Creature Feature

Exploring the impact of climate change on the ability of species to survive and thrive

Year Level:	7-8	**Subject:**	Science (Biological sciences)	**Topic:**	Adaptation
Duration:	2 x 50 minute lessons **Lesson 1** Creature development **Lesson 2** Creature testing	**Curriculum:**	**Content description codes** • **VC2S8U04**: Students learn that matter and energy flow through ecosystems and can be represented using models, including food webs and food pyramids; populations will be affected by **changing biotic and abiotic factors** in an ecosystem including **habitat loss**, **climate change**, seasonal migration and introduction or **removal of species**	**Climate Topics:**	• Climate change risks • Extinction • Adaptation/evolution • Food web risks and ecosystem collapse

Brief Overview

Students will design and build a creature from recycled materials – the goal is to help it survive climate change. The lesson begins with a teacher-led discussion about how climate change alters ecosystems and landscapes around the world, and how these changes can threaten species survival.

With these challenges in mind, students will work in groups to create 'creatures of the future', considering how adaptations can help them endure changing environmental conditions. Once the creatures are complete, the teacher will present a timeline of climate change impacts – from rising temperatures to habitat loss and extreme weather – and students must decide which creatures (if any) survive each phase.

Learning outcomes
Learning intention Students design and create a creature that can survive the effects of climate change. They will explore how animals adapt to their environment and how climatic shifts influence habitat, diet, and survival. **Success criteria** • Explain how climate change will impact species survival • Describe how changes in environmental factors can lead species extinction • Identify possible adaptations that could help species survive climate risks

Introduced climate science concepts	Presumed knowledge
• Climate risks • Adaptability • Sea level rise • Extreme weather • Habitat destruction • Ecosystem collapse	• **VC2S6U01: habitats can be described by their physical conditions; changing the physical conditions of a habitat, including by human activity, may affect the growth and survival of organisms** • **VC2S6U02**: organisms have evolved over time, as seen in fossils and scientific records; the structural features and behaviours of living organisms enable them to thrive in their environments

Teaching materials and resources (device-free hands on activity)				
Tool ID	**Student/teacher**	**Tool and link**	**Overview**	**Credits**
R1	Teacher resource	Glossary of climate terms	This document provides teachers with a glossary of key terms relevant to this lesson plan	Monash Climate Change Communication Research Hub
R2	Teacher	Lesson PowerPoint	PowerPoint slides with lesson content and activity	Monash Climate Change

			instructions for students to follow, includes speaker notes	Communication Research Hub
R3	Student	Recycled materials (e.g. cardboard, paper, toilet rolls)	Recycled materials for students use to create their creatures There should be enough for at least 6 groups to create a creature ***(students can bring materials from home if asked to do so by teacher prior)***	n/a
R4	Student	Stationary: scissors, coloured pencils/markers, glue stick/sticky tape	For students to cut materials, stick them together and add colour to their creatures	n/a
R5	Teacher	Cheat sheet of common animal adaptions	Examples of animal adaptations – use as prompts if students need support generating ideas during creature creation	Monash Climate Change Communication Research Hub
R6	Teacher	Mini blocks or tokens x18 (three per group)	Each creature will be assigned three mini blocks/tokens during the 'playing it out' phase. Each time a creature doesn't survive a stage, a block/token is removed	n/a (school to supply)
R7	Teacher	Climate change timeline document	Timeline script for the teacher to read aloud while determining whether the creatures survive the various climate impacts	Monash Climate Change Communication Research Hub
R8	Teacher	Post-it notes	For students to write their answers in Step 6: informal learning assessment	n/a

Lesson outline				
Stages	**Description**	**Tool ID**	**Slide Number**	**Time**
Before lesson: Material prep	**For this lesson you will need craft/construction materials i.e. cardboard, plastic bottles, cans, newspaper, glue, tape, scissors etc.** **In the lesson prior, ask students to bring in any scrap/recyclable items from home, or source them from the school.** **Teacher / student helpers:** Set up the materials station – using items brought in by students, the teacher or found at school – at the back or side of the room so it doesn't distract students during presentations or the activity later on.	R3 + R4	–	–
Part 1: Learning introduction	**Teacher:** Begin the lesson with the powerpoint (slides 1-10). **Aim:** To encourage students to think critically about how environmental changes driven by climate change influence animal survival. • **Slide 1 (*Optional to show to students*):** Learning goals • **Slide 2:** Title slide • **Slide 3 (*Discussion question*):** What does the word extinction mean to you? • **Slide 4:** Definitions • **Slide 5 (*Discussion question*):** Can you name any extinct species? – examples in speaker notes	R2	1-10	10 minutes

	• **Slide 6:** Climate change extinction example – Bramble Cay Melomys
	• **Slide 7-9 (*Theory*):** How could climate change affect a species' ability to survive?
	  ○ Habit impacts
	  ○ Food impacts
	• **Slide 10 (*Discussion question and activity segway*):** What happens when a species loses either?
	
	Students:
	Take notes from slides and participate in class discussion
	
	Differentiation discussion strategy:
	Use the 'popcorn discussion' method and call on hesitant sharers first to name the easier or more obvious words/options. Call on extension students when obvious ones have already been said.			

Part 2: Creature creation	**Teacher:** Organise students into groups of 3 or 4 once content delivery from slide 10 is complete. Once in groups, introduce the creature construction activity **(slide 11)**, explaining that students will use recycled materials to create a creature designed to survive climate change impacts. **Creature outlines (*these can be altered our guided by your choice*):** 1. Give the creature a name 2. Habitat – can be on land or in the water (ocean and rivers), be specific 3. Diet – it has to be a current food source i.e. make it realistic to the habitat and reality (e.g. the creature can't just survive off plastic or no food at all)	R2 + R3 + R4 + R5	11-13	35 minutes

	4. Traits and behaviours – The creature can't be a total 'fantasy', immune from anything that could go wrong. There needs to be a reason behind every adaptation/design choice. Creatures can be as creative or realistic as you like – for example, a panda with 3-metre-long legs and super jump abilities, or just adding webbed feet to a kangaroo to help it swim better in flood water. Inform students that they will present their creatures to the class after the allotted construction time. **Slide 12** provides examples of behaviours and attributes that could count as adaptations. If students need more ideas, **Resource 5** provides prompts with a broader range of behaviours and attributes to consider. **Keep slide 13 with the instructions on the screen during creation time** **Students:** In their groups students are to build their creature using recycled materials and write down its 'specifications' as listed above. It should be at least the size of an A4 piece of paper. When creation time is up, students must return any unused materials back to the station, to both aid clean up and remove distractions during the next phase.			
Start of Lesson 2 (*if split over two single periods*)				
Part 3: Creature presentation	**Teacher:** Ask one member of each group to bring their creatures to the front of the classroom to present to the rest of the class (limit to 2 minutes or less each). **Students:** Each group selects one student to give a quick presentation of their creature to the class	R2	13	15 minutes

	They need to share: • The creature's name • Habitat • Diet • Traits/behaviours • And why it will survive a changing climate			
Part 4: Playing it out	**Teacher:** Change to **slide 14** to start the second stage of the activity – the survival scenario testing Choose one of the following set-ups based on feasibility: • Place each creature on top of 3 blocks/boxes/thick books • Place 3 tokens/counters in front of each creature • Draw 3 tally marks/hearts above each creature on the whiteboard (or write the names and have these next to each) …these represent 'lives', each time a creature is affected by one of the climate impacts, one of these is removed. Read out the climate change scenarios from **Resource 7**. At each phase or change, pause and guide the class in deciding which creatures lose a life and which survive to face the next round. Continue until all scenarios have been completed and see how many remain standing. **Students:** Students will listen along to each of the scenarios/impacts and decide which creatures lose a life or survive for each. *Discussion strategy:*	R2 + R6 + R7	14	25 minutes

	To decide what happens to each creature, have each team's spokesperson explain why their animal would or wouldn't be affected. After each pitch, the class votes (hands up or down) to decide whether that creature loses a life or survives.			
Part 5: Expanding on activity learning	**Teacher:** Go through powerpoint **slides 15-18** expanding on activity learning, and solutions. • **Slide 15 (*Discussion question*):** Why can't all species just adapt? • **Slide 16:** Adaptation challenges • **Slide 17 (*Discussion question*):** How can we help our species? • **Slide 18:** Human driven solutions **Students:** Take notes from slides and participate in class discussion *Differentiation discussion strategy:* *Use the 'popcorn discussion' method and call on hesitant sharers first to name the easier or more obvious words/options. Call on extension students when obvious ones have already been said.*	R2	15-18	10 minutes
OPTIONAL **Part 6: Concluding informal learning assessment**	**Teacher:** Finish on **slide 20** and ask students to complete the activity as a way to gauge each of their learning levels on the topic covered in the lesson. **Students:** Students are to write their name and the following on a post-it note/piece of paper and hand it to the teacher on the way out of class:	R2 + R8	20	5 minutes

	1. One climate change impact 2. One example of species adaptation 3. One solution or behaviour we as humans can do to help			

Links for further reading	
Climate Change: ● What Is Climate Change? - UN ● Australia's changing climate - CSIRO **Climate Change in Victoria:** ● How is Victoria's climate changing? - VIC Gov **Species impacts:** ● Biodiversity: Impacts, Adaptation and Vulnerability - IPCC ● 10 Species That Are Evolving Due To Climate Change - Smithsonian ● How are climate change and biodiversity loss linked? - Natural History Museum ● Animals impacted by climate change - IFAW	**Solutions:** ● Protecting Wildlife in a Changing Climate: Four Powerful Adaptation Strategies - Global Center on Adaptation ● How can we address the causes of climate change? - CSIRO **Australian organisations protecting nature:** ● Australian Wildlife Conservatory ● Zoos Victoria's Conservation ● Parks Victoria: Conserving Our Parks