

**Rockmount Primary School  
Skills Progression Document  
Computing**

	<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>Programming</b>	<ul style="list-style-type: none"> <li>know that a programmable robot can be controlled by inputting a sequence of instructions</li> <li>develop and record sequences of instructions as an algorithm</li> <li>program a robot to follow their algorithm</li> <li>debug programs</li> <li>predict how their programs will work</li> </ul>	<ul style="list-style-type: none"> <li>plan a sequence of instructions e.g. to move sprites in Scratch Jr</li> <li>create, test and debug programs e.g. sprites in Scratch Jr</li> <li>work with input and output</li> <li>use repetition in their programs</li> <li>design costumes for sprites</li> </ul>	<ul style="list-style-type: none"> <li>plan and create an algorithm for an animated scene in the form of a storyboard</li> <li>write a program in Scratch to create the animation, including characters, dialogue, costumes, backdrops and sound</li> <li>review their animation programs and correct mistakes</li> </ul>	<ul style="list-style-type: none"> <li>develop an educational computer game using selection and repetition</li> <li>understand and use variables</li> <li>start to debug computer programs</li> <li>recognise the importance of user interface design, including consideration of input and output</li> </ul>	<ul style="list-style-type: none"> <li>create original artwork and sound for a game</li> <li>design and create a computer program for a computer game, which uses sequence, selection, repetition and variables</li> <li>detect and correct errors in their computer game</li> <li>use iterative development techniques (making and testing a series of small changes) to improve their game</li> </ul>	<ul style="list-style-type: none"> <li>understand how computers use stored programs to connect input to output</li> <li>understand how to generate and evaluate designs in response to a brief</li> <li>plan a complex project by decomposing it into smaller parts</li> <li>work with physical components of a system</li> <li>design and write a program for an embedded system</li> <li>use criteria to provide others with feedback on their work</li> </ul>
<b>Computational thinking</b>	<ul style="list-style-type: none"> <li>break down a process into simple, clear steps (an algorithm)</li> <li>use different features of a video camera</li> <li>use a video camera to capture moving images</li> <li>edit a video to include an audio commentary</li> <li>develop collaboration skills</li> <li>discuss their work and think about how it could be improved</li> </ul>	<ul style="list-style-type: none"> <li>observe and describe carefully what happens in computer games</li> <li>use logical reasoning to make predictions of what a program will do and test these predictions</li> <li>think critically about computer games and their use</li> <li>create sequences of instructions for a virtual robot to solve a problem</li> <li>work out strategies for playing a game well</li> <li>be aware of how to use games safely and in balance with other activities</li> </ul>	<ul style="list-style-type: none"> <li>develop a number of strategies for finding errors in programs</li> <li>build up resilience and strategies for problem solving</li> <li>increase knowledge and understanding of Scratch</li> <li>recognise a number of common types of bugs in software</li> </ul>	<ul style="list-style-type: none"> <li>learn about the input – process – output model of computation</li> <li>learn about the inputs and outputs available on a BBC micro:bit</li> <li>program using the MakeCode block- based environment</li> <li>test and debug programs they write, using an on-screen simulator and the micro:bit</li> <li>convert and transfer a program written on screen to the micro:bit</li> </ul>	<ul style="list-style-type: none"> <li>be familiar with semaphore and Morse code</li> <li>understand the need for private information to be encrypted</li> <li>encrypt and decrypt messages in simple ciphers</li> <li>appreciate the need to use complex passwords and to keep them secure</li> <li>have some understanding of how encryption works on the Internet</li> </ul>	<ul style="list-style-type: none"> <li>develop the ability to reason logically about algorithms</li> <li>understand how some key algorithms can be expressed as programs</li> <li>understand that some algorithms are more efficient than others for the same problem</li> <li>understand common algorithms for searching and sorting a list</li> </ul>
<b>Creativity</b>	<ul style="list-style-type: none"> <li>how to select and set brushes and colours in a paint package</li> <li>create artwork in a range of styles on iPads</li> <li>use the undo function if they make mistakes, and to encourage experimentation</li> <li>use multiple layers in their art</li> <li>transform layers</li> <li>paint on top of photographs</li> </ul>	<ul style="list-style-type: none"> <li>consider the technical and artistic merits of photographs</li> <li>use the iPad camera app</li> <li>take digital photographs</li> <li>review, reject or pick the images they take</li> <li>edit and enhance their photographs</li> </ul>	<ul style="list-style-type: none"> <li>develop web-based research skills</li> <li>structure, prepare and deliver a talk about a given topic or subtopic studied in another curriculum area</li> <li>record a piece to camera</li> <li>edit a movie using static images and green screen footage</li> <li>give constructive, critical feedback on recorded presentations.</li> </ul>	<ul style="list-style-type: none"> <li>create a repeating percussion rhythm</li> <li>play music using virtual instruments</li> <li>compose or edit tunes using the piano roll (pitch and duration) tool</li> <li>perform electronic music using pre-recorded loops, and create their own loops</li> <li>create a multi-track composition or performance using multiple instruments</li> <li>give feedback to others on their compositions and performances.</li> </ul>	<ul style="list-style-type: none"> <li>understand the work of architects, designers and engineers working in 3-D</li> <li>develop familiarity with a simple CAD (computer-aided design) tool</li> <li>develop spatial awareness by exploring and experimenting with a 3-D virtual environment</li> <li>develop greater aesthetic awareness.</li> </ul>	<ul style="list-style-type: none"> <li>manage or contribute to large collaborative projects, facilitated using online tools</li> <li>write and review content</li> <li>source digital media while demonstrating safe, respectful and responsible use</li> <li>design and produce a high-quality print document.</li> </ul>

<b>Computer networks</b>	<ul style="list-style-type: none"> <li>• plan a small multimedia eBook</li> <li>• choose and import images</li> <li>• record audio commentary</li> <li>• add and format titles and other text</li> <li>• think carefully about protecting their privacy</li> <li>• respect other people's copyright</li> <li>• revise and improve work</li> </ul>	<ul style="list-style-type: none"> <li>• develop collaboration skills through working as part of a group</li> <li>• develop research skills through searching for information on the Internet</li> <li>• think through privacy implications of their use of search engines</li> <li>• be more discerning in evaluating online information</li> <li>• improve note-taking skills through the use of mind mapping</li> <li>• develop presentation skills through creating and delivering a short multimedia presentation</li> </ul>	<ul style="list-style-type: none"> <li>• create a number of structured presentations</li> <li>• narrate presentations</li> <li>• consider issues of trust and privacy when sharing information.</li> </ul>	<ul style="list-style-type: none"> <li>• become familiar with blogs as a medium and a genre of writing</li> <li>• create a sequence of blog posts on a theme</li> <li>• incorporate additional media</li> <li>• comment on the posts of others</li> <li>• develop a critical, reflective view of a range of media, including text</li> </ul>	<ul style="list-style-type: none"> <li>• learn the name and function of components making up the school's network</li> <li>• understand how information is passed between the components that make up the Internet</li> <li>• what the source code for a web page looks like, and how it can be edited</li> <li>• how a website can be structured</li> <li>• how to add content to a web page</li> </ul>	<ul style="list-style-type: none"> <li>• learn about appropriate rules or guidelines for a civil online discussion</li> <li>• understand how search results are selected and ranked</li> <li>• know how to argue their point effectively, supporting their views with sources</li> <li>• know how to counter someone else's argument while showing respect and tolerance</li> <li>• learn how to judge the reliability of an online source</li> <li>• develop some strategies for dealing with online bullying</li> </ul>
<b>Communication collaboration</b>	<ul style="list-style-type: none"> <li>• record audio on an iPad</li> <li>• program sprites to playback recorded audio in ScratchJr</li> <li>• program ScratchJr to create repeating rhythms using recorded audio</li> <li>• explore different effects that can be applied to audio</li> <li>• create a repeating percussion pattern using a virtual drum machine</li> <li>• experiment with a range of virtual instruments</li> </ul>	<ul style="list-style-type: none"> <li>• understand how animation works</li> <li>• use storyboards to plan an animation</li> <li>• create their own original characters, props and backgrounds for an animation</li> <li>• film, review and edit a stop-motion animation</li> <li>• record audio to accompany their animation</li> <li>• provide constructively critical feedback to their peers</li> </ul>	<ul style="list-style-type: none"> <li>• understand the conventions for collaborative online work, particularly in wikis</li> <li>• be aware of their responsibilities when editing other people's work</li> <li>• become familiar with Wikipedia, including potential problems associated with its use</li> <li>• practise research skills</li> <li>• write for a target audience using a wiki tool</li> <li>• develop collaboration skills</li> <li>• develop proofreading skills</li> </ul>	<ul style="list-style-type: none"> <li>• develop an appreciation of the links between geometry and art</li> <li>• become familiar with the tools and techniques of a vector graphics package</li> <li>• develop an understanding of turtle graphics</li> <li>• experiment with the tools available, refining and developing their work as they apply their own criteria to evaluate it and receive feedback from their peers</li> <li>• develop some awareness of computer-generated art</li> </ul>	<ul style="list-style-type: none"> <li>• how to plan a non-linear presentation</li> <li>• to create text as part of a presentation</li> <li>• to add and edit images in a presentation</li> <li>• to use hyperlinks for navigation between the slides of a presentation</li> <li>• to record and add audio narration to a presentation</li> <li>• to use commenting tools to give feedback on a presentation</li> </ul>	<ul style="list-style-type: none"> <li>• think critically about how video is used to promote a cause</li> <li>• storyboard an effective advert for a cause</li> <li>• work collaboratively to shoot original footage and source additional content</li> <li>• acknowledge intellectual property rights</li> <li>• work collaboratively to edit the assembled content to make an effective advert</li> </ul>
<b>Productivity</b>	<ul style="list-style-type: none"> <li>• understand how data can be structured as records with fields for information</li> <li>• know that data can be organised into groups and subgroups</li> <li>• explore how data can be structured as a tree</li> <li>• learn how data can be organised into a table</li> <li>• learn how data in a table can be filtered and searched</li> </ul>	<ul style="list-style-type: none"> <li>• sort and classify a group of items by answering questions</li> <li>• collect data using tick charts or tally charts</li> <li>• take, edit and enhance photographs</li> <li>• use Google Sheets or Microsoft Excel to produce basic charts</li> <li>• record information on a digital map</li> <li>• summarise what they have learned in a presentation</li> </ul>	<ul style="list-style-type: none"> <li>• understand some elements of survey design</li> <li>• understand some ethical and legal aspects of online data collection</li> <li>• use the Internet to facilitate data collection</li> <li>• use charts to analyse data</li> <li>• interpret results</li> </ul>	<ul style="list-style-type: none"> <li>• understand different measurement techniques for weather – both analogue and digital</li> <li>• use computer-based data logging to automate the recording of some weather data</li> <li>• use spreadsheets to create charts</li> <li>• analyse data, explore inconsistencies in data and make predictions</li> <li>• practise using presentation and video software</li> </ul>	<ul style="list-style-type: none"> <li>• explore real-world and imagined locations in VR (if possible)</li> <li>• create 360° photosphere images</li> <li>• link physical objects to digital content using QR codes</li> <li>• create their own VR scene</li> <li>• program objects and interactions in VR</li> </ul>	<ul style="list-style-type: none"> <li>• know how decision trees can be trained automatically to classify data</li> <li>• understand how speech recognition works</li> <li>• understand how a neural net recognises images</li> <li>• train a neural net to classify images</li> <li>• train a machine learning system to identify sentiments</li> <li>• consider some ethical principles in designing AI systems</li> </ul>