

Year 5 – Drones in Conservation 90mins Lesson 3

Learning Intentions		Lesson Outcomes
<ul style="list-style-type: none"> Students demonstrate safe use of drones Students revise their knowledge about using grid referencing to describe locations Students consolidate their understanding of algorithms and coding by programming a drone for flight 		<ul style="list-style-type: none"> Understand how drones are used in conservation Understand how to use grid referencing when describing a location on a map Know how to program a drone for automated flight Understand the Design Challenge
Australian Curriculum Content Descriptors		Australian Curriculum General Capabilities
<p>Mathematics</p> <p>Use a grid reference system to describe locations. Describe routes using landmarks and directional language (ACMMG113)</p> <p>Digital technologies</p> <p>Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019)</p> <p>Digital Technologies</p> <p>Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020)</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>Critical and creative thinking – reflecting on thinking and processes</p> <p>Critical and creative thinking – analysing, synthesising and evaluating reasoning and procedures</p>
Assessment		
Formative assessment		
Demonstration of ability to use grid references to describe locations and program a drone using block coding to launch, fly and land in a safe manner.		
Phase/Slide	Learning Activity	Resources
Slide 1 – 2 Engage	<ul style="list-style-type: none"> Greetings Introduction Acknowledgement of Traditional Custodians 	PowerPoint

Phase/Slide	Learning Activity	Resources
Slide 3 -5 Engage	<ul style="list-style-type: none"> Lesson outcomes Programming requires ability to break down problems into manageable solutions Identifying Computational Thinking skills in lesson – algorithms and persevering 	PowerPoint
Slide 6-8 Explore	<ul style="list-style-type: none"> Discuss what students recall from last lesson Discuss the terminology used in drone flying Ask students to demonstrate the difference between ‘roll’ and ‘yaw’ 	PowerPoint
Slide 9 – 13 Explain	<ul style="list-style-type: none"> Drones in conservation Discussion about what the word ‘conservation’ means Discuss how drones can assist in conservation Watch video on thermal imaging used to identify can count Koala populations Discussion about what students learned from the video 	PowerPoint Thermal imaging drones video
Slide 14 – 16 Elaborate	<ul style="list-style-type: none"> Outline the design challenge for the lesson Explain and discuss grid referencing Model and practice identifying areas on a map using grid referencing 	PowerPoint
Slide 17 Explore	<ul style="list-style-type: none"> Design challenge – Part 1 Divide students into groups of 3 Students choose 1 mat and 1 animal type and identify the grid references for the locations of the animal they are going to monitor Write grid references on a piece of paper 	PowerPoint Grid floor mats – ocean and bush with animals paper
Slide 18 - 19 Explain	<ul style="list-style-type: none"> Design challenge – Part 2 In same groups students create their pseudo code for their program Show students the example and the pseudo code Reminder about decision to use ‘yaw’ to change direction Students will need to estimate the distances Discuss degrees when using ‘yaw’ 	PowerPoint Grid floor mats – ocean and bush with animals paper
Slide 20 – 25 Explore	<ul style="list-style-type: none"> Show students set up of the space Discuss rules for indoor drone flying - STOP Conduct pre flight checklist reminder 	Tello drones iPad with Tello Edu app

Phase/Slide	Learning Activity	Resources
Slide 26 – 28 Explore	<ul style="list-style-type: none"> • Explain how to use the Tello Edu app in program mode • Describe how the set up is similar to drive as they need to Wi-Fi their drone to their iPad to run their program • Important that they include 'take off' and 'land' in their code • Students will program without the drone connected to the iPad (safer) 	iPad with Tello Edu app (one iPad per team of 3 students)
Slide 29 – 31 Elaborate	<ul style="list-style-type: none"> • Design challenge – Part 3 • Students put their code into the Tello Edu app • Teacher checks the code - program is checked to ensure 'land' block is included • After program is checked students can be assigned a drone • One group at a time runs their program with their drone (ensure that the drone they are connected to is their drone and not another groups) • Go back and debug their program if it does not land on the animal • Once a group has successfully landed on one animal, they can remove the land block and add to their code. Again, teachers need to ensure that a land block is included back into the program before flight. 	Tello drones iPad with Tello Edu app Students working in groups of 3 Grid floor mats – ocean and bush with animals
Slide 32 – 34 Evaluate	<ul style="list-style-type: none"> • Wrap up and discussion about what they learned in the lesson • Next lesson – drones in agriculture/farming • Acknowledgements 	PowerPoint