

National Curriculum:

- use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.
- understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions
- create and debug simple programs
- use logical reasoning to predict the behaviour of simple programs.

Vocabulary

Internet, website, e-safety, online, tools, icons, navigate, technology, algorithm, program, debug, cursor, instructions, undo, display, background, homepage, action, code, bug, character, command, sequence

Snapshot overview

Recap e-safety. Recap what an algorithm is, check terminology learned and remembered from year 1 relating to algorithms and debugging. Create and write down algorithms to guide peers around the room from specific places to follow a specific route. Reinforce the need for algorithms to be specific, thinking about $\frac{1}{2}$ and $\frac{1}{4}$ turns too. All algorithms to be at least 2 steps

Introduce Scratch Junior – a programme that lets you create a range of simple and advanced algorithms to program a digital character to perform a range of movements and activities. Start with the basics, how to navigate the program around screens, then make the character move forward, turn and jump by making algorithms.


Continue using Scratch Junior and build on last sessions skills. Algorithms need a start and end programmed in to be completed. Teach children the green and red flags. Teach children how to add a new character and apply the skills they have learned to program it to move and jump alongside the initial character.

Continue making a variety of algorithms to program characters in Scratch Junior. Teach children how to watch their program on full screen when it is complete. Also how to debug any erroneous algorithms they make.

Explore the full range of Scratch Junior commands and activities to make a variety of algorithms. Can they make the character grow and shrink, race another character or even add sound and speech?

ICT Short Term Planning

Ludlow Infant Academy	Objective	Input	Task including scaffold and differentiation	Outcome
Vocabulary – algorithm, programming, command, instructions, character, digital, insert, sequence, delete, undo, debug				
1	I can follow an algorithm	<p>Technology safety: Advise pupils that we are using a new programme. Elicit from children what rules they should follow when using new technology (following instructions correctly, telling an adult if they are unsure). Write these instructions on the board. Recap throughout lessons.</p> <p>What is an algorithm?</p> <p>Introduce the vocabulary – action, algorithm, bug, code, debug (teacher flashcards - match to description)</p> <p>What does it mean to debug an algorithm?</p> <p>Explain that we are going to follow algorithms today. Spread the children out in the classroom. Give them instructions to move forwards and backwards in a number of steps, adding some quarter left and right turns in.</p> <p>How specific does your algorithm need to be? Why?</p> <p>Stop the children and introduce quarter terms. Practice following instructions with quarter turns. Repeat with half turns.</p> <p>E.g forward two steps, (quarter) turn left, backwards one step.</p> <p>Plenary: share what we have done and what we have found out.</p>	<p>Activity – using spots, children to give their partner instructions to move around a route which goes to different coloured cones/spots. Children to write down instructions to complete their route and swap with another pair to try. (have forward, ¼ turn, backwards, left and right arrows on cards)</p> <p>Can the children create a shape route for their partner to follow? How would you write it down? E.g. making a square or rectangle.</p>	Children to be able to follow an algorithm.

<p>2</p>	<p>I can programme a character to move in a range of ways</p>	<p>Warm up key question for discussion: who should we speak to on the internet?</p> <p>Recap algorithms from prior lesson. Play Simon Says. The teacher should play Simon Says with the class. Discuss how this activity is dependent on properly being able to give and follow instructions. Explain how providing clear instructions is critical to computer programming. Why do you need to make sure the instructions are clear and specific?</p> <p>Introduce the children to Scratch Jr – a programme that allows them to create their own algorithms. Demonstrate to children how to use the following blocks:</p> <ul style="list-style-type: none"> ● Hop ● Go Home ● Reset Size ● Turn clockwise ● Turn counterclockwise <p>Sequencing in ScratchJr (10 minutes): Use PowerPoint in resources to take children through the main skills of ScratchJr.</p> <ul style="list-style-type: none"> ● Begin a new project in ScratchJr. ● Show children how to add a character (they can choose one) ● Show children how to move the character to their chosen start point using click and drag ● Show children different movement blocks they will need to use and sequence correctly to move character (forward, back, jump, turn etc). ● Children to experiment with the different movement blocks (commands) and the numbers underneath them e.g. forwards 4, jump to a height of 8). 	<p>ScratchJr Exploration (10 minutes): Allow children to explore the ScratchJr iPad application. Encourage them to experiment with recently learned blocks. Have them practice putting different programming blocks next to each other to make the cat move in different directions.</p> <p>Evidence: write in books what buttons they used and what it made the character do.</p> <p>(PowerPoint with photos of what to do and print out of pictorial instructions for the LA)</p> <p>Challenge: what else can the character do?</p> <div style="text-align: center;">  </div>	<p>Children to programme a character to hop, turn clockwise and counterclockwise.</p>
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		<ul style="list-style-type: none"> Children to successfully move their character in a variety of ways on the screen using the movement blocks (commands). <p>How can you move your character? What else you can do? What commands can you give your character?</p> <p>Plenary - share with class what we have done and discuss how we did it.</p>		
3	I can complete an algorithm for 2 characters.	<p>Programme the Teacher game: Begin by "programming" (instructing) the teacher. Begin with an easy "program" (have the teacher arrive at a nearby location e.g. move from the board to the door). Then programme the teacher to arrive at a location that is farther away and has obstacles to move around (tables, chairs). Introduce the idea of the green flag and red blocks. Then have the teacher follow their program when the green flag card is held up, and end their program when the red stop sign card is held up.</p> <p><i>Materials: Green flag card, red stop sign card !</i></p> <p>What do the green/ red flags stand for?</p> <p>Teach children how to complete their algorithm by using the green start button at the beginning of the algorithm and the red stop button at the end – see powerpoint for visual instructions.</p> <p>Choosing Characters (2 minutes): Demonstrate to children how to choose a new character from the character library. Also make sure to teach them how to delete a character (by holding a finger on the character until an "x" appears and then pressing the "x").</p>	<p>Support - mixed ability groups. Adults to lap and feedback as required.</p> <p>Challenge: explain what they did and why.</p>	Children to be able to use the green flag and end block in a programming sequence.

Computing Plan Year 2 Summer 2 Scratch Junior

4		<p>As previous lesson use the movement blocks to programme your new character. Add green start and red stop buttons.</p> <p>Press the full screen button to play your finished algorithm with your 2 characters. – see powerpoint for visual instructions.</p> <p>What if your algorithm doesn't work? What could you do to fix it? What is it called when you fix a broken algorithm?</p> <p>How do you choose your character? Can you delete your character to choose a different one?</p> <p>Evidence: take photos or screen shots/grabs to stick in books.</p> <p>Plenary: share with class what we have done and how we did it.</p>		
5	I can programme a collage on Scratch Jr.	Children to further explore a wider range of commands (movement blocks) follow instructions on the powerpoint to make your character use a range of movement for different effects, e.g shrink and grow, become invisible, and change the background.	<p>Present collages to others/ class. Others to give feedback e.g star and a wish.</p> <p>Support - mixed ability groups. Adults to feedback and lap as appropriate.</p> <p>Challenge: Use the voice command button to record your voice and add speech for your character.</p>	Children can make a Scratch Jr collage.

Impact:

- To explain what algorithms are (a set of digital instructions)
- To be able to sequence a set of instructions to programme a digital character
- To be able to debug/undo/fix their algorithms where needed
- To be able to create an algorithm with a range of movements and actions