

<b>Year Group: 3</b>	<b>Term: Spring 1 &amp; 2</b>	<b>Topic: Computing Science</b>
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**NC Links**

- Design and write programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.
- 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.
- Use logical reasoning to explain how a simple algorithm works, detect and correct errors in algorithms and programs.

**Other Curriculum Links**

Literacy, Maths, Science, Current History or Geography topic, PE

**Topic Overview**

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, 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 C). Class teachers can also use school ipads as an additional activity or exploration lesson.

**Links to Rights Respecting**

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.

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.

**Links to North East Ambition**

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.

GATSBY BENCHMARK 3  
 GATSBY BENCHMARK 4  
 GATSBY BENCHMARK 5

**Possible Visits/Visitors**

**Essential Subject Skills to be covered**

- Use specified screen coordinates to control movement.
- Set the appearance of objects and create sequences of changes.
- Create and edit sounds. Control when they are heard, their volume, duration and rests.
- Control the shade of pens.
- Specify conditions to trigger events.
- Use IF THEN conditions to control events or objects.
- Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).
- Use variables to store a value.
- Use the functions define, set, change, show and hide to control the variables.

### Overall Learning Outcomes

Children to build upon experiences from KS1 and Year 2. One of the big steps of progression from Year 2 to Year 3 is the introduction of turning right and turning left (*clockwise and anti-clockwise*), as opposed to just moving left and moving right. Pupils will still need to experience this practically. Children will learn about Sequencing, Loops and Events

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

- I can use specified screen coordinates to control movement.
- I can set the appearance of objects and create sequences of changes.
- I can create and edit sounds. Then control when they are heard, their volume, duration and rests.
- I can control the shade of pens.
- I can specify conditions to trigger events.
- I can use IF THEN conditions to control events or objects.
- I can create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).
- I can use variables to store a value.
- I can use the functions define, set, change, show and hide to control the variables.

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<b>Possible Activities</b>		
<ul style="list-style-type: none"> <li>● <b>Barefoot Computing</b> – 2D Shape Drawing Debugging, Decomposition Unplugged, Selecting Search Activity</li> <li>● <b>Code.org</b> – (Unit C) Sequencing, Loops and Events</li> <li>● Develop upon skills from Year 2 using '<b>Kodable</b>'. Introduction of loops and repeats as a way of making programs more precise.</li> <li>● Continue with practical devices. Build upon experiences from Year 2 of using both the physical <b>Blue Bot</b> and the link with the Blue Bot app.</li> <li>● Put down scrap paper and allow them to step out the routes, rather than simply just sitting at desks and having to create algorithms.</li> <li>● '<b>Crazy Characters</b>'. Use images from '<b>Flanimals</b>' book by Ricky Gervais. Each child to be given a Flanimal (<i>can Google for images and then print and laminate</i>). Don't show image to partner. Describe the Flanimal to your partner using as precise language as possible. Partner must use precise instructions to draw the Flanimal based on the given instructions. Review. How could precise language be improved to make the drawing more accurate? Progress to children creating their own Flanimals and writing precise instructions as to how to create this crazy character. Follow instructions. Are these instructions precise enough, or is debugging required? We often naturally apply 'logical reasoning' (based on experience and what we can see), but computers do not work in this way. They do 'precisely' what we tell them to do!</li> <li>● '<b>A.L.E.X.</b>' app. The '<i>goal</i>' is to get A.L.E.X. to the portal at the end of the maze. Progression in the 'moving' skills from Kodable to now programming each individual step and the addition of 'turning' right and left, rather than 'moving' left and right. There are also special features, such as slider and breaking floor pieces. Pupils will have to use skills of 'decomposition' to break down their algorithms into smaller parts, so that they can most effectively create algorithms for 'A.L.E.X.'.</li> <li>● '<b>Scratch Junior</b>' app. Children to have introduction of Scratch programming language (<i>block-based programming</i>) via use of the Scratch Junior App. Pupils to develop basic skills of control, movement, sound and repeats. Ensure that there are opportunities for pupils to access 'open-ended' tasks that allow them to demonstrate their programming skills.</li> </ul>		
<b>Suggested Strategies for Recording Learning</b>		
<ul style="list-style-type: none"> <li>● Code.org</li> <li>● Ongoing projects recorded on '<b>Kodable</b>', '<b>A.L.E.X</b>' and '<b>Scratch Junior</b>'</li> <li>● Series of instructions created for physical devices (Blue Bots) or activities (Mazes)</li> <li>● Descriptive writing (precise and specific) for '<b>Flanimals</b>'</li> </ul>		

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Assessment			
Ongoing assessment from guided activities, observations, discussions, questioning and work evidence. A suggested activity is: <ul style="list-style-type: none"> <li>Code.org will track progress of children</li> </ul>			
	x.1	x.2	x.3
<b>Motion</b>	Beginning to use specified screen coordinates to control movement.	Use specified screen coordinates to control movement.	Use specified screen coordinates to control movement and reflect/edit accordingly.
<b>Looks</b>	Beginning to set the appearance of some objects and create sequences of changes.	Set the appearance of objects and create sequences of changes.	Set the appearance of a wide range of objects and create sequences of changes.
<b>Sound</b>	Create and edit some sounds. Beginning to control when they are heard, their volume, duration and rests.	Create and edit sounds. Control when they are heard, their volume, duration and rests.	Create and edit multiple sounds. Accurately control when they are heard, their volume, duration and rests.
<b>Draw</b>	Starting to control the shade of pens.	Control the shade of pens.	Accurately control the shade of pens to enhance detail/effectiveness.
<b>Events</b>	Specify conditions to trigger some events.	Specify conditions to trigger events.	Specify conditions to trigger multiple events.
<b>Control</b>	Is starting to use IF THEN conditions to control events or objects.	Use IF THEN conditions to control events or objects.	Can accurately and independently use IF THEN conditions to control events or objects.

<b>Sensing</b>	Create conditions for limited actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).	Create conditions for actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).	Create conditions for a wide range of actions by sensing proximity or by waiting for a user input (such as proximity to a specified colour or a line or responses to questions).
<b>Variables and lists</b>	Use some variables to store a value.	Use variables to store a value.	Use a range of variables to store a value.
<b>Variables and lists</b>	Can sometimes use the functions define, set, change, show and hide to control the variables.	Use the functions define, set, change, show and hide to control the variables.	Accurately and independently use the functions define, set, change, show and hide to control the variables.