MindSET-do

Lesson Structure 10 x 90min lessons

Year 5 – Micro Drones			
Lesson Number	**Focus**	**Australian Curriculum General Capabilities**	**Australian Curriculum Content Descriptors**
1	Drone solutions	• **Critical and creative thinking** – inquiring – identifying, exploring and organising information and ideas • **Critical and creative thinking** – generating ideas, possibilities and actions • **Personal and social capability** – Social awareness • **Ethical understanding** - exploring values, rights and responsibilities	• **Design technologies** - Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use (ACTDEK019) • **Design technologie**s - Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use (ACTDEK023)
2	Flight L Plates	• **Critical and creative thinking** – inquiring – identifying, exploring and organising information and ideas • **Critical and creative thinking** – generating ideas, possibilities and actions • **Personal and social capability** – Social awareness	• **Digital Technologies** - Examine the main components of common digital systems and how they may connect together to form networks to transmit data (ACTDIK014) • **Design technologies** - Investigate characteristics and properties of a range of materials, systems, components, tools and equipment and evaluate the impact of their use (ACTDEK023)

Year 5- Micro Drones

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3	Drones in conservation	• **Critical and creative thinking** – inquiring – identifying, exploring and organising information and ideas • **Critical and creative thinking** – generating ideas, possibilities and actions • **Critical and creative thinking** – reflecting on thinking and processes • **Critical and creative thinking** – analysing, synthesising and evaluating reasoning and procedures	• **Mathematics** – Use a grid reference system to describe locations. Describe routes using landmarks and directional language (ACMMG113) • **Digital technologies** - Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019) • **Digital Technologies** - Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020)
4	Drones in agriculture	• **Critical and creative thinking** – inquiring – identifying, exploring and organising information and ideas • **Critical and creative thinking** – generating ideas, possibilities and actions • **Critical and creative thinking** – reflecting on thinking and processes • **Critical and creative thinking** – analysing, synthesising and evaluating reasoning and procedures	• **Design technologies** - Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use (ACTDEK019) • **Digital technologies** - Design, modify and follow simple algorithms involving sequences of steps, branching, and iteration (repetition) (ACTDIP019) • **Digital Technologies** - Implement digital solutions as simple visual programs involving branching, iteration (repetition), and user input (ACTDIP020) •

Year 5 – Micro Drones

Design Brief: Design and program a drone for an environmental application in the community.

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Design and technologies project: Design and program a drone for an environmental application in the community.		• **Critical and creative thinking** – inquiring – identifying, exploring and organising information and ideas • **Critical and creative thinking** – generating ideas, possibilities and actions • **Critical and creative thinking** – reflecting on thinking and processes • **Critical and creative thinking** – analysing, synthesising and evaluating reasoning and procedures • Personal and social capability – social management • **ICT capability** – Applying social and ethical protocols and practices when using ICT • **ICT capability** – managing and operating ICT	• **Design technologies** - Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use (ACTDEK019) • **Design and technologies** – Analyse ways to produce designed solutions through selecting and combining characteristics and properties of materials, systems, components, tools and equipment (ACTDEK034) • **Design and technologies** – processes and production skills (ACTDEP035), (ACTDEP036), (ACTDEP037), (ACTDEP038), (ACTDEP039) • **Digital technologies** - Plan and manage projects that create and communicate ideas and information collaboratively online, taking safety and social contexts into account (ACTDIP032) • **Digital technologies** - Evaluate how student solutions and existing information systems meet needs, are innovative, and take account of future risks and sustainability (ACTDIP031)

Lesson Number	Focus	Learning outcomes	Resources
5	Investigate, Generate and refine ideas	• Understand the requirements of the design brief • Investigate an environmental application for a drone in the local community • Brainstorm 3 x design ideas, Draw and label each system and describe how it works (in consideration of safety issues too) • Evaluate and select a final design	Year 5 generate and refine ideas worksheet – **Group task**
6	Production plan	• Collaborate with group members • Select an online collaboration tool for planning and storing files • Draw and label final system and describe how it works (in consideration of safety issues too) • List materials and equipment • List risks and risk management strategies • Write pseudo-code for Block programming in Tello edu • Create production steps and allocate group roles	Year 5 Production plan worksheet – **group task** iPads with tello edu app
7,8	Producing and implementing	• Collaborating and managing the production process • Safely use appropriate materials to collaboratively execute the programming of the drone system • Create and debug tello edu program collaboratively • Test product meets design brief specifications	Completed Year 5 production plan worksheet for each group – **group task** Micro Drones and iPads with tello edu app

Lesson Number	**Focus**	**Learning outcomes**	**Resources**
9	evaluating	• Evaluate and reflect on the drone system you created • Explain use of code, evaluate and reflect on programming in tello edu • Evaluate and reflect on collaboration skills and strategies • Explain future use of your drone system in the community, including how it will meet needs, is innovative, and takes account of future risks and sustainability	Year 5 evaluation worksheet – **group and individual task**
10	Presenting	• Groups present their drone system to an audience • Groups explain their drone system, how it meets community needs and how they designed the programming in tello edu	Completed Year 5 production plan worksheet for each group – **group task** Each group's designed drone system and code Micro Drones and iPads with tello edu app