

LKS2 – Lesson Plan 3 – Computing

Can we use coding to control a space mission?

Aim: To explore how coding is used in space exploration and create a simple program to control a space rover or astronaut sequence.	Key Words: coding, algorithm, program, command, sequence, debug, input, output, astronaut, rover	Preparation: - Laptops or tablets with coding software (e.g. Scratch, ScratchJr, Espresso Coding, Bee-Bots) - Printed astronaut/space rover sprites or icons (if using unplugged options) - Visual instruction cards (forward, turn, repeat, etc.) - Grid mats for movement activities (if doing unplugged coding) - Mission planning worksheet
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Prior Learning: Children have some experience using basic coding platforms and understand how to give step-by-step instructions.

WC / PT	<u>Warm-up:</u> Start with a class discussion: - What do you think astronauts control using computers? - How do robots move on Mars? Play a short video of a Mars rover being programmed to move or carry out tasks. Explain: Today you'll be coding your own space mission!	0-5 mins
WC	<u>Main Teach:</u> Demonstrate a simple coding task using your platform of choice (e.g. Scratch): - Move a space rover forward, turn, collect a rock sample - Explain terms like algorithm, sequence, and debug Model: - How to build a sequence of commands - How to test and fix a program (debugging)	5-10 mins

I / S	<u>Activity:</u> Code Your Own Space Mission Children plan and code a short program to: • Move a rover across a surface • Visit planets or collect samples • Avoid space obstacles Options: • Use a grid mat and arrow cards for unplugged coding • Use Scratch or another app to animate the sequence Encourage children to plan first, then test and debug.	10-30 mins
I	<u>Extension Challenge:</u> Include a repeat or loop command (e.g. collect 3 rock samples). Children can also record a space-themed sound or voice message in the program.	30-35 mins
WC	<u>Plenary:</u> Gather children to share their missions: • What did your rover do? • What problems did you need to debug? • How is this like real space exploration? Celebrate creativity and persistence in programming.	35-40 mins

WC – Whole Class

PT – Partner Talk

I – Independent

S - Support

Challenge A	Science Link: Research a real rover (e.g. Perseverance or Curiosity). What jobs do they do?
Challenge B	English Link: Write a mission log or set of astronaut instructions: <i>“How to Land on Mars.”</i>