

<b>Year Group: 6</b>	<b>Term: Spring 1 &amp; 2</b>	<b>Topic: Computing Science</b>
<b>NC Links</b>		
<ul style="list-style-type: none"> <li>• Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</li> <li>• Use sequence, selections and repetition in programs; work with variables and various forms of input and output; generate appropriate inputs and predicted outputs to test programs.</li> <li>• Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs.</li> </ul>		
<b>Other Curriculum Links</b>		
Links to Science, PE (unplugged activities)		
<b>Topic Overview</b>		
<p>Children will further understanding of computing science by using knowledge of algorithms and programming by using a range of activities and applications. Topic will begin by revisiting 'unplugged' activities using Barefoot Computing and/or CS Unplugged, to support children's understanding of computing science and the vocabulary behind it (use knowledge organisers to help explain concepts and vocabulary). Children will then progress onto the next stage of Code.org (Unit F). Class teachers can also use school ipads as an additional activity or exploration lesson.</p>		
<b>Links to Rights Respecting</b>		
<p>Article 17 - Every child has the right to reliable information from the media. This should be information that children can understand. Governments must help protect children from materials that could harm them.</p> <p>Article 28 - Every child has the right to an education. Primary education must be free and different forms of secondary education must be available to every child. Discipline in schools must respect children's dignity and their rights.</p>		
<b>Links to North East Ambition</b>		
<p>Children will look at different careers within computing and how the subject is evolving every day. Teachers can reference jobs/companies that are recognised globally (apple, Microsoft etc.) or locally (Sunderland Nissan, Newcastle University, CAS). Jobs may include: Engineer, Game Designer, Cyber Crime Officer, Photographer, Video Animator, Office Worker etc.</p> <p>GATSBY BENCHMARK 3  GATSBY BENCHMARK 4  GATSBY BENCHMARK 5</p>		
<b>Possible Visits/Visitors</b>		
Makey Makey session with Martin Bailey		

### **Essential Subject Skills to be covered**

- Set IF conditions for movements. Specify types of rotation giving the number of degrees.
- Change the position of objects between screen layers (send to back, bring to front).
- Upload sounds from a file and edit them. Add effects such as fade in and out and control their implementation.
- Combine the use of pens with movement to create interesting effects.
- Set events to control other events by 'broadcasting' information as a trigger.
- Use IF THEN ELSE conditions to control events or objects.
- Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.
- Use lists to create a set of variables.

### **Overall Learning Outcomes**

By the end of this unit, children should learn about Ramp up, Variables, Data, Loops, Internet, Sprites and Digital Citizenship.

### **Learning Intentions (for use in self assessment at end of topic)**

- I can set IF conditions for movements
- I can change the position of objects between screen layers
- I can upload sounds from a file and edit them.
- I can add sound effects such as fade in and out and control their implementation.
- I can combine the use of pens with movement to create interesting effects.
- I can control other events by 'broadcasting' information as a trigger.
- I understand the difference between IF THEN ELSE conditions to control events or objects.
- I can use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.
- I can use lists to create a set of variables.

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<b>Possible Activities</b>		
<ul style="list-style-type: none"> <li>● <b>Barefoot Computing</b> - Introduction to HTML 1</li> <li>● <b>CS Unplugged</b> - Sorting Networks p81-93 &amp; Graph Colouring (Intractability) p132-140</li> <li>● <b>Code.org</b> - (Unit F) Ramp up, Variables, Data, Loops, Internet, Sprites, Digital Citizenship</li> <li>● <b>'Lego Mindstorms: Fix the Factory'</b> app. Children to develop upon skills learnt using Kodable, A.L.E.X. and Lightbot Jr apps. Lot more decomposition is now needed to break algorithms now into smaller more manageable chunks.</li> <li>● Combine <b>'Scratch'</b> desktop PC software with <b>'Makey Makey'</b> kits. Pupils to first create Scratch code to perform certain tasks (<i>e.g. shape piano</i>). Then combine Makey Makey kit via USB with the computer to interact and use as a controller (<i>e.g. a banana piano or a games controller then is controlled via pencil lead drawing of a controller</i>).</li> <li>● Use <b>'Sketch Nation Create'</b> app. Pupils to design the various elements of their own computer game and then create them using the app. Pupils to play and review both their own apps and the apps of others and link to other curriculum areas (<i>e.g. persuasive writing to now promote or review the game that they have created</i>).</li> </ul>		
<b>Suggested Strategies for Recording Learning</b>		
<ul style="list-style-type: none"> <li>● Code.org</li> <li>● Create own algorithms using iPad app.</li> <li>● Code using scratch to create audio.</li> <li>● Design and create own computer game using Sketch Nation.</li> </ul>		

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Assessment			
<p>Ongoing assessment from guided activities, observations, discussions, questioning and work evidence. A suggested activity is</p> <ul style="list-style-type: none"> <li>• Code.org will track progress of children</li> <li>• Create own algorithms using iPad app.</li> <li>• Code using scratch to create audio.</li> <li>• Design and create own computer game using Sketch Nation.</li> </ul>			
	x.1	x.2	x.3
<b>Motion</b>	Beginning to understand the difference between and appropriately uses 'if', 'then' and 'else' statements.	Understands the difference between and appropriately uses 'if', 'then' and 'else' statements.	Understands <i>fully</i> the difference between and appropriately uses 'if', 'then' and 'else' statements.
<b>Looks</b>	Beginning to change the position of objects between layers.	Can regularly attempt to change the position of objects between layers with some accuracy.	Can regularly and independently change the position of objects between layers accurately.
<b>Sound</b>	Is beginning to upload and edit sounds from a file as well as adding fade in and out effects controlling their implementation.	Can upload and edit sounds from a file, as well as adding fade in and out effects controlling their implementation.	Can independently and accurately upload and edit sounds from a file, as well as adding fade in and out effects controlling their implementation.
<b>Draw</b>	Is beginning to develop combining the use of pens with movement to create interesting effects.	Can securely combine the use of pens with movement to create interesting effects.	Can independently and purposefully combine the use of pens with movement to create interesting effects.
<b>Events</b>	Is beginning to set events to control other events by 'broadcasting' information as a trigger.	Can set events to control other events by 'broadcasting' information as a trigger.	Can set a range of events to control other events by 'broadcasting' information as a trigger.

<b>Control</b>	Beginning to use IF THE ELSE conditions to control events or objects.	Regularly uses IF THE ELSE conditions to control events or objects.	Accurately and independently uses IF THE ELSE conditions to control events or objects.
<b>Sensing</b>	Beginning to use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.	Use a range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.	Can use a wide range of sensing tools (including proximity, user inputs, loudness and mouse position) to control events or actions.
<b>Variables and lists</b>	Is beginning to use lists to create a set of variables.	Can use lists to create a set of variables.	Can use lists to create a set of multiple variables.