



Thrapston Primary School Knowledge Progression

Subject area: Computing

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Programming</p> <p>Planning, writing and testing computer programs from digital devices, from floor turtles to tablets</p>	<p>Most children will know:</p> <ul style="list-style-type: none"> - that many everyday devices respond to commands 	<p>Most children will know:</p> <ul style="list-style-type: none"> - that pressing buttons makes the toy or robot respond. -that by pressing a particular direction will make the robot move that way. 	<p>Most children will know:</p> <ul style="list-style-type: none"> -that a programmable robot can be controlled by inputting a sequence of instructions. - that a sequence of instructions is an algorithm. - how algorithms are implemented as programs on digital devices. -that to debug programs you fix errors 	<p>Most children will know:</p> <ul style="list-style-type: none"> - what algorithms are - how to create and de-bug simple programs - how to select coding blocks to create a program 	<p>Most children will know:</p> <ul style="list-style-type: none"> - how to use a range of coding blocks to create a program. - how to evaluate their work. - how to correct any mistakes within their program. - how to solve problems by decomposing them into smaller parts. 	<p>Most children will know:</p> <ul style="list-style-type: none"> - understand what variables are - recognise the importance of user interface design (what it looks like) - what input and output are in relation to a game (what does the player have to do, what happens as a result) -how to explain the algorithm that underlies their game 	<p>Most children will know:</p> <ul style="list-style-type: none"> -how to create an algorithm for a game -how to create images and sounds for their games -how to use selection and repetition in their game -how to improve their game based on feedback 	<p>Most children will know:</p> <ul style="list-style-type: none"> - how computers use stored programs to connect input to output. - how to generate and evaluate designs in response to a brief - how to design and write a program for an embedded system (MakeCode)

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<p>Computational Thinking</p> <p>Some of the computer science foundation- particularly algorithms, logical reasoning and decomposing problems into smaller parts <i>(Input – process – output)</i></p>	<p>Most children will know:</p> <ul style="list-style-type: none"> - that devices can take pictures - which devices at home and school can take pictures -which button on the device will take a picture 	<p>Most children will know:</p> <ul style="list-style-type: none"> -how to use devices to take pictures -that there are a range of ways to share pictures and videos on a computer screen - that sounds can be recorded and played back -know the buttons to press to record and play back sounds 	<p>Most children will know:</p> <ul style="list-style-type: none"> - that an algorithm is a sequence of clear, simple steps. - how to collaborate with others -how to capture a video - how to record sounds - how to playback recorded sounds - how to improve the quality of a video 	<p>Most children will know:</p> <ul style="list-style-type: none"> - about games that are played on a computer/ technology -that computer games are made up of precise instructions for the computer to follow -programmers implement many algorithms when making computer games - how to make predictions -how to create a sequence of instructions - know what algorithms are - how to use games safely and in balance with other activities -how to keep their personal information private -to know of and observe age restrictions on commercial games <i>(age/PEGI rating)</i> 	<p>Most children will know:</p> <ul style="list-style-type: none"> - how to debug programs to accomplish specific goals - how to use sequence, selection and repetition in programs - what a variable is and various forms of input and output -the more complex a program is the more bugs are likely to occur 	<p>Most children will know:</p> <ul style="list-style-type: none"> - the model of computation: input - process - output - about inputs and outputs available on a BBC micro:bit - how to convert and transfer a program written on screen to the micro:bit 	<p>Most children will know:</p> <ul style="list-style-type: none"> - about semaphore and Morse code - that private information needs to be encrypted - the need to use complex passwords and to keep them secure - some understanding of how encryption works on the Internet -how to check if a web page is encrypted 	<p>Most children will know:</p> <ul style="list-style-type: none"> - how some key algorithms can be expressed as programs - that some algorithms are more efficient than others for the same problem -understand common algorithms for searching and sorting a list

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Creativity Creating and refining original content using digital tools across a range of media.	Most children will know: - that devices can take pictures - which devices at home and school can take pictures -which button on the device will take a picture -sounds can be recorded and played back	Most children will know: -where to find pictures they have take on a device, with some support -that they can select different tools and colours	Most children will know: -how to select and set brushes and colours -how to create artwork in a range of styles -which programs can be used to draw in -that different tools can create different effects	Most children will know: -how to take photos on a digital device -how to review the technical merits of others' photographs -what to do if they find images that they are concerned about	Most children will know: -how to retrieve information -how to use recording devices to record video -how to upload video footage to a computer for editing -which program is used for video editing -how to combine background images and live video	Most children will know: -how to use sequence and repetition -how to record sounds using a variety of devices -how sounds can be uploaded to use on the computer/ device -how to evaluate a piece of music -what a repeating rhythm is	Most children will know: -about the work of architects, designers and engineers working in 3-D -how to evaluate the aesthetics of a space -which packages can be used to create virtual spaces	Most children will know: -how to source content -how to word process text -know how to use collaborative software -the principles of good design when designing/creating pages or spreads

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Digital Literacy Using and understanding the internet, the web and search engines, effectively and safely.	Most children will know: -information can be shared using computers and the Internet -the letter keys are used to type words - information can be presented in a variety of ways -whether they find content upsetting/worrying or not	Most children will know: -they can retrieve information from a computer or the Internet -if they need to put spaces between words or need to change their typing -that sounds and images can be used in presentations	Most children will know: -how to save and retrieve files and images -how to use the keyboard to type -that their personal information needs to be kept private -how to protect their privacy -what Copyright is -how to evaluate their work	Most children will know: -how to work as part of a group -how to use an Internet search engine -that not all information on the Internet is true -how to report concerns when searching for content over the Internet -how to insert pictures and sounds in a presentation	Most children will know: -how to create a presentation -how narration can be used to enhance their presentation -the importance of speaking clearly when narrating -how to use screen recorder software -what is meant by personal information	Most children will know: -that blogs are a medium and genre for writing -how to comment on blog posts -how to use blogs safely and responsibly -how the Internet makes blogging possible -that blog posts are stored as HTML -how to report concerns about posts or comments on blog posts -what constitutes acceptable and unacceptable behaviour when commenting on blog posts -know the difference between database driven sites - such as a WordPress blog and static HTML pages	Most children will know: -how information is passed between the components that make up the Internet -what the source code for a web page looks like and how it can be edited -how a website can be structured -how to add content to a web page -that web pages are written and transmitted in HTML	Most children will know: -about appropriate rules or guidelines for a civil online discussion -how search engines are selected and ranked -not all information online is reliable -how to determine whether a source is trustworthy or reliable -strategies for dealing with online bullying

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<p>Communication/ Collaboration</p> <p>Making the most of computers and the internet for communicating with one of many and working together on projects.</p>	<p>Most children will know:</p> <ul style="list-style-type: none"> -which devices can play sounds -sounds can be recorded and played back 	<p>Most children will know:</p> <ul style="list-style-type: none"> - that sounds can be recorded and played back -know the buttons to press to record and play back sounds -which devices they can use to record and playback sounds in their setting or at home 	<p>Most children will know:</p> <ul style="list-style-type: none"> -that sounds can be recorded and played back -how to re-record unsatisfactory audio -how to explore different effects that can be applied to audio -how to create a repeating percussion pattern -what algorithms are 	<p>Most children will know:</p> <ul style="list-style-type: none"> -how animation works -how to take pictures -how to record sounds -how to plan a story -that the camera and stage must remain fixed 	<p>Most children will know:</p> <ul style="list-style-type: none"> -how to edit work -how to act responsibly when editing the work of others -how to identify the sources used in their work -evaluate an article for trustworthiness -how to organise a research project by breaking it into manageable parts 	<p>Most children will know:</p> <ul style="list-style-type: none"> -what geometry and tessellation is -how to appraise art -how to write a program to draw a shape -how to use repetition in a program 	<p>Most children will know:</p> <ul style="list-style-type: none"> -how to plan a non-linear presentation -what creative commons license is -how to create links between slides in presentations -how to add audio narration to slides 	<p>Most children will know:</p> <ul style="list-style-type: none"> -how to shoot video footage -how to use search tools to find media -how to import video footage and media into editing software

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Productivity Collecting and analysing data and information using computers, organising, manipulating and presenting this to an audience	Most children will know: -how to identify and sort objects by colour, and size	Most children will know: -how to identify common similarities with objects in a group -that different classification criteria can be used to sort the same group of objects	Most children will know: -how data can be structured as records with fields for information -how data can be organised into groups and sub-groups -how data can be structures as a tree -how data can be organised into a table -how data in a table can be filtered and searched	Most children will know: -how to use classification keys to identify a class of things from questions about their properties -how to edit and enhance photos -how to import photos to a document and add captions -how to add titles to charts and labels to axis	Most children will know: -how to collect data via the web -how to analyse data and interpret results -how to move information between different applications	Most children will know: -how to enter data -how to take digital photos -how to create simple charts -how to make sensible predictions -how to add measurement and descriptions to photographs	Most children will know: -the difference between real and imagined locations -how to upload an audio file to cloud storage -how to show respect for privacy by blurring some content	Most children will know: -how decision trees can be trained automatically to classify data -how speech recognition works -how a neural net recognises images -know what input nodes are