

Learning Intentions		Lesson Outcomes	
<ul style="list-style-type: none"> <li>Students explore the features of a micro:maqueen including: motors, ultrasonic sensors, expansion ports, LED lights and battery packs</li> <li>Students explore the digital systems and features of a micro:bit including: 25 LED lights, built in sensors (microphone, motion, orientation and temperature), processor, speaker, antenna, Bluetooth connectivity, input and output pins and power options</li> <li>Students experiment with patterns, algorithms, loops, and create solutions to challenges with debugging and tinkering</li> </ul>		<ul style="list-style-type: none"> <li>Understand the design brief for today</li> <li>STEM knowledge used in the lesson</li> <li>Computational thinking skills</li> <li>Revise differences between a self-driving car and a regular car</li> <li>Describe features, function and digital system of the micro: Maqueen</li> <li>Work collaboratively to complete tasks</li> <li>Drive challenges 1, 2, 3, 4</li> </ul>	
Australian Curriculum Content Descriptors		Australian Curriculum General Capabilities	
<p><b>Digital technologies</b></p> <p>Design algorithms represented diagrammatically and in English, and trace algorithms to predict output for a given input and to identify errors (ACTDIP029)</p>		<ul style="list-style-type: none"> <li><b>Critical and creative thinking</b> – inquiring – identifying, exploring, and organising information and ideas</li> <li><b>Critical and creative thinking</b> – generating ideas, possibilities, and actions</li> <li><b>Critical and creative thinking</b> – reflecting on thinking and processes</li> <li><b>Critical and creative thinking</b> – analysing, synthesising, and evaluating reasoning and procedures</li> </ul>	
Assessment			
<p><b>Formative assessment</b></p> <p>Observations and feedback on understanding of programming algorithms, patterns, and loops.</p>			
Phase/Slide	Learning Activity		Resources
Slide 1 - 3	<ul style="list-style-type: none"> <li>Greetings / Introduction</li> <li>Acknowledgement of Traditional Custodians</li> <li>Lesson outcomes</li> </ul>		PowerPoint

Phase/Slide	Learning Activity	Resources
Slide 4 - 6 Engage	<ul style="list-style-type: none"> <li>• Introduce the Design Brief</li> <li>• Discuss STEM knowledge that will be used</li> <li>• Discuss Computational thinking</li> <li>• Discuss the concepts and approaches they will use in the lesson today</li> </ul>	PowerPoint
Slide 7 – 8 Revision / Engage	<ul style="list-style-type: none"> <li>• Revise – what are the differences are between self-driving car and a regular car? – ask for feedback / discuss</li> </ul>	PowerPoint
Slide 9 - 15 Explain / Discuss	<ul style="list-style-type: none"> <li>• What is a micro:Maqueen – introduce the self-driving car</li> <li>• Explain and discuss the features of the micro:Maqueen</li> <li>• Explain and discuss the functions of the Micro:Bit and Maqueen noting the relevant parts to be used</li> <li>• Discuss the similarities between a real self-driving car – sensors, sounds, speakers, antenna</li> <li>• Discuss the equipment to be used today</li> </ul>	PowerPoint Example micro:bit & micro:maqueen
Slide 16 - 20 Explain	<ul style="list-style-type: none"> <li>• Explain safety and respect of equipment</li> <li>• Explain how to set up the equipment</li> <li>• Explain how to connect, pair and download</li> <li>• Explain how to download the extension: maqueen</li> </ul>	PowerPoint, micro:maqueen kits, laptops for students
Slide 21 - 24 Explore Evaluate	<ul style="list-style-type: none"> <li>• Explain the Driving Task 1</li> <li>• Ask students to hypothesise about what code they will need, what commands to choose, explain their reasoning – <i>Forward, wait, reverse wait repeat</i></li> <li>• Introduce the code – decomposition (break it down into parts) – patterns &amp; algorithms</li> <li>• Discussing speed, movement &amp; time</li> <li>• Test – tinkering and debugging</li> </ul>	PowerPoint, micro:maqueen kits, laptops for students

Phase/Slide	Learning Activity	Resources
Slide 25 - 28 Explore Evaluate	<ul style="list-style-type: none"> <li>• Explain the Driving Task 2</li> <li>• Ask students to hypothesise about what code they will need, what commands to choose, explain their reasoning – <i>Forward, wait, indicate right, turn right, forward, and stop</i></li> <li>• Introduce the code – decomposition (break it down into parts) – patterns &amp; algorithms</li> <li>• Discussing angles and time</li> <li>• Test – tinkering and debugging</li> </ul>	PowerPoint, micro:maqueen kits, laptops for students
Slide 29 - 31 Explore Evaluate	<ul style="list-style-type: none"> <li>• Explain the Driving Task 3</li> <li>• Ask students to hypothesise about what code they will need, what commands to choose, explain their reasoning - <i>Forward, wait, <b>flashing</b> indicate right, turn right, forward, and stop</i></li> <li>• Introduce the code – decomposition (break it down into parts) – patterns &amp; algorithms</li> <li>• Discussing wait, lights, order of code</li> <li>• Test – tinkering and debugging</li> </ul>	PowerPoint, micro:maqueen kits, laptops for students
Slide 32 - 34 Explore Evaluate	<ul style="list-style-type: none"> <li>• Time permitting:</li> <li>• Explain the Driving Task 4</li> <li>• Ask students to hypothesise about what code they will need, what commands to choose, explain their reasoning – <i>Drive in a square back to the start, using a flashing indicator before each turn</i></li> <li>• Introduce the code – decomposition (break it down into parts)</li> <li>• Discuss repeating code, speed of motors</li> <li>• Test – tinkering and debugging</li> </ul>	PowerPoint, micro:maqueen kits, laptops for students
Slide 35 - 39 Engage	<ul style="list-style-type: none"> <li>• Discuss learning outcomes of programming a car</li> <li>• Saving work, Questions</li> <li>• Packing up equipment</li> <li>• Acknowledgements</li> </ul>	PowerPoint