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	Topic	Knowledge Progression
<b>Nursery</b>	Barefoot computing linked to children's interests with a focus on 'computational thinking'	<ul style="list-style-type: none"> <li>• Knows how to operate simple equipment, e.g. turns on CD player, uses a remote control, can navigate touch-capable technology with support.</li> <li>• Shows an interest in technological toys with knobs or pulleys, real objects such as cameras, and touchscreen devices such as mobile phones and tablets.</li> <li>• Shows skill in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movements or new images.</li> <li>• Knows that information can be retrieved from digital devices and the internet.</li> <li>• Plays with a range of materials to learn cause and effect, for example, makes a string puppet using dowels and string to suspend the puppet.</li> </ul>
<b>Reception</b>	Barefoot computing linked to children's interests with a focus on 'computational thinking'	<p>Technology in the Early Years can mean:</p> <ul style="list-style-type: none"> <li>• taking a photograph with a camera or tablet</li> <li>• searching for information on the internet</li> <li>• playing games on the interactive whiteboard</li> <li>• exploring an old typewriter or other mechanical toys</li> <li>• using a Beebot</li> <li>• watching a video clip</li> <li>• listening to music</li> </ul>
<b>Year 1</b>	Computing systems and networks – technology around us <b>(NC 1.4, 1.5 &amp; 1.6)</b>	<p><b>Computer science/Information technology/Digital literacy</b></p> <p>Know how to identify technology</p> <p>Know what a computer is and its main parts</p> <p>Know how to use a mouse in different ways</p> <p>Know how to use a keyboard to type on a computer</p> <p>Know how to use the keyboard to edit text</p> <p>Know the rules for using technology responsibly</p> <p><b>Online Safety</b></p> <p>Recognise behaviours that can upset others.</p>



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<p>Creating media – digital painting <b>(NC 1.4)</b></p>	<p><b>Information technology</b>          Know what different freehand tools do          Know how to use the shape tool and the line tools          Know to make careful choices when painting a digital picture          Know why I chose the tools I used          Know how to use a computer on my own to paint a picture          Know how to make comparisons painting a picture on a computer and on paper  <b>Online Safety</b>          Know to speak to a trusted adult when upset by things online          Know rules that keep me safe online</p>
<p>Programming A – Moving a robot <b>(NC 1.1, 1.2, 1.3 &amp; 1.5)</b></p>	<p><b>Computer science/Information technology</b>          Know what a given command will do          Know how to act out a given word          Know how to combine forwards and backwards commands to make a sequence          Know how to combine four direction commands to make sequences          Know how to plan a simple program          Know how to find more than one solution to a problem  <b>Online Safety</b>          Know what my personal information is and how to keep it private</p>
<p>Data and information – grouping data <b>(NC 1.4 &amp; 1.6)</b></p>	<p><b>Information technology/Digital literacy</b>          Know how to label objects          Know that objects can be counted          Know how to describe objects in different ways          Know how to count objects with the same properties          Know how to compare groups of objects          Know how to answer questions about groups of objects  <b>Online Safety</b>          Know to ask before sharing information online</p>



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	<p>Creating media – Digital writing <b>(NC 1.4 &amp; 1.6)</b></p>	<p><b>Information technology/Digital literacy</b>          Know how to use a computer to write          Know how to add and remove text on a computer          Know that the look of text can be changed on a computer          Know to make careful choices when changing text          Know why I used the tools that I chose          Know how to compare typing on a computer to writing on paper  <b>Online Safety</b>          Know work I create using technology belongs to me          Know it is important to be polite in online communication</p>
	<p>Programming B – Programming animations <b>(NC 1.1, 1.2, 1.3 &amp; 1.4)</b></p>	<p><b>Computer science/Information technology</b>          Know how to choose a command for a given purpose          Know that a series of commands can be joined together          Know the effect of changing a value          Know that each sprite has its own instructions          Know how to design the parts of a project          Know how to use my algorithm to create a program  <b>Online Safety</b>          Know how to search for information online</p>
<b>Year 2</b>	<p>Computing systems and networks – IT around us <b>(NC 1.4, 1.5 &amp; 1.6)</b></p>	<p><b>Information technology/Digital literacy</b>          Know the uses and features of information technology          Know the uses of information technology in the school          Know information technology beyond school          Know how information technology helps us          Know how to use information technology safely          Know that choices are made when using information technology  <b>Online Safety</b>          Know what bullying is and how it can hurt people</p>



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<p>Creating media – Digital photography <b>(NC 1.4, 1.5 &amp; 1.6)</b></p>	<p><b>Information technology/Digital literacy</b>          Know how to use a digital device to take a photograph          Know how to make choices when taking a photograph          Know what makes a good photograph          Know how photographs can be improved          Know how to use tools to change an image          Know that photos can be changed  <b>Online Safety</b>          Know people might act differently online to off line          Say rules for keeping safe online</p>
<p>Programming A – Robot algorithms <b>(NC 1.1, 1.2, 1.3 &amp; 1.6)</b></p>	<p><b>Computer science/Information technology</b>          Know how to describe a series of instructions as a sequence          Know what happens when we change the order of instructions          Know how to logical reasoning to predict the outcome of a program (series of commands)          Know that programming projects can have code and artwork          Know how to design an algorithm Know how to create and debug a program that I have written  <b>Online Safety</b>          Explain what 'Keeping things private' means and the rules for keeping my information private.</p>
<p>Data and information – Pictograms <b>(NC 1.4 &amp; 1.6)</b></p>	<p><b>Information technology/Digital literacy</b>          Know that we can count and compare objects using tally charts          Know that objects can be represented as pictures          Know how to create a pictogram          Know how to select objects by attribute and make comparisons          Know that people can be described by attributes          Know that we can present information using a computer  <b>Online Safety</b>          Know information put online lasts for a long time and can be seen by others</p>
<p>Creating media – Digital music <b>(NC 1.4)</b></p>	<p><b>Information technology</b>          Know how music can make us feel          Know that there are patterns in music          Know how music is made from a series of notes          Know how music is made from a series of notes</p>



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		<p>Know how to create music for a purpose</p> <p>Know how to review and refine our computer work</p> <p><b>Online Safety</b></p> <p>Know why other peoples work online belongs to them.</p> <p>Know how I can communicate with others online.</p>
	<p>Programming B – Programming quizzes <b>(NC 1.1, 1.2 &amp; 1.3)</b></p>	<p><b>Computer science</b></p> <p>Know that a sequence of commands has a start</p> <p>Know that a sequence of commands has an outcome</p> <p>Know how to create a program using a given design</p> <p>Know how to change a given design</p> <p>Know how to create a program using my own design Know how my project can be improved</p> <p><b>Online Safety</b></p> <p>Use key words to find information on a search engine</p>
<b>Year 3</b>	<p>Computing systems and networks – connecting computers <b>(NC 2.2, 2.4, &amp; 2.6)</b></p>	<p><b>Computer science/Information technology</b></p> <p>Know how digital devices function</p> <p>Know how to identify input and output devices</p> <p>Know how digital devices can change the way we work</p> <p>Know how to explain how a computer network can be used to share information Know how digital devices can be connected</p> <p>Know the physical components of a network</p> <p><b>Online Safety</b></p> <p>Describe appropriate ways to behave online</p>
	<p>Creating media – Stop frame animation <b>(NC 2.6 &amp; 2.7)</b></p>	<p><b>Information technology/Digital literacy</b></p> <p>Know that animation is a sequence of drawings or photographs</p> <p>Know how to relate animated movement with a sequence of images</p> <p>Know how to plan an animation</p> <p>Know and understand the need to work consistently and carefully</p> <p>Know how to review and improve an animation</p> <p>Know how to evaluate the impact of adding other media to an animation</p> <p><b>Online Safety</b></p> <p>Know what identity means and how I can represent myself online</p> <p>Know how spending too long online can have a negative impact on someone.</p>



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Programming A – Sequencing sounds <b>(NC 2.1, 2.2, 2.3 &amp; 2.6)</b>	<b>Computer science/Information technology</b> Know how to explore a new programming environment Know that commands have an outcome Know how to explain that a program has a start Know that a sequence of commands can have an order Know how to change the appearance of my project Know how to create a project from a task description <b>Online Safety</b> Know what a strong password is and why it is important
Data and information – Branching databases <b>(NC 2.6)</b>	<b>Information technology</b> Know how to create questions with yes/no answers Know how to identify the object attributes needed to collect relevant data Know how to create branching database Know how to explain why it is helpful for a database to be well structured Know how to identify objects using a branching database Know how to compare the information shown in a pictogram with a branching database <b>Online Safety</b> Know what information I should and should not share online Know why copying someone else' work from the internet isn't fair.
Creating media – Desktop publishing <b>(NC 2.5, &amp; 2.6)</b>	<b>Computer science/Information technology</b> Know how text and images convey information Know that text and layout can be edited Know to choose appropriate page settings Know how to add content to a desktop publishing publication Know how different layouts can suit different purposes Know the benefits of desktop publishing <b>Online Safety</b> Know the difference between someone 'knowing' someone online and knowing them offline



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<b>Year 4</b>	Programming B – Events and actions in programs <b>(NC 2.1, 2.2, 2.3 &amp; 2.6)</b>	<b>Computer science/Information technology</b> Know how a sprite moves in an existing project Know how to create a program to move a sprite in four directions Know how to adapt a program to a new context Know how to develop my program by adding features Know how to identify and fix bugs in a program Know how to design and create a maze-based challenge <b>Online Safety</b> Use key phrases in search engines to gather more accurate results
	Computing systems and networks – The internet <b>(NC 2.4, 2.5, 2.6 &amp; 2.7)</b>	<b>Computer Science/Information technology/Digital literacy</b> Know how networks physically connect to other networks Know how networked devices make up the internet Know how websites can be shared via the World Wide Web (WWW) Know how content can be added and accessed on the World Wide Web (WWW) Know how the content of the WWW is created by people Know how to evaluate the consequences of unreliable content <b>Online safety</b> Describe ways people can be bullied online
	Creating media – Audio production <b>(NC 2.5, 2.6 &amp; 2.7)</b>	<b>Information technology/Digital literacy</b> Know that sound can be digitally recorded Know a digital device to record sound Know how to explain that a digital recording is stored as a file Know that audio can be changed through editing Know that different types of audio can be combined and played together Know how to evaluate editing choices made <b>Online safety</b> Explain how I can change my identity when going online and why I might do this Know times when I need to limit my amount of time on technology.



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Programming A – repetition in shapes <b>(NC 2.1, 2.2, 2.3 &amp; 2.6)</b>	<b>Computer science/Information technology</b> Know that accuracy in programming is important Know how to create a program in a text-based language Know what 'repeat' means Know how to modify a count-controlled loop to produce a given outcome Know how to decompose a task into small steps Know how to create a program that uses count-controlled loops to produce a given outcome <b>Online safety</b> Create strong passwords Know how devices collect information about me when I use them
Data and information – Data logging <b>(NC 2.2 &amp; 2.6)</b>	<b>Computer science/Information technology</b> Know that data gathered over time can be used to answer questions Know to use a digital device to collect data automatically Know that a data logger collects 'data points' from sensors over time. Know that data is collected over a long duration to find information. Know to identify the data needed to answer questions Know to use collected data to answer questions <b>Online safety</b> Know how to find information about others by searching online
Creating media – Photo editing <b>(NC 2.5, 2.6 &amp; 2.7)</b>	<b>Computer Science/Information technology/Digital literacy</b> Know that digital images can be changed Know to change the composition of an image Know how images can be changed for different uses Know to make good choices when selecting different tools Know that not all images are real Know how changes can improve an image. <b>Online safety</b> Know I need to be careful with who I trust to share information with online.



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	<p>Programming B – Repetition in games <b>(NC 2.1, 2.2 &amp; 2.3)</b></p>	<p><b>Computer science</b> Know how to use count controlled loops in a different programming environment. Know that in programming there are infinite loops and count controlled loops Know how a design that includes two or more loops which run at the same time. Know an infinite loop in a given program. Know how to design a project that includes repetition. Know how to create a project that includes repetition.</p> <p><b>Online safety</b> Know how the internet is used to encourage us to buy things online</p>
<b>Year 5</b>	<p>Computing systems and networks – Systems and sequences <b>(NC 2.1, 2.2, 2.4, 2.6 &amp; 2.7)</b></p>	<p><b>Computer Science/Information technology/Digital literacy</b> Know that computers can be connected together to form systems Know the role of computer systems in our lives Know how information is transferred over the internet Know how sharing information online lets people in different places work together Know how to contribute to a shared project online Know how to evaluate different ways of working together online</p> <p><b>Online safety</b> Know how to get help for someone who is being bullied online Know services to block abusive users</p>
	<p>Creating media – Video production <b>(NC 2.5, 2.6 &amp; 2.7)</b></p>	<p><b>Information technology/Digital literacy</b> Know what makes a video effective Know how to identify digital devices that can record video Know how to capture video using a range of techniques Know how to create a storyboard Know that video can be improved through reshooting and editing Know the impact of the choices made when making and sharing a video</p> <p><b>Online safety</b> Explain how online identity can be copied and altered Describe ways technology can affect health and well-being both positively and negatively</p>



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<p>Programming A – Selection in physical computing <b>(NC 2.1, 2.2, 2.3 &amp; 2.6)</b></p>	<p><b>Computer science/Information technology</b>          Know how to control a simple circuit connected to a computer          Know how to write a program that includes count-controlled loops          Know that a loop can stop when a condition is met          Know that a loop can be used to repeatedly check whether a condition has been met          Know how to design a physical project that includes selection          Know how to create a program that controls a physical computing project</p> <p><b>Online safety</b>          Know strategies for creating and keeping strong passwords private.          Describe ways that information about someone online can be used to make judgments about an them and why these may be incorrect</p>
<p>Data and information – Flat-file databases <b>(NC 2.5 &amp; 2.6)</b></p>	<p><b>Computer science/Information technology</b>          Know how to use a form to record information.          Know how to compare paper and computer-based databases.          Know how grouping and sorting data allows us to answer questions.          Know tools can be used to select specific data.          Know that computer programs can be used to compare data visually.          Know how to apply my knowledge of a database to ask and answer real-world questions.</p> <p><b>Online safety</b>          Describe why other people's work belongs to them.</p>
<p>Creating media – Introduction to vector graphs <b>(NC 2.6)</b></p>	<p><b>Information technology</b>          Know that drawing tools can be used to produce different outcomes.          Know how to create a vector drawing by combining shapes.          Know how to use tools to achieve a desired effect.          Know that vector drawings consist of layers.          Know how to group objects to make them easier to work with.          Know how to evaluate my vector drawing.</p> <p><b>Online safety</b>          Describe strategies for safe and fun experiences in online social environments. Know that there are some people they communicate with online who may want to do them or their friends harm (includes sending nudes and semi-nudes referenced as pics).</p>



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	<p>Programming B – Selection in quizzes <b>(NC 2.1, 2.2, 2.3 &amp; 2.6)</b></p>	<p><b>Computer science/Information technology</b>          Know how selection is used in computer programs.          Know that a conditional statement connects a condition to an outcome.          Know how selection directs the flow of a program.          Know how to design a program which uses selection.          Know how to create a program which uses selection.          Know to evaluate my program</p> <p><b>Online safety</b>          Explain key concepts including: data, information, fact opinion belief, true, false, valid, reliable and evidence.          Know why some information they find online may not be honest, accurate or legal</p>
<b>Year 6</b>	<p>Computing systems and networks – communication and collaboration <b>(NC 2.1, 2.4, 2.5, 2.6 &amp; 2.7)</b></p>	<p><b>Computer Science/Information technology/Digital literacy</b>          Know how to use a search engine          Know how search engines select results          Know how search results are ranked          Know why the order of results is important, and to whom          Know how we communicate using technology          Know how to evaluate different methods of online communication</p> <p><b>Online safety</b>          Explain how to report online bullying on apps and platforms that I use</p>
	<p>Creating media – Web page creation <b>(2.5, 2.6 &amp; 2.7)</b></p>	<p><b>Computer Science/Information technology/Digital literacy</b>          Know how to review an existing website and consider its structure.          Know to plan the features of a web page.          Know to consider the ownership and use of images (copyright)          Know the need to preview pages          Know the need for a navigation path          Know the implications of linking to content owned by other people.</p> <p><b>Online safety</b>          Recognise that the content on the internet may belong to other people.          Explain their responsibilities for the well-being of others in their online social group. Explain how they would support others (including those who are having difficulties) online (includes sending nudes and semi-nudes as pics).</p>



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<p>Programming A – Variables in games <b>(NC 2.1, 2.2, 2.3 &amp; 2.6)</b></p>	<p><b>Computer science/Information technology</b>          Know a 'variable' as something that is changeable          Know why a variable is used in a program          Know how to improve a game by using variables          Know how to design a project that builds on a given example          Know how to use my design to create a project          Know how to evaluate my project  <b>Online safety</b>          Explain what app permissions are and give some examples from the technology I use.          Describe simple ways to increase privacy on the apps I use.</p>
<p>Data and information – Introduction to spreadsheets <b>(NC 2.6)</b></p>	<p><b>Information technology</b>          Know questions which can be answered using data.          Know that objects can be described using data.          Know that formulas can be used to produce calculated data.          Know how to apply formulas to data, including duplicating.          Know how to create a spreadsheet to plan an event          Know how to choose suitable ways to present data  <b>Online safety</b>          Explain what app permissions are and give some examples from the technology I use.          Describe simple ways to increase privacy on apps I use.</p>
<p>Creating media – 3D modelling <b>(NC 2.6 &amp; 2.7)</b></p>	<p><b>Information technology/Digital literacy</b>          Know how to use a computer to create and manipulate three dimensional (3D) digital objects          Know how to compare working digitally with 2D and 3D graphics          Know how to construct a digital 3D model of a physical object          Know that physical objects can be broken down into a collection of 3D shapes          Know how to design a digital model by combining 3D objects          Know how to develop and improve a digital 3D model  <b>Online safety</b>          Describe ways the media can shape ideas about gender and know how to reject inappropriate messages I see about gender online          Describe common systems that regulate age related content and describe their purpose</p>



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Programming B – Sensing movement <b>(NC 2.1, 2.2, 2.3 &amp; 2.6)</b>	<b>Computer Science/Information technology/Digital literacy</b> Know how to create a program to run on a controllable device Know how to explain that selection can control the flow of a program Know how to update a variable with a user input Know that a conditional statement to compare a variable to a value Know how to design a project that uses inputs and outputs on a controllable device Know how to develop a program to use inputs and outputs on a controllable device <b>Online safety</b> Explain how search engines work and how results are selected and ranked. Define the terms 'influence', 'manipulation' and 'persuasion' and explain how they might encounter these online. Know how to identify, flag and report inappropriate content.
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References:  
National Curriculum in England: computing programs of study  
Teach computing curriculum (NCCE)  
Pitmaston Primary School  
[www.st-annes-lancs.co.uk](http://www.st-annes-lancs.co.uk)  
[www.sspeterandpaulprimary.co.uk](http://www.sspeterandpaulprimary.co.uk)