

Year 7 – Elements of a self-driving car 70min Lesson 2

Learning Intentions		Lesson Outcomes
<ul style="list-style-type: none"> Students explore components of a self-driving car Explore solutions to roads for self-driving cars Explore insurance implications Design parts of a self-driving car Learn more about careers in this industry 		<ul style="list-style-type: none"> Find components of a self-driving car and combine into a current solution for self-driving cars Propose modifications to environments to suit self-driving cars Explore insurance implications of self-driving cars Design a self-driving car Understand occupations which design self-driving or autonomous systems
Australian Curriculum Content Descriptors		Australian Curriculum General Capabilities
<p>Science Understanding Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations (ACSHE120)</p> <p>Design and Technologies Investigate the ways in which products, services and environments evolve locally, regionally, and globally and how competing factors including social, ethical and sustainability considerations are prioritised in the development of technologies and designed solutions for preferred futures (ACTDEK029)</p>		<p>Critical and creative thinking – inquiring – identifying, exploring, and organising information and ideas</p> <p>Critical and creative thinking – generating ideas, possibilities, and actions</p> <p>Personal and social capability – Social awareness</p> <p>Ethical understanding - exploring values, rights, and responsibilities</p>
Assessment		
<p>Formative assessment</p> <p>Two worksheets to be filled out in class related to activity.</p>		
Phase/Slide	Learning Activity	Resources
Slide 1 - 3	<ul style="list-style-type: none"> Greetings / Introduction Acknowledgement of Traditional Custodians Lesson outcomes 	PowerPoint

Phase/Slide	Learning Activity	Resources
Slide 4 Engage	<ul style="list-style-type: none"> Review last lesson's content – ethical dilemmas with self-driving cars 	PowerPoint
Slide 5-6 Engage	<ul style="list-style-type: none"> Discuss and explore similarities between a self-driving car and a regular car Physical structure, fuel source and purpose Brainstorm ideas 	PowerPoint
Slide 7-11 Explore	<ul style="list-style-type: none"> Discuss and explore the differences between a self-driving car v regular car Control; Sensors & hardware; software & algorithms; User experience; and Cost Discuss each idea and suggestions 	PowerPoint
Slide 12 – 18 Explore / Discuss	<ul style="list-style-type: none"> Exploring Sensors, different types for uses and requirements GPS, inertial navigation, laser rangefinders (LIDAR), radar and video. Discuss each one, why its needed, how it works in regular cars and self driving cars 	PowerPoint
Slide 19 – 20 Engage	<ul style="list-style-type: none"> Discuss sensors, ask group questions Introduce worksheet labelled '<i>Investigating components</i>' to allow students to brainstorm, draw and label components Work in pairs for 5 minutes 	PowerPoint and worksheet Investigating components
Slide 21 – 22 Explain / Discuss	<ul style="list-style-type: none"> Discuss and Explore self-driving cars and the environment What environmental problems could negatively impact a self-driving car? Problem solving those impacts 	PowerPoint
Slide 23 - 27 Explain / Explore	<ul style="list-style-type: none"> Explain and Explore Insurances - Comprehensive & Third Party Question: will new types of insurance need to be made available? Question: what will the insurance be called and what will it cover? Brainstorm for 5 minutes in groups, then discuss outcomes 	PowerPoint

Phase/Slide	Learning Activity	Resources
Slide 28 Elaborate	<ul style="list-style-type: none"> • Introduce the design brief • Use worksheet labelled '<i>Generating and refining ideas</i>' • Students are to draw and label their own self-driving car ensuring it can sense the road, map the road and negotiate its place on the road. • Work in same pairs • Students must label components in accordance to worksheet '<i>investigating components</i>' 	PowerPoint and worksheet Generating and Refining ideas
Slide 29 - 31 Engage	<ul style="list-style-type: none"> • Discuss Industry jobs • Possible careers • TAFE and Uni Pathways 	PowerPoint
Slide 32 - 33	<ul style="list-style-type: none"> • Discuss learning outcomes • Questions and pack up • Acknowledgements 	PowerPoint

Phase/Slide	Learning Activity	Resources
Slide 18 Evaluate	<ul style="list-style-type: none"> • Wrapping up of ideas 	PowerPoint
Slide 19 – 21 Explain	<ul style="list-style-type: none"> • Explain how you get working in the industry • Industry jobs – many unheard of will need looking up to explain what they are • What to study while at school • What to study after school 	PowerPoint Internet – search what the jobs are
Slide 22 - 23	<ul style="list-style-type: none"> • Next lesson • Explain the design challenge • Acknowledgements 	PowerPoint