Stage 3 Science – Living World – The Emu Cold Case | Stage 3 | Science

Summary	Duration
This small unit of work allows teachers to involve students in authentic learning in a place based educational setting. It activates inquiry learning under the NSW Science Syllabus Strand - The Living World and develops in depth learning around the structural and behavioural features of an Australian native animal and the physical conditions in which its survival is possible. Learning across the curriculum is incorporated through activities that involve understanding of *Sustainability* and *Aboriginal and Torres Strait Islander histories and cultures* and general capabilities with an emphasis on creative and ethical thinking, literacy and information and communication technologies.	Sample term 1 week Detail: Excursion plus pre and post-work

Outcomes

Science K-10 (inc. Science and Technology K-6)

ST3-10LW describes how structural features and other adaptations of living things help them to survive in their environment

ST3-11LW describes some physical conditions of the environment and how these affect the growth and survival of living things

› ST3-2VA demonstrates a willingness to engage responsibly with local, national and global issues relevant to their lives, and to shaping sustainable futures

› ST3-4WS investigates by posing questions, including testable questions, making predictions and gathering data to draw evidence-based conclusions and develop explanations

› ST3-5WT plans and implements a design process, selecting a range of tools, equipment, materials and techniques to produce solutions that address the design criteria and identified constraints

Key inquiry questions

How do physical conditions effect the survival of living things such as emus?

How do structural and behavioural features of emus and other living things support survival?

Why is important for food and fibre to be produced sustainably?

Unit overview	Resources
This unit of work includes 2 pre-excursion lessons and a prior knowledge survey to be completed in school. The main resources required for these lessons are the book - Emu by Clare Saxby and Graham Byrne and the work booklet. These lessons should be undertaken in the lead up to the excursion. The excursion concentrates on fieldwork, scientific discovery and Aboriginal knowledge. Post-excursion a podcast and podcasting skills are developed to display student knowledge gained over the unit. The final product is a class podcast about Emus that can be used for assessment and evidence of meeting outcomes.	**Workbook** Available for printing at your school. Supplied via email or online by Brewongle EEC **Book** "Emu" by Clare Saxby & Graham Byrne **Tips for school podcasts** Fizzics Education: How to create a student science podcast https://www.fizzicseducation.com.au/Blog/x_post/How-to-create-a-student-science-podcast-00118.html Passionate Podcasting https://create.artslive.com/explore/media-techniques/passionate-podcasting? NSW Department of Education Information regarding podcasts Permission to use copyrighted work https://education.nsw.gov.au/inside-the-department/legal-services/media/documents/copyright/4template_podcasting.doc Creative Commons https://education.nsw.gov.au/inside-the-department/legal-services/media/documents/copyright/creativecommons.pdf

Content	Lessons
Stage 3 - Working Scientifically	**Pre-Excursion Work**
Students plan investigations by:	Lesson 1: Undertake Emu knowledge Test linked to Brewongle EEC website before any work on Emus. This can provide you, as a teacher, information regarding class knowledge for assessment purposes.
▪ with guidance, planning appropriate investigation methods to test predictions, answer questions or solve problems including surveys, fieldwork, research and fair tests (ACSIS086, ACSIS103, ACSHE081, ACSHE098)	Introduction to Emus: read text "Emu" by Clare Saxby & Graham Byrne
▪ collaboratively and individually selecting suitable methods for gathering data and information first-hand and from reliable secondary sources 🎓 👫 ✳	Draw a picture (in the workbook) of an Emu showing its physical characteristics and label the parts of his/her body as described in the book. Also write a brief to description of each part and its use.
Students conduct investigations by:	Lesson 2: Discuss the physical and environmental needs of the Emu and make decisions in working groups of 3 or 4 students which 4 tests out the possible 8 tests (noted in the workbook) that the students think are most appropriate for survey the Emu's possible environment at Brewongle and surrounding areas.
▪ working individually and collaboratively in conducting a range of appropriate investigation methods, including fair tests, to answer questions or solve problems 👫 ✳	**Excursion**
▪ using suitable equipment and materials, checking observations and measurements by repeating them where appropriate	Activity 1: Physical and Environmental tests
▪ accurately observing, measuring and recording data, using digital technologies as appropriate (ACSIS087, ACSIS104) 💻 🎓	▪ Using various scientific equipment to test optimum environment for Emus.
▪ using formal units and abbreviations for measuring and recording data 🔢	▪ Undertake habitat survey
Students process and analyse data and information by:	Activity 2: Adaptions of animals
▪ reflecting on their gathered evidence in relation to: ⚙	▪ Identify various animal tracks and reproduce tracks in sand beds including emu tracks and predators
– their own prior knowledge as well as accepted scientific explanations	▪ Examine emu eggs by handling carefully and under microscope.
– their own and others' conclusions	▪ Discuss Aboriginal hunting/tracking methods and try out emu callers, find out how to steal an emu egg.
Students communicate by:	Activity 3: Predict and discuss how changing physical conditions affect the survival of the emu.
▪ constructing and using a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data including using digital technologies as appropriate (ACSIS090, ACSIS107) 🔢 💻 🎓 ⚙	▪ Bush Walk and discussion of which land has been left clear and which land has been allowed to regrow after past clearing.
	▪ Look at map of Sackville area and note how much is vegetated and how much is cleared.
	▪ Aboriginal fire stick farming (use fire sticks to attempt to make fire) discussion of sustainability and care need to farm using fire. Why would fire stick farming be good or not for emus?
Stage 3 - Working Technologically	Activity 4: Plants, Emus and Aboriginal Knowledge
Students generate and develop ideas by:	▪ Emu food survey
▪ selecting and using creative thinking techniques, including mind-mapping, brainstorming, sketching and modelling ⚙	▪ Identify a plant and draw using observations
▪ selecting and using research techniques	▪ Discussion of bush tucker
	▪ Try lemon myrtle cordial
	▪ If there is time - making string using stringy bark or lomandra
	Post-Excursion Work
	Students will develop a class podcast about Emus.
	Podcast Lesson
	Before undertaking podcast watch video at Passionate Podcasting. https://create.artslive.com/explore/media-techniques/passionate-podcasting?
	A podcast is a kind of broadcast invented in 2004 that automatically delivers digital audio to portable players and

Content	Lessons

appropriate to the task 👥
Students evaluate by:
  ▪ identifying the strengths and limitations of the process used ⚙️
Stage 3 - Living World
Living things have structural features and adaptations that help them to survive in their environment. (ACSSU043)
Students:
  ▪ observe and describe the structural features of some native Australian animals and plants 🌱
  ▪ present ideas and explanations about how the structural features and behaviour of some plants and animals help them to survive in their environment, eg shiny surfaces of leaves on sand dune plants and nocturnal behaviour in some animals 📷 ⚙️
The growth and survival of living things are affected by the physical conditions of their environment. (ACSSU094)
Students:
  ▪ identify some physical conditions of a local environment, eg temperature, slope, wind speed, amount of light and water
  ▪ make predictions about how changing the physical conditions of the environment impacts on the growth and survival of living things, eg different amounts of light or water on plant growth or the effect of different temperatures on the growth of yeast or bread mould ⚙️ 👥 🗄
  ▪ use gathered data to develop explanations about how changing the physical conditions of the environment affects the growth and survival of living things 📷 🗄 🌱
	phones. To make a podcast you will be working in small groups (2 to 3 people) to create a 30 second to 90 second segment which will then be compiled into the Class podcast.
	One group will act as hosts and develop a tag line and teaser and introduce each segment. The other groups can choose one segment idea each from the list below (no double ups). One group may be responsible for compiling the podcast or the whole class may be able to add each segment as it is finished.
	Segment ideas:
	▪ Hosts - Intro with Tagline and Outro (Wrap-up with tag line).
	▪ Emu facts - What are emu characteristics and behaviours?
	▪ How to do a habitat survey. What habitat does an Emu require?
	▪ How do you measure soil samples and why soils are important for plants and animals such as emus?
	▪ What food do Emu's like to eat?
	▪ A couple of emu jokes.
	▪ A poem about emus (Remember to include the title and author even if you write it yourself).
	▪ A small 1 minute play about emus talking to each other about important emu stuff.
	▪ What is Aboriginal sustainability and how were emu populations kept sustainable?
	▪ What is the best bush tucker? Plants and/or animals - Can you eat emu?
	▪ What are Aboriginal Fire farming techniques? How is this good for animals and plants?
	▪ How do you steal an emu egg from an emu?
	▪ Where did the Brewongle emus go? - Human impacts
	▪ What was great about the excursion to Brewongle?
	Record segments using smartphone or school computer then edit using software free for school use such as Garage Band (Apple) or Audacity (Apple and PC).
	When all segments, intro and outro are complete create a new file in Google Classroom to compile all recordings in a suitable format with Intro followed by segments with transitions between them and finish with the outro and possibly fading music.
	Writing and recording considerations
	▪ Chose the really interesting facts about each idea.
	▪ Gross facts are always interesting.
	▪ An interesting format is an interview. One student can be the expert (scientist or professor) and one the interviewer.
	▪ Keep it short and to the point and do not add extra material just to make it longer. It just gets boring and who wants to be boring.
	▪ Write out what you are going to say.
	▪ Practice it out loud many times over.
	▪ Consider music sound clips or sound effects for inside segments. Consider music for transitions between segments and the intro and outro - use free online audio files. Source these before you begin recording your segment.
	▪ Remember to speak slowly and clearly when you are recording.
	▪ Record a few times and chose the best recording.
	▪ Adjust the sound levels using the program controls if it is too soft or loud.
	▪ Copy the best recording and add in sound clips and/or effects. Keep the original recording in case you make mistakes and have to try again.

Content	Lessons
	• It is best to record in a quite space with no background noise. In other words, do not record in a busy classroom or playground. • Collate individual segments, intro and outro into one file using Audacity or Garage Band and add in transition music. • Export recording to class podcast folder in mp3 format. **Information for the Hosts.** INTRO Don't write this introduction until you have written the main part of your podcast. That means you need to know what your classmates have included in their segments before you can go ahead and create the teaser. So, work on your tag line until everyone else has told you what they are doing. The teaser should get your audience excited about what you are going to talk about. Be sure to include all the usual stuff like the names of your host, the tag line, a quick overview of the podcast and whom the podcast is being produced for. For example Brewongle Environmental Education Centre or Year 6C from Watt Evva Primary School. Practice saying the Teaser out loud. Speak slowly so that everyone can understand you. TAG LINE Brainstorm and write down three clever, cool, or witty sayings that can be used for your podcast. Try making up tag lines that rhyme, use alliteration and/or humour. Tag Line 1: Tag Line 2: Tag Line 3: Practice saying your tag line to a lot of people and chose the one that gets the best reaction. OUTRO Short, sharp and sweet. Mention something learnt about emus in the podcast, the tagline and goodbye.

Other notes

Podcasting Equipment required:

For basic recording use a voice recorder from a smartphone or the built-in recorder on the computer.

For better quality use a dedicated plug in microphone if your school has one. (One that has a pop-filter and noise cancelling if possible).

Quiet space for recording.

Set up a folder in which to save segment recordings in Google Classroom so that all students have access.

Record segments using smartphone or school computer then edit using software free for school use such as Garage Band (Apple) or Audacity (Apple and PC).

When all segments, intro and outro are complete create a new file in Google Classroom to compile all recordings in a suitable format with Intro followed by segments with transitions between them and finish with the outro and possibly fading music.

Free hosting of finished podcast is available through Google Apps - Drive.

Choose a suitable name for your Podcast - ie. Stage 3 Watt Eva Public School - Emu Cold Case Study

Upload finalised and exported podcast in mp3 format to Google Drive.

Here is how you can host your classroom podcasts for free through Google Drive:

Information courtesy of Chris Avilies at Teched Up Teacher- http://www.techedupteacher.com/google-drives-best-kept-secret/

1. Create a folder in Google Drive to put your podcasts in. Set this folder to the public on the web - *can view shared setting*. Call the folder whatever you want, viewers will not be able to see the folder name.
2. Upload a podcast into this folder. It should either be a .wav or .mp3. Viewers will be able to see the podcast name.
3. Get the folder ID from the folder's URL.
4. Your URL will look like this. The bold part is the folder ID. https://drive.google.com/drive/u/0/folders/**0B5wgRxIHJdv3X2JQVEJZbmxrRGM**
5. Type www.googledrive.com/host/ into the address bar and then paste the folder ID at the end, after the /host/, and hit enter. After hitting enter, I suggest you bookmark this new URL.
6. Prior to hitting enter, the URL should look similar to this: www.googledrive.com/host/0B5wgRxIHJdv3X2JQVEJZbmxrRGM
7. When you visit this new URL, you should see the podcast you put in the folder. Click on it. You know you've done it right if the podcast starts playing automatically and the URL of the podcast you've clicked on ends in .wav or .mp3. This is the link you will share when you want someone to listen to your podcasts. Please Share the url in the Brewongle Emu Cold Case folder at ....
8. You can stop here if you just want to give out the URLs to podcasts, but if you want a place to share all your podcasts like I did, create a Blogger. You can see ours here.
9. Once your Blogger is setup, create a new post and click on the button that says HTML and paste this code in:

<audio controls="">

<source src="Paste the URL of the Podcast within these quotation marks" type="audio/mpeg"></source>

If your browser does not support the audio element add.</audio>

When you click back on the compose button, if you did it right, you should see an audio player. When you click on the audio player, you should hear your podcast. Click on Publish so the world can hear your podcasts!

Two examples of annotated emu diagrams.

large, wedge-shaped beak

blue neck (males)

Emu
Dromiceius novaehollandiae

thick brown feathers that hang down loosely in the back

long, strong legs for running

3-toed feet with claws

www.exploringnature.org

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Emu

Brown-gray feathers with a part down the middle of the back

Males have a blue neck, females gray-brown

Large, dark eyes

Large, dark triangular beak

Loose, limp, hair-like feathers that hang down

Long legs

Three-toed feet with claws

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