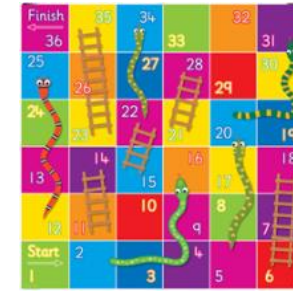# Loti-Bot plays Snakes & Ladders

Many thanks to Bolton Schools ICT for creating this series of lesson ideas. A great way to introduce Loti-Bot to your class and explore some of the robot's features.

Skills and Learning

At the end of this unit, children at age related expectation will be able to:

- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems: solve problems by decomposing them into smaller parts.
- Use sequence, selection and repetition in programs.
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.
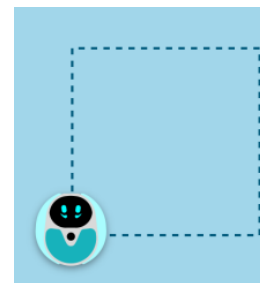
Resources

Loti Bot and App
Snakes and Ladders mat (TTS)
Dice

Key Vocabulary and Questions

algorithm, program, sequence, repeat/loop, debugging/deglitching, input, output, event blocks.

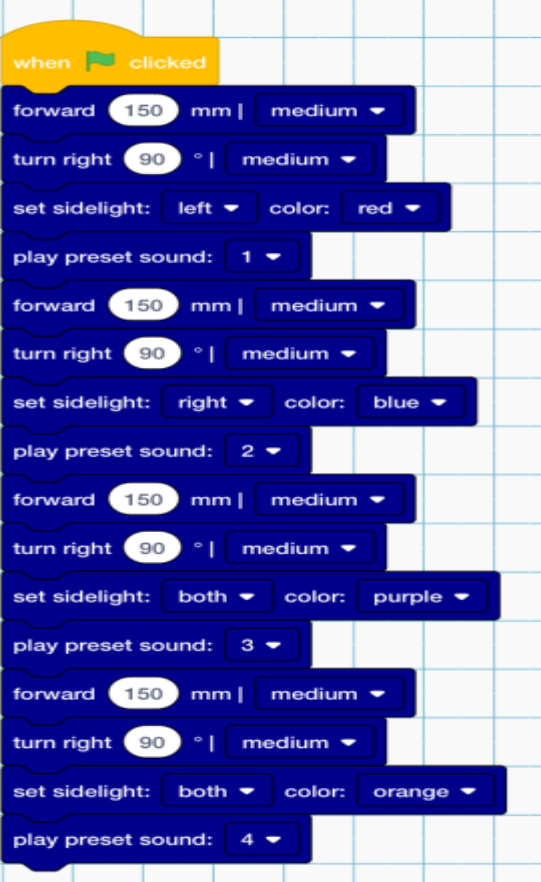|	Learning Objective	National Curriculum Link	Planned Learning Experience	Assessment Outcome
1	I can think about the process involved to create a square.	Pupils should be taught to: design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Solve problems by decomposing them into smaller parts.	Unplugged activity – In pairs children to give each other instructions to walk in a square. Discuss how specific the instruction needs to be. Did you need to consider how many steps to move forwards? (Relate to debugging) How can we be more specific about the corners? Can you think of any maths vocabulary that would help? (Right 90 degrees) Explain that when telling a partner, you might say 3 steps forwards but for Loti it is measured in mm. (One square is 150mm) Opportunity to talk about converting between cm and mm here.	Clear instructions given to make a square.
2	I can apply my knowledge to program Loti to make a square.		Open the Loti Bot app and select level 2. Children to use their unplugged activity to help them write the coding for a square. (There is a block called draw square but encourage children to think the coding through) They can click the green flag at any stage and view the simulator on the right-hand side of the screen to check they have programmed correctly to make a square and debug if necessary.	Correct coding to make a square.

		Use sequence, selection, and repetition in programs, work with variables and various forms of input and output.		
3	***I can connect to Loti Bot to create a square.***		*Discuss with children the technology we use to connect to Loti (Bluetooth). Explain that Bluetooth technology connects over a shorter distance than Wi-Fi. Switch Loti on and ensure the sound is on also. Explain to children that to connect they click on the purple connect button in the top left-hand corner of the screen. When they are connected press the cross in the top right-hand corner to go back to the coding screen. They can then click on the green flag to make Loti create the square. (You may wish to use the pen feature here so that Loti draws the square)*	*Loti will move in a square.*

4	I can change the lights.		Challenge children to change the colour of Loti's sidelights – found in the Loti-Bot Features section of the app. On the first corner they must change the left sidelight, the second corner the right sidelight, the third corner both sidelights and the final corner they can choose.	Lights will change.
5	I can add a sound.		Challenge the children to add a different sound when Loti reaches each corner of the square. This can also be found in the Loti-Bot features section of the app. 	Sound will play.

6	*I can program Loti as the counter in a game.*		*Using a snakes and ladders mat begin a game. Children need to set their left sidelight to decide their counter colour. This will not change throughout the game. Using their coding learned above to make a square children will program Loti to move according to the number they roll.*	*Left sidelight will reflect the counter colour. Children will be able to move and turn around the mat.*
7	*I can program Loti to move up a ladder.*		*When Loti lands at the bottom of a ladder children program her to reach the top, change the colour on the right sidelight to a happy colour and select a happy sound for her to make in celebration (1, 3, 5, 7, 8) On next turn reset the right sidelight to white.*	*Loti will successfully move to the top of the ladder.*
8	*I can program Loti to move down a snake.*		*When Loti lands on a snake children program her to reverse (move backwards) down the snake. At the bottom the right sidelight will turn a sad colour, and she will make a sad noise (4, 6, 9, 10) On the next turn reset the right sidelight to white.*	*Loti will successfully reverse down the snake.*

9	I can program Loti to celebrate winning the game.		When Loti reaches the finish square and wins the game children to program her to turn 360 degrees, flash 4 different colours on both sidelights and play 2 happy sounds. You can use the repeat block here x2.	Loti will celebrate winning the game.