft office (text size,	I know keyboard shortcuts work efficiently. I know the snipping tools purpose.

	<p>I know the purpose of backspace, space bar and enter button.</p> <p>I know what double clicking on a mouse is.</p> <p>-----</p> <p>I know font size and colour can be changed.</p>	<p>I know capital letters can be formed.</p> <p>I know my work can be spell checked.</p> <p>I know which buttons are my cursor keys.</p> <p>I know a range of media can be inserted using clipart, word art and shape.</p>	<p>adjustments, transparency and shape.</p> <p>I know the function of left and right click on the mouse.</p> <p>I know about the punctuation keys.</p> <p>-----</p> <p>I know which template to use for a given purpose.</p> <p>I know slides can be arranged and duplicated</p> <p>I know slides can be formatted by theme and colour.</p> <p>I know text boxes can be modified deleted and edited.</p>	<p>I know efficient methods of saving work.</p> <p>-----</p> <p>I know that you can insert a range of multimedia including video files and sounds.</p> <p>I know slide transitions can be added.</p> <p>I know animations can be provided for a purpose.</p>	<p>font, colour, size, underline).</p> <p>I know how to use keyboard shortcuts to save, copy and paste.</p> <p>-----</p> <p>I know what columns, cells and rows are.</p> <p>I know data needs to be inputted with accuracy.</p> <p>I know basic calculations can be solved using excel.</p> <p>I can create a simple formula.</p> <p>I can apply the autosum feature for desired effect.</p>	<p>I know the format of cells.</p> <p>I know simple graphs can be created from inputted data</p> <p>I know data can be filtered and sorted.</p>
<b>Vocabulary</b>	<p>Microsoft word</p> <p>Space bar</p> <p>Enter button</p> <p>Save</p> <p>Caps lock</p>	<p>Insert</p> <p>Copy/paste</p> <p>Folder</p> <p>Shift</p> <p>backspace</p>	<p>Crop</p> <p>Multimedia</p> <p>Powerpoint</p> <p>Slide</p> <p>format</p>	<p>Slide</p> <p>Transition</p> <p>Hyperlink</p> <p>Animation</p> <p>Insert</p>	<p>Autosum</p> <p>Data</p> <p>Format</p> <p>Formula</p> <p>spreadsheet</p>	<p>Filter</p> <p>Sort</p> <p>Format</p> <p>cells</p>
<b>IT Multi Media</b>	<p>2create a story</p>	<p>2animate</p>	<p>2DIY</p>	<p>Stop Frame Animation</p>	<p>Sensory Room</p>	<p>Fake News and Blogging</p>
<b>Key Questions</b>	<p><b>How can a new page be created?</b></p> <p><b>What is the 'background' of a page?</b></p> <p><b>How do I change the background?</b></p> <p><b>What are 'tools'?</b></p> <p><b>How can tools be used to create a picture or image?</b></p> <p><b>What is an animation?</b></p> <p><b>How can an animation be created?</b></p>	<p><b>What different functions do digital art tools have?</b></p> <p><b>What is a frame?</b></p> <p><b>Can frames change?</b></p> <p><b>How can frames change?</b></p> <p><b>How do you change the speed of a frame?</b></p>	<p><b>What is a sprite?</b></p> <p><b>What is an AI?</b></p> <p><b>How can an AI be coded to alter position and direction?</b></p> <p><b>What is a goal and how can this be achieved in my game?</b></p> <p><b>How can the appearance of my sprite be edited?</b></p>	<p><b>What do sensing blocks do?</b></p> <p><b>What do operators do?</b></p> <p><b>What are variables and how can they be used in a game?</b></p> <p><b>Why are coordinates used?</b></p>	<p><b>What is the purpose of a sensory room?</b></p> <p><b>How do Bluetooth connections work?</b></p> <p><b>How do sensory rooms provide artificial experiences?</b></p>	<p><b>What keyboard shortcuts are effective?</b></p> <p><b>What is the purpose of the snipping tool?</b></p>
<b>Knowledge</b>	<p>I know pages can be created.</p> <p>I know what a background is.</p>	<p>I know digital art tools have a range of functions.</p> <p>I know what a frame is.</p> <p>I know frames can change.</p>	<p>I know what a sprite is.</p> <p>I know what AI is.</p> <p>I know AI can be coded to alter position and direction.</p>	<p>I know what sensing blocks do.</p> <p>I know what operators do.</p>	<p>I know what the purpose of a sensory room is.</p> <p>I know Bluetooth connections connect devices.</p>	<p>I know keyboard shortcuts work efficiently.</p> <p>I know the snipping tools purpose.</p>

	I know shape tools can be used to create digital art. I know what animation is and that it can be applied to digital art.	I know frames can be sped up and slowed down.	I know what a goal is and how it can be achieved in my game. I know the appearance of sprites can be edited	I know what variables are and how they can be used in a game. I know co-ordinates can provide precise motion.	I know sound, smells and images can be manipulated using technology. I know sensors rooms can be used to provide experiences.	
<b>Vocabulary</b>	Pages background	Digital art Frame Sped up Slowed down	AI Alter Position Direction appearance	Animation Transitions Stop frame	Sensory Bluetooth Manipulation Reality Virtual reality Augmented reality	Blogging Fake Inauthentic Scams dopamine
<b>Computer Science - Software</b>	2code - chimp	Lightbot	Kodu	Minecraft Education	Minecraft Education	Vex VR
<b>Key Questions</b>	<b>What does 'input' mean?</b> <b>How does code create events?</b> <b>How does clicking the mouse change what happens on the screen?</b> <b>Where are the arrow keys?</b> <b>What are the arrow keys used for?</b>	<b>What does each coding block represent?</b> <b>What is debugging?</b> <b>What can debugging do?</b> <b>How can I solve a coding problem?</b> <b>How can I evaluate how my code works?</b>	<b>What do loop blocks do in Kodu?</b> <b>How can Kodu behaviour be predicted using code?</b> <b>How can sprites appearance and behaviour be edited?</b>	<b>What can an ultrasonic sensor do?</b> <b>How do I code variables?</b> <b>How and why do I duplicate code?</b>	<b>What are sequencing blocks?</b> <b>What is the purpose of event blocks and event handlers?</b> <b>What are co-ordinates and how do they work?</b> <b>What is an 'absolute world' position?</b> <b>How do conditionals work?</b> <b>What are the range of loop blocks?</b>	<b>What is a simulation?</b> <b>What is virtual reality?</b> <b>What can a simulation evaluate?</b> <b>What do nested loops do?</b> <b>What do selection codes do?</b> <b>How can you use selection codes?</b>
<b>Knowledge</b>	I know that clicking is an input. I know that events can happen in code when I click. I know what is wrong with a line of code. I know that arrow keys can be used for direction.	I know what each coding block represents. I know what debugging is. I know that debugging can fix code. I know a range of strategies to solve a coding problem. I know to run code to evaluate how it works	I know what loop blocks do in Kodu games. I know Kodu behaviour can be predicted using code. I know sprites appearance and behaviour can be edited.	I know what an ultrasonic sensor can do. I can code variables on hardware. I know variables can be used on hardware. I know I can duplicate code to be more efficient.	I know what sequencing blocks are. I know what event and event handlers do. I know how co-ordinates can be used to determine position. I know what absolute world position is. I know what "if" conditionals can be used for.	I know what a simulation is. I know what virtual reality is. I know what a simulation can evaluate. I know that nested loops create more efficient complex programs. I know what selection (If then) code does and how it can be utilised.

					I know what “if else” conditionals are used for. I know a range of loops including repeat, for, while and forever loops.	
<b>Vocabulary</b>	Clicking Input direction	Coding Block Debugging strategies	Loop blocks If blocks Then blocks When blocks Edited Behaviour	Credibility Pattern recognition Nested loop Repetitive loop Collaboration	Sequencing Event handlers ‘if’ conditionals ‘if else’ conditionals	Simulation Virtual reality Nested loops Selection codes
<b>Computer Science - Hardware</b>	Beebots	Beebots	Crumble (light painting project)	Crumble (parking sensor)	Microbits	Microbits
<b>Key Questions</b>	<p>What are directions? Which direction is left? Which direction is right? How can I predict what the Beebot will do? What is a maze? How can a Beebot be programmed to reach a particular destination? What is a turn? How can code be checked? What does the go button do?</p>	<p>What is a rotation? What is meant by clockwise? What is meant by anti-clockwise? What is an estimate? How do I get to the end of complex maze? What problems will I encounter using code? How will the Beebot react to my code?  How will I fix problems?</p>	<p>What does each part of the crumble hardware do? What is the role of each part of hardware? How can looks be used to create a specific output? What does the ‘wait until’ (duration) block do? What does the ‘do until’ (loop) block do?</p>	<p>What is credibility? What is pattern recognition and how is it applied? What is a repetitive loop? What is a nested loop? What is collaboration and why is it important when completing a project? What is debugging and why is it important when completing a project?</p>	<p>What are variables and how can they be presented? What devices is code used in? How ca an algorithm be used to achieve a goal? What variables does debugging programs involve?</p>	<p>What is a radio signal? How does hardware communicate through radio signals? What are variables used for? What are ‘selection’ blocks needed for? How can sensors be utilised when using hardware?</p>
<b>Knowledge</b>	<p>I know what directions are. I know the difference between left and right. I can predict what the Beebot will do. I know the end of a maze can be reached I know what a turn is. I know to check code by running my program. I know that ‘go’ is an event.</p>	<p>I know what rotation is. I know the difference between anti-clockwise and clockwise. I know what an estimate is. I know how to get to the end of a complex maze using turns. I know what the Beebot will do before running the code.</p>	<p>I know what each part of the hardware does. I know the role of each part of the hardware. I know that loops can be used to create a specific output. I know what ‘wait until’ (duration) and ‘do until’ (loop) blocks do.</p>	<p>I know what credibility is. I know what pattern recognition is and can apply it. I know repetitive loops can be applied and their effect. I know what a nested loop is. I know what collaboration is and can use it to complete a project.</p>	<p>I know that variables can be random numbers. I know code is used in a range of modern devices. (Activity tracker) I can write an algorithm to achieve a set goal (Create a step counter) I know debugging programs involves random number variables.</p>	<p>I know what a radio signal is. I know hardware can communicate through radio signals. I know that hardware uses variables (Called ID’s) to communicate. I can use ‘selection’ blocks to complete a project using hardware. I know the practical uses for a range of sensors for hardware.</p>

	I know which button represents the different directions on the Beebot (forwards, backwards, left and right). I know which button makes the Beebot turn. I know to clear the instructions given to the Beebot before inputting more. I know which button clears the instructions given.	I know problems when observing code and can fix them.		I know what debugging is and can apply it in a project.		
<b>Vocabulary</b>	Directions Predict Program Go event	Rotation Anti-clockwise Clockwise Running code	Hardware Loops duration	Ultrasonic sensor Hardware Duplicate	Random variables Debugging LED's Temperature sensor Display connector	Radio signal ID's Sensors LED's PIN GND antenna
<b>Computer Science - Hardware</b>	Data Handling (2graph, 2question)	Scratch Jnr	Scratch	Scratch	Lego We Do	Vex Robotics
<b>Key Questions</b>	<p>What is data?</p> <p>What is a table on the computer?</p> <p>What information can be put in a table?</p> <p>How can data be represented?</p> <p>What is a graph and what does it look like?</p> <p>What is a flowchart?</p> <p>What is a flowchart used for and what does it show?</p> <p>How can a flowchart be used from start to finish?</p>	<p>What is an algorithm?</p> <p>Why won't code work in Scratch Jnr?</p> <p>What is a sprite?</p> <p>How can code behaviour be predicted in Scratch?</p> <p>What is motion?</p> <p>What is repetition?</p> <p>What is an input in Scratch Jnr?</p> <p>What is an output in Scratch Jnr?</p> <p>What is an event block?</p> <p>Where should an event block be placed?</p>	<p>How can algorithms be created in scratch?</p> <p>What is editing a sprite?</p> <p>What do loop blocks do?</p> <p>What do duration blocks do?</p> <p>What do look blocks do?</p> <p>How do I retrieve previous work?</p> <p>What is the purpose of event blocks?</p> <p>What are the inputs and outputs in Scratch?</p>	<p>What do sensing blocks do?</p> <p>What do operators do?</p> <p>What are variables and how can they be used in a game?</p> <p>How do we create precise motion?</p>	<p>What is artificial intelligence?</p> <p>What are the benefits of using AI?</p> <p>What are sensors used for?</p>	<p>What does each part of a robot do?</p> <p>How do you code each controller?</p> <p>How can you upload code to the robot?</p> <p>What are the strategies needed to complete a set goal?</p>
<b>Knowledge</b>	I know data can be organised in a table.	I know what an algorithm is.	I know algorithms can be created in scratch.	I know what sensing blocks do. I know what operators do.	I know what artificial intelligence is.	I know what each part of the robot does.

	<p>I know data can be inputted in a programme.</p> <p>I know data can be presented in graphs.</p> <p>I know what a flowchart is.</p> <p>I know selection can be used in a flowchart</p> <p>I know questions and answers can be represented on a flowchart.</p> <p>I can follow a flowchart.</p>	<p>I know why code won't work in scratch jnr.</p> <p>I know what a sprite is.</p> <p>I know code behaviour can be predicted in scratch.</p> <p>I know what motion is.</p> <p>I know what repetition is.</p> <p>I know what inputs and outputs are in scratch jnr.</p> <p>I know that code starts with an event block.</p>	<p>I know what editing a sprite is.</p> <p>I know what loop blocks do.</p> <p>I know what duration blocks do.</p> <p>I know what look blocks do.</p> <p>I know what retrieving previous work looks like.</p> <p>I know about a range of event blocks.</p> <p>I know about a range of inputs and outputs in Scratch.</p>	<p>I know what variables are and how they can be used in a game.</p> <p>I know co-ordinates can provide precise motion.</p>	<p>I know the advantages of using AI for a set goal.</p> <p>I know that sensors can detect motion, colour and inclination.</p>	<p>I know that each controller input can be coded separately.</p> <p>I know that code can be uploaded to the robot efficiently.</p> <p>I know of a range of strategies to complete a set goal.</p>
<b>Vocabulary</b>	<p>Graph</p> <p>Table</p> <p>Flowchart</p> <p>Question answer</p>	<p>Algorithm</p> <p>Sprite</p> <p>Motion</p> <p>Repetition</p> <p>Input</p> <p>output</p>	<p>Algorithms</p> <p>Editing</p> <p>Loop blocks</p> <p>Duration</p> <p>sprite</p>	<p>Sensing</p> <p>Operator</p> <p>Variable</p> <p>Co-ordinate</p> <p>Precise Motion</p>	<p>AI</p> <p>Motion</p> <p>Inclination</p>	<p>Controller</p> <p>Upload</p> <p>Variable</p>