

Example Planning Brookland Junior School



Subject: Computing (Computer Science)

Term: Summer 2

Date: 2026

Loti-Bot Coding Lessons – Programming with Floor Robots

Cross Curricular Links - Maths – angles, turns, polygons, tessellation; PSHE – teamwork, communication, peer assessment; Art/Design – pattern and presentation.

Year 3 – Key Skills and Knowledge

- design, write and debug programs that accomplish specific goals; solve problems by decomposing them into smaller parts
- use sequence and repetition in programs; work with various forms of input and output
- use logical reasoning to explain how algorithms work and to detect and correct errors (debugging)
- use technology safely, respectfully and responsibly (as appropriate to tasks)

Prior Learning:

KS1: understand what algorithms are; create and debug simple programs; use logical reasoning to predict the behaviour of simple programs.

Next Steps:

Year 4: deepen use of repetition and introduce selection; begin to use variables and more complex inputs/outputs.

Intent:

This unit introduces pupils to programming a floor robot (Loti-Bot) using a block-based app. Across six lessons they explore algorithms, directional movement, WAIT instructions, loops (repetition), messages and outputs (LEDs), and pen-based drawing of shapes. Pupils plan, test and debug increasingly complex programs, linking with Maths (direction, angles, polygons, tessellation) and PSHE (teamwork, communication, evaluation).

Vocabulary:

algorithm, program, command, sequence, step, wait, loop/repeat, message, input, output, sensor, LED, angle, degree, turn, clockwise/anticlockwise, polygon, tessellation, debug, decompose, evaluate

Concepts:

decomposition, iteration (repetition), sequencing, debugging, evaluation, collaboration, audience & purpose

Outcomes (by end of unit):

- write and run programs to navigate routes using forward/backward moves and turns by degrees;
- use WAIT to control timing;
- apply loops to repeat sequences efficiently;
- send/receive messages to coordinate outputs (e.g., LEDs);
- use the pen to draw shapes and explore tessellating patterns;
- predict, test, debug and explain program behaviour using correct vocabulary.

	Learning Objective	Resources, ICT links, H&S, vocab	Starter/Warm Up/Hook	Teaching Input and Main Activity.	Plenary GPC	Success Criteria
1	<u>LO: Can I write an algorithm to make my Loti-Bot move through a maze?</u>	Loti-Bots Year 4 iPads Masking tape for maze Vocabulary Forwards Backwards Degrees Positive Negative	Hook – show children picture of Loti-bots. Get them to discuss what they think about them in partners Recap – What is an algorithm? Chn should be able to explain this from prior learning on scratch Discuss that algorithms are used in everyday life e.g. recipes,	(This lesson can be done over 2 lessons if creating the mazes takes up most of the lesson time) Get children to explore the Loti-Bots app in groups. What do they notice? Is it similar to scratch? Hopefully children recognise the code blocks. Task Explain to children that they will be creating a maze and need to direct their Loti-Bot through the maze using forward/backward and turns. Model how to do this but also explain that they will need resilience and problem-solving skills as it may not work the first time around.	What code blocks did you use? What directional vocabulary did you use?	Bronze: I can use determination to move the Loti-Bot forwards or backwards Silver: I can move the Loti-Bot forwards and backwards and include accurate turns Gold: I can complete a route and explain the algorithm used

			morning routines etc.	SEN support: provide arrow cards and a printed route; restrict blocks to move/turn; adult prompts for vocabulary. Greater depth: add precise degree turns and multi-step routes; explain why a right angle is 90° and apply to code.		
2	LO: Can I give clear instructions to navigate a Loti-Bot around a town map?	Loti-Bots Year 4 iPads A4 Paper/Sugar paper Masking tape <u>Vocabulary</u> Algorithm Direction Wait pause, timing, destination, stop, sequence, route, debug.	Recap - What type of coding are we doing this unit? What is an algorithm? What directional vocabulary can you remember? Starter – Talk partners How many turns / moves do you think it will take for the Loti-Bot to draw a square? How many degrees will the turn be? How do you know?	Explain to the children that today they will be turning classroom into a Model Town. Their goal is to navigate the Loti-Bot through the town and stop off at designated locations. <u>Task 1</u> Explain that to do so, they will need to think about what we will need in a town e.g. post office, bakery, bank, school, shops, supermarkets, mall, roads, bus stops, train stations etc. As a class, create a key. What is a key? Remind them of their Geography learning of maps. Once key has been created, get children in pairs or groups of 3 to draw the symbol given to them on A4 paper. They could colour their symbols if they want too (optional). Place these symbols around the classroom on the floor – may need to tape them down. Use masking tape to create roads around the classroom.	How successful were you in navigating the model town? What directional vocabulary did you use? When would we wait in real life situations?	Bronze: I can use determination to create a complex algorithm to move around a town. Silver: I can make my Loti-Bot stop at specific destinations within the town. Gold: I can use the WAIT instruction to make my Loti-Bot stop at various destinations before continuing its journey.

			What direction will the turn need to be? Does this stay the same each time?	Once model town classroom is set up, give children a starting point and a finishing point. E.g. start at the bus stop and travel to the school. The children will then need to use their prior learning from lessons and debugging skills to successfully get to their destination. LA – give an easy route that is close by. HA – give a tricky route. <u>Task 2</u> Explain The WAIT Instruction (allows the robot to pause and wait for a certain amount of time before continuing with the next instructions. E.g. Stopping at a pedestrian crossing or traffic light.) Challenge/extend the children to: •Visit 3 destinations •Use the WAIT instruction and stop at those destinations before continuing on to the next.		
3	<u>LO: Can I learn how to add a pen to my Loti-Bot and instruct it to draw shapes?</u>	Loti-Bots Year 4 iPads A3 Paper/Sugar paper Loti-Bot pen attachment	Recap - What is the WAIT instruction? Why is it important to use it?	Paired activity Give pairs a chance to give instructions and follow them and then swap over. Explain that the instructions need to be specific <i>E.g. Move your pencil forward for 3 seconds. Stop and turn it 90 degrees clockwise. x4</i> Partner 1: Giving instructions Partner 2: Following instructions	What learning skill was most important in order to be successful in this	Bronze: I can use determination to find the prebuilt block for drawing a square. Silver: I can understand the algorithm behind the prebuilt block for drawing a square.

		rulers; protractors (optional). <u>Vocabulary</u> Shapes Tessellation Repeat : square, rectangle, triangle, polygon, side, angle, 90°, turn, repeat,		Task 1 – Group work Give children time to create square using Loti-Bot and pens (on sugar paper/A3) Allow each child to attempt to create the algorithm. Task 2 – Group work Can they try to create other shapes? E.g. triangle, pentagon, rectangle or hexagon. Introduce tessellation – show images of tessellation in the real world. Ask children what they notice and allow them to talk to their partner. Challenge- Give them the opportunity to have a go at creating a tessellated pattern of their choice. Remind them that there should be no gaps!	lesson and why? What other skills did you need to be successful?	Gold: I can use my knowledge to create different shapes and explore the concept of tessellation.
4	LO: Can I use loops to create efficient, creative movement (robot dance)? MONIQUE NEEDS TO	Loti-Bots Year 4 iPads Open space in classroom Music (optional) <u>Vocabulary</u> Loop Repeat	Recap – What is tessellation? How were we able to create a tessellated pattern? Watch a short demo where repeating blocks are replaced with	<u>Vocabulary discussion</u> Ask children what is a loop? Where have they heard that word before? Discuss meaning Ask children what is choreography? Discuss meaning. Ask children where they have created choreography before – should be able to make links with their gymnastics and dance learning in Autumn/Spring terms.	Performances with peer feedback- A star and a wish Can children identify where	Bronze: I can use teamwork to create one loop. Silver: I can apply loop controls to develop a repeated pattern. Gold: I can choreograph a routine with multiple loops and precision.

	CREATE A DEMO VIDEO PRIOR TO THIS LESSON	Choreography, Pattern, Sequence, Rhythm.	a loop – what changed, what stayed the same? Give children time to discuss what they noticed with their partner. Feedback and discuss.	<u>Using loops in robotic dance</u> Emphasise that coding and robotics can be creative and fun, and in this lesson, they will explore more imaginative ways to program the robot's movements. Explain that loops can be used to repeat specific dance movements, creating patterns and rhythms in their routines. The children will be choreographers, creating a routine for their Loti-Bot. Model/demonstrate how to use a loop to repeat a set of dance movements. E.g. forwards, backwards, 90 degree turn, forwards, backwards, 360 degree turn, pause and then loop.	loops saved blocks?	
5	Optional Lesson					