TWO SHARED TEACHING UNITS

Leah Arthur, Nowra Christian School

Editors Comment: Many thanks to Leah Arthur for sharing the following teaching units. It is always interesting to see the approaches taken in different schools to implement the NSW 7 – 10 Geography Syllabus. Nowra Christian School is a very small independent school on the South Coast of NSW and they are improving the geographical literacy of their students using inquiry based learning approaches such as those used in these two units.

Stage 4: Landscapes and Landforms

In ***"Push and Shove",*** students explore how geomorphic and human process create and change landscapes and landforms. Students are pushed to consider the ethical implication of human decisions as they interact with landscapes and other cultural regions through tourism.

This unit, with a case study of Mount Everest, aims to show students that when they understand the Geography of a place - the space, environment and change – they are better placed to consider larger ethical dilemmas that impact on sustainability. Seeing students wrestle with the idea of banning climbing on Everest is both invigorating and encouraging, not because of their answers but because of the critical thinking they use to process information.

Image: https://www.nationalgeographic.com/content/dam/adventure/photos/everest-then-now/mount-everest-base-camp-night-lights.jpg

Stage 5: Environmental change and management

In ***"Let it burn"*** students explore the current mainstream approach to fire management and prevention in Australia and undertake a case study that allows them to practice a range of geographical skills. During the online and map based case study the students "manage" a fire to discover the role that RFS and other community members play in fire management and how geographical skills are real world applicable. Students explore the emerging research around cool burn fire management of Indigenous communities. They explore how and why these methods are proposed for contemporary management and how they benefit environments and the indigenous communities. Student finish the unit by questioning how non-indigenous people would feel about these approaches and discussing why or why not the approach may work in the Shoalhaven region given what they know of the local vegetation, topography and climate.

Image: http://www.indigenous.gov.au/savanna-burning-a-cleaner-future

Each of these units contain embedded Geography skills which make sense when used in a real-world context. Stage 5 students will understand why they are calculating gradient when they are using it to determine which part of a forest is under greatest threat from a fire. Similarly, they show an increased awareness of the importance of the indigenous perspective to environmental management. The unit concludes with the new research presented in Bruce Pascoe's book *Dark Emu.*

STAGE 4: Push and Shove

Nowra Christian School: Unit Programing Cover Sheet 2017

Teacher:	Leah Arthur	**Year / Semester:**	**2017/2**
KLA:	Geography	**Grade:**	**7**
Unit title:	Push and Shove	**Unit length in weeks:**	**7**
Unit focus:	This unit focuses on the formation and degradation of landscapes. Students will explore in both theory and practice, coastal and mountain landscapes. Students will explore how geomorphic and human process create and change landscapes and landforms. Students will be pushed to consider the ethical implication of human decisions as they interact with landscapes and other cultural regions through tourism. This unit also aims to give students and appreciation for the beauty and diversity of the physical world.		
Syllabus outcomes taught in this unit:	• explains processes and influences that form and transform places and environments GE5-2 • analyses the effect of interactions and connections between people, places and environments GE5-3 • accounts for perspectives of people and organisations on a range of geographical issues GE5-4 • assesses management strategies for places and environments for their sustainability GE5-5 • acquires and processes geographical information by selecting and using appropriate and relevant geographical tools for inquiry GE5-7 • communicates geographical information to a range of audiences using a variety of strategies GE5-8		
Assessment summary for this unit:	**Formal assessment**: • End of year exam **Informal assessment:** • Skills sheets • In class writing • Excursion booklet • 5 quick questions at the beginning of every lesson		

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Biblical perspectives
Creation – made by god to be cared for by people. Genesis – the role of man as custodian. This is incorporated throughout the unit in informal class discussions and reflection questions. Everest: • What responsibility do people have to consider the welfare of others as they make life choices? • Should people expect others to make sacrifices for them to help them achieve a physical goal? • How does the pursuit of a physical goal morph in idolising and superstition? • How does the gift of the cross compare to the promises and worldview of religions like Buddhism?

Hazard identification & risk assessment of practical activities in this unit
Likelihood of a risk becoming reality must be rated as: **V**ery Likely, **L**ikely, **U**nlikely or **V**ery **U**nlikely
The impact of a risk must be rated as: **E**xtreme, Ma**j**or, Mo**d**erate or Mi**n**or

Practical Activities:	Risk	Likelihood	Impact	Management strategies
Excursion to Gerringong	**See risk assessment created in EMS**			

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Unit Program – this section can be organised to suit individual needs and must include the following:

Time	Outcomes and Content points	Learning and Assessment strategies	Resources	Extension	Registration and adjustments
1 lesson 3 lessons	Students: Investigate different landscapes and the geomorphic processes that create distinctive landforms.	INQUIRY QUESTION: How do the Earth's plates create landscapes and landforms? 1. Use story map to explore the relationship between tectonic plates and earthquakes. 2. Discuss the concept of how mountain landscapes form and introduce **tectonic plates** – this should be revision for most. 3. In 4 groups put together a puzzle of the world using the plates as puzzle pieces. 4. Use Map maker interactive to show the tectonic plates on a world map and allow students to make corrections to their puzzle. 5. Explain how *digital maps allow us to overlay different types of data so we can see relationships.* 6. Overlay the natural disasters and volcanic activity layers and alter the transparency to allow students to see the relationships. 7. Discuss the relationship. Encourage students to use the words landscape and landform – define and write in books. 8. Students stick in a small copy of the plate boundaries map showing mountain ranges, volcanoes and valleys. Students write 2-3 sentences outlining the relationship between movement and landscapes.	*https://storymaps.esri.com/stories/2017/seismic-illumination/index.html* • *work sheet 2.5 Pearson* • *35, 36, 38 skills book* • *Pg 61 mark twain media* *(see hardcopy folder for photocopy sets)*	Support: use sentence starters on board.	

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		Latitude and longitude 1. Have a map of the world projected on the board and use fold mountains as an introduction to the concept of needing to find out where **not** to be – how could you do this world wide? Ask for suggestions. 2. Draw on the map as the students suggest things – add in the equator, the tropic of Capricorn, Tropic of Cancer etc. 3. Draw lines of latitude and longitude in a different colour. 4. Discuss with students using the 3D globe how the lat/long affects a place – time/temp etc. 5. Make notes on the board. 6. Use the large world map and lego on the floor to allow students to practice using simple Lat/long calculations. 7. Students complete differentiated worksheets to practice latitude and longitude – map a variety of points. (see below)	• Latitude and Longitude quiz.docx	Alternate worksheets Sheet sets are differentiated.	
2-3 lessons plus field trip	Students: Investigate different landscapes and the geomorphic processes that create distinctive landforms. Students: Investigate how the operation of the	INQUIRY QUESTION: How does water create landscapes? 1. Quick quiz to recall the rules of *latitude and longitude.* 2. In groups ask students to match photos of a variety of landscapes to each point on their world map. Report back to the class on why they matched them that way i.e. coastal pictures went on coastal areas; desserts went in middle of dry continents.		Have students draw how 3 landscapes are connected by water, and how that water is impacted by the human factors. More complex maps ae available for	

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	water cycle connects people and places. Investigate the human cause of land degradation -including its spatial distribution, causes and impact	3. Reiterate to students that they have highlighted that water or the lack of it is one of the key features in what defines and creates a landscape. *(use same photos to display on world map at back of classroom – near INQUIRY QUESTION)* 1. Students make a table of the landscape types from textbook and have a column for erosion and deposition and common landform– fill in from text book. *Students undertake field work to investigate the coastal processes at Gerringong. Students view and explore the headlands, see erosion, the formation of a lagoon and view the Long shore drift.* *As part of this, students compete the excursion work book, which includes precis map and field sketch.* 2. Students answer questions from textbook – page 65 for erosion. And page 67 for deposition. 3. In pairs, students brainstorm "how people damage coasts" and create a mind map. 4. Report back to class and build on this. 5. In pairs, decide on two examples from the mind map and write at least 5 lines describing these issues. 6. Students may include a drawing. 7. Students predict what the term "ghost nets" could mean. Write prediction in book. 8. Break a page in their book up into what, where, why how. Leave 5 lines under each.	Field work book. Resources file.	advanced students or those who have done this before. Simple grid and sketch maps are available for support students. Sentence starters for support students. Extension students work alone, do not receive note taking assistance	

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		9. As a class: teacher reads text from page 82-83. Students say stop when something important is read out. 10. Students suggest which category it fits into and all students write it in this category – note taking on ghost nets develops. 11. In pairs, students use q3-5 on pg 83 to help add detail to their notes – answers should be included in their notes. 12. Students complete question 6 individually. Answer INQUIRY QUESTION and Display.			
	Case study	**Everest case study** Where is it? 1. With your students, locate the Himalayan Mountain Range and Mount Everest in an atlas. 2. Ask your students to identify the continent that Mount Everest is on (Asia). Colour this on the world map. 3. After identifying Asia help your students identify the countries surrounding Mount Everest. Introduce China (including the Tibetan region) and Nepal. 4. Have your students mark the location of Mount Everest, the Himalayas and the other country names on the Asia map. 5. Have one student identify Mount Everest's **latitude** on the atlas map and another student identify Mount Everest's **longitude**. (27°59′17″N, 86°55′31″E) As a class, compare its coordinates to your hometown and mark both Mount Everest and your hometown on the student World Map. Have your		* Students have a folio they can either work through on their own if advanced and have skills knowledge, or it can be used as a basis for the class room teacher to work through.	

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		students study latitude to discover if Mount Everest is closer or further away from the Equator than your hometown. 6. Tell your students that Mount Everest is the highest peak in the world. Explain that **elevation** measures the height of a point on the earth's surface by how tall it is compared to sea level. Tell your students that Mount Everest's elevation is 8,850 meters above sea level. 7. Have students look at topographic map of Berry to find the elevation of Cambewarra and Coolangatta mountains. 8. Take students on a virtual tour of Mount Everest: Allow students to explore the Mount Everest area using Google Earth independently, in partners or small groups, or as a class. *Alternative: If you do not have access to Google Earth, you can show your students a video of someone navigating Google Earth for you by visiting:* http://www.youtube.com/watch?v=S5T3sfWnaGg *Students complete first page of folio – covers these activities. Extension students can be left to work ahead at own pace.* https://www.youtube.com/watch?v=q4Kw7GlZcHM			
	Students: Students: Investigate different landscapes and the geomorphic processes that create distinctive landforms.	**Fold mountains - Teacher directed** 1. Discuss how Everest is a fold mountain covered in Glaciers – 2 geomorphic processes occurring to shape the landscape. 2. Watch video on *geographypods* website. 3. Demonstrate using towels how fold mountains are created. 4. Draw a quick sketch as shown on website. Ask students to write a description in their folios that explains how	http://www.geographypods.com/4-fold-mountains.html simple fold mountain explanation.docx	.	

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	Investigate how the operation of the water cycle connects people and places. Investigate the human cause of land degradation -including its spatial distribution, causes and impact	fold mountains are created. A combination of Deposition and plate movement. **Glaciers – teacher directed** 1. Have students read glacier information from folio as a class and discuss. 2. Individually or as a class, watch and take notes from the first two videos *in the folio* which explain how glaciers form and move. 3. Ask students to make a line drawing from a Glacial lake photo displayed on the board – reteach how to draw a line drawing if required. 4. Discuss Glaciers and how they shape landscapes in different ways. Emphasise that solid water creates different shaped landscapes to liquid water. V and U shaped valleys. 5. Watch the videos from the folio about the Khumbu Glacier – and discuss with students how the surface of the glacier is far from smooth a uniform. 6. Have students think pair share reasons why the Khumbu Glacier is important locally and globally. → provides fresh water for local towns and villages, contributes to temperature regulation and the water cycle globally. Take suggestions on how it may be being damaged either locally or globally → contamination through faecal matter and rubbish of climbers and climate change causing glacial retreat.	How glaciers form https://www.youtube.com/watch?v=4wNOrFy17WE (3:50) How Glaciers shape landscapes https://www.youtube.com/watch?v=loI584OFVpE (2:30) What is the Khumbu Icefall like? https://www.youtube.com/watch?v=6vKLWwECCcc Crossing a Crevice on the Icefall https://www.youtube.com/watch?v=q4Kw7GlZcHM How the Khumbu Glacier is receding http://youtu.be/KtFM_cvwEQU *Global warming and khumbu glacier:*		

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			https://www.theguardian.com/world/2013/may/23/mount-everest-glaciers-shrinking-global-warming		
	Investigate the aesthetic, cultural and spiritual values of landscapes and landforms for people.	What is it like? 1. Use the *photograph* of Nepalese side of Everest to plot the routes that climbers take to the summit: • Begin by plotting the Southeast Ridge route in green. • Students find and label **Base Camp**. Explain to your students that Base Camp is a place used to store supplies and get ready for climbing located low on the mountain, safe from harsh weather, icefalls, avalanches and the effects of high altitude found higher on the mountain.. • Explain to students that an **icefall** is very dangerous part of a glacier full of **crevasses**. • Continue this process until the entire route is drawn and labelled to the summit from Base Camp to the South **Col** and along the Southeast **Ridge** route. *(See the Teacher copy of Everest map to see the routes. And the image of Everest with base camp and the death zone labelled.)* 2. *Optional: Watch a video that shows this route using Google Earth by visiting: http://www.youtube.com/watch?v=_YZw5Qq09EU* *In folio:* 1. Students annotate features onto the route diagram • **base camp:** a place used to store supplies and get ready for climbing located low on the			

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		• mountain, safe from harsh weather, icefalls, avalanches and the effects of high altitude • found higher on the mountain • **col (coal):** a low point on a ridge in between two peaks, also called a "saddle" • **crevasse (kruh-VAS):** a crack in a glacier's surface that can be very deep and covered by • snow • **elevation:** the height of place measured from sea level • **glacier:** a massive river of ice that moves slowly downward from the high mountains • **icefall:** a steep, broken section of a glacier where there are many crevasses and falling blocks • of ice • **ridge:** a long, narrow crest of land leading to a peak or connecting several hills or mountains 2. Students use *topographic map* to practice direction, slope, aspect. 3. Students use the terms above and the features of a mountain to describe a chosen route. (see example in folio) 4. Students predict why people choose to climb Everest and discuss which ones they identify with. 5. Students use a Spidergram to predict the dangers of climbing Everest.			
	Investigate how the operation of the water cycle connects people and places.	When is the best time to climb? * Some teacher direction required 1. Show students how to complete a climate graph using an image projected onto the board. 2. Make sure to discuss how the axis are different units and can start at different numbers if required. Discuss with students why average temp is used and total rainfall – relate to farming or building as these are easy to		Some students will know how to do a climate graph – allow them to work in a group to complete this section without instruction.	

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		understand by the students. (a farmer is concerned about total rainfall when growing crops, not average, a builder is concerned about average temp when outside all day, not the total temp for a month) 3. Students do climate activities in folio. Compare and contrast Nowra and Everest. 4. Identify with students that in Australia humidity refers to the amount of water in the air – and have them suggest what humidity might lead to in a freezing environment → SNOW. 5. Use climate data to identify best time to start climb (cross out months that are too dangerous (wind or snow) and note that March April May are the only consecutive months – most treks start in march to summit by between May 20 and June 6th) NOTE: Simplify the following when needed (student folio): *Monsoons are more than rain:* 1. Watch a short clip showing monsoonal rain. 2. Ask students to predict what that would look like at base camp and given what they just learnt about snow – when would it occur? (snow/blizzard – humid months). 3. As groups/individuals or class: Display the winter and summer monsoon maps for South Asia on the board. Have students focus on the directions of the arrows on each map, and have them describe the differences in the winter and summer maps. 4. Students complete questions from folio. *(Answers: In winter, where do winds originate? (over land) ; In summer, where do the winds originate? (over water); Which winds do you think would bring rains, and which would bring dry air? (In South Asia, winter winds over land bring dry weather, and summer winds moving over the ocean bring precipitation); What do you think happens to that*		Teacher to sit with lower ability students to complete graphs.	

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		precipitation at high altitudes on Mount Everest? (precipitation is snow); How do you think the monsoon affects the Sherpa and other communities who live near Mount Everest?) 5. Have students find Mount Everest on the summer monsoon map. Then focus on the lines with dates showing the normal advance of the monsoon. Ask: When do you think the monsoon is likely to reach Mount Everest according to this map? 6. Show the Film Clip, "Monsoon Sets In." 7. Discuss whether the timing looks good for Conrad Anker to make the push for the summit. The map of monsoon onset dates is very similar to the one Jennifer Lowe-Anker, Conrad's wife, viewed in the clip. Discuss the difference technology has made in both communications and weather prediction since the first climbing attempts. 8. Discuss with students the ethics around these decisions – what happens if something goes wrong? How does it impact other people? 9. Start to discuss with students the impact on local Sherpas – as these are the people that often rescue people, or who die alongside climbers, as they are paid to guide them. *Note that this is a chance for students to explore an ethical dilemma on their own with guidance, but not bias.* 10. The Sherpa rescue video can be shown to the class here to start or conclude discussions, as can the video on the SBS site – *this is more direct in its discussion of the ethics* 11. If students are mature enough they can watch and discuss the Dying for Everest. *(shows a dead frozen body)* *NOTE: In this part of the course it is important to include Christian perspectives and values in the conversation and debate – this should be lead and encouraged by the teacher. Keep coming back to the question of "what does the Bible say*	https://video.nationalgeographic.com/video/movies/wildest-dream-monsoon https://video.nationalgeographic.com/video/ng-adventure/170720-mount-everest-sherpas-climbers-rescue?source=relatedvideo https://www.sbs.com.au/news/thefeed/article/2017/07/10/everest-dilemma-when-rescuing-climbers-endangers-sherpas http://mountainworldproductions.com/the-ethics-of-everest	Some students will be able to see many sides to the argument and some may not – the teacher may need to carefully manage this discussion, or could use mixed ability groups with butcher's paper to draw out ideas and thoughts.	

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		about these types of decisions?" and "what do we think Jesus might advise us?"			
		OPTIONAL EXPERIMENT – if time is tight, skip this 1. Brainstorm with students all the clothes they have on. Ask them how much they think everything they are wearing weighs. Allow students to guess, and then tell your students that the clothing they are wearing weighs approximately 0.8-1kg. **2.** Now, ask your students how much they think their backpack weighs with a typical day's supplies in it (binders, textbooks, lunch, etc.). Allow students to guess, and then tell your students that a typical 7th grader's backpack weighs between (1.8 to 2.7 kilograms). **3.** Read your students the Equipment List (available at the end of this lesson for a typical Mount Everest climber. Tell them that climbers carry most of the items on the list in a backpack. Ask the students how much they think a backpack will weigh for a Mount Everest climber. Take several responses before telling students that climbers carry an average of 18kgs of supplies while hiking *above* Mount Everest's **Base Camp**. (Base Camp is a place used to store supplies and get ready for climbing located low on the mountain, safe from harsh weather, icefalls, avalanches and the effects of high altitude found higher on the mountain.) The average Mount Everest climber probably weights around 77.11 kg so they are carrying approximately ¼ of their weight on their backs. Climbers' carry light backpacks that are around 9kg when they are hiking to Base Camp and yaks carry the rest. At **elevations** above 5182 m, it is extremely difficult to carry heavy packs due to the lack of oxygen in the air.			

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		Note: For the following activity, a risk assessment will need to be done which considers the health factors of the class, and the prevention/safety measures to be put in place. An extra teacher may be required. **4.** Explain to students that to simulate what it is like to climb Mount Everest at extreme altitudes with the gear they would need, they are going to conduct an experiment using their loaded backpacks, straws and the oval. 5. Explain the following steps of the experiment to the students. Divide your class into small groups of four students each and lead students through each step. **a.** Pass out materials for each group of four students: one backpack with one backpack with five large text books (approximately 10 pounds or 4.5 kilograms), one timer or stop watch, and four drinking straws (one per student). **b.** Have your students take turns in their groups wearing the backpack with textbooks while walking around the oval quickly for one minute. One student at a time whilst the others keep time. **c.** Then, have students take turns in their small walking at the same speed wearing the backpack with textbooks while breathing through a straw to simulate constricted availability of oxygen. **d.** Lead a discussion with your students about what they experienced. Ask your students: i. Did the added weight of the backpack make walking at speed difficult? **ii.** Were you out of breath after walking with the backpack? **iii.** What was it like breathing through the straw while walking fast with the backpack? **iv.** Did you rest or take a break during the timing?			

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		v. Do you think climbers on Mount Everest have to take breaks while climbing? **vi.** Ask each student how much he or she weighs (or weigh them if you have a scale). Ask them to calculate how heavy their backpack would be if it was equal to ¼ of their body weight. How much more weight would they have to add to the 4kg backpack to get it to be 1/4 of their weight? Students explore the physical constraints of climbing Everest – altitude sickness, frost bite, fatigue.			
2 lessons (95mins)	Investigate one **geomorphic hazard**, including cause, impacts and response	Students watch "Sherpa" about the 2013 avalanche – take notes on the geomorphic hazard and deaths of Sherpas and climbers.			
	Investigate the influence on and effects of, people's travel and recreational, cultural or leisure connections with different places for the future. Investigate the Aesthetic, cultural and spiritual values of landscapes and landforms for people.	**Inquiry task** Students complete the ethical dilemma question: Should it be illegal to climb Everest? Students complete a "peel the fruit" visual tool to help them develop an enquiry question for each of the following areas: • Environmental – deforestation and glacial pollution • Social – death of Sherpas and loss of cultural identity due to tourism • Economic – cost/benefit to Nepalese people and Government from tourism. • Ethical – should people be rescued at risk of others losing their lives?	https://www.sbs.com.au/news/thefeed/article/2017/07/10/everest-dilemma-when-rescuing-climbers-endangers-sherpas https://www.thedailybeast.com/should-we-rescue-the-everest-climbers http://www.bbc.com/travel/story/20140307-the-worlds-highest-clean-up-effort		

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		Students fill in the peel the fruit for each section as they research and then compile a written opinion piece using their research. Tourism fact sheet has a great table about what each type of tourist seeks and how that changes culture – would be a great thinking starter. Students should be given time for their own research – but a list of helpful articles etc are provided here for those students who find research difficult and time consuming, or for teacher background reading. Differentiation – for the assessment it is suggested that the reading levels of lower ability students are assessed and taken into consideration – articles may need to be modified and then printed to reduce the reading comprehension levels to ensure they are accessible to students.	https://www.theguardian.com/world/2006/oct/08/conservation.environment https://www.culturalsurvival.org/publications/cultural-survival-quarterly/impact-deforestation-life-nepal https://www.rgs.org/NR/rdonlyres/75AD6C2D-B268-43A6-B5C1-C3EE440E09FA/0/F3tourismfactsheet.pdf Decreasing the risk on the icefall: http://www.theaustralian.com.au/news/world/the-khumbu-icefall-the-deadly-everest-route-that-climbers-fear/news-story/629b3be674ac2c92a54040ea4c877182?sv=2f7c3b72f18a3dac300c56ec876997be		

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			https://www.salon.com/2014/03/04/mount_everests_massive_trash_problem_nepal_cracks_down_on_littering_tourists/ https://www.summitclimb.com/news/mef/cleaning-up-mount-everest-news/ https://www.grida.no/resources/5028 https://www.theguardian.com/world/2015/mar/03/too-much-human-poo-on-mount-everest-says-nepal		

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Unit Evaluation:

Question	Evaluation Response
Are you using the appropriate NSW Board Syllabus for this unit?	
How successfully were Christian Perspectives taught/received in this unit and what changes would you make if any?	
How successful were the strategies used for assessment and what changes would you make if any?	
Were differentiated learning opportunities available at appropriate times?	
Which resources worked well in this unit and what additions / changes would you make if any?	
How successfully was 'IT' included into the unit and what changes would you make if any?	
Did you take the students on a field trip? If so, evaluate this experience.	Yes. Fantastic to go with the science faculty. Need to include more data collection next year.
What in-services did you attend that assisted in teaching this unit/subject this semester and what did you find most helpful?	GTA conference – encouraged me to go on field work that had a small scope to focus the kid's attention. Was helpful

Teacher to sign off at the completion of the unit: Leah Arthur Dated: 30/11/17

Supervisor check: C Thompson 1/12/17

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Stage 5 | Geography Unit of Learning

Teacher:	Leah Arthur	**Year / Semester:**	**2018/1**
KLA:	Geography	**Grade:**	**10**
Unit title:	Let it Burn	**Unit length in weeks:**	**5**
Unit focus:	Students explore the current mainstream Australian approach to fire management and prevention and undertake a case study that allows them to practice a range of geographical skills. During the online and map based case study the students "manage" a fire to discover the role that RFS and other community members play in fire management and how geographical skills are real world applicable. Students then explore the emerging research around cool burn fire management as proposed by Indigenous communities. They explore how and why these methods are proposed and why they benefit environments and the indigenous communities themselves. Student finish the unit by questioning how non-indigenous people would feel about these approaches and discussing why or why not the approach may work in the Shoalhaven region given what they know of the local vegetation, topography and climate. **Content focus:** Students examine the differences in Indigenous and non-Indigenous perspectives around fire and recognise that attitudes to environmental management and the importance of cultural knowledge changes over time.		
Syllabus outcomes taught in this unit:	**A student:** ▪ explains the diverse features and characteristics of a range of places and environments GE5-1 ▪ explains processes and influences that form and transform places and environments GE5-2 ▪ Accounts for perspectives of people on a range of geographical issues GE5-4 ▪ acquires and processes geographical information by selecting and using appropriate and relevant geographical tools for inquiry GE5-7 ▪ communicates geographical information to a range of audiences using a variety of strategies GE5-8	Geographical Concepts: ▪ Place ▪ Space ▪ Environment ▪ Interconnection ▪ Scale ▪ Sustainability ▪ Change	Geographical tools: ▪ Maps –topographic maps ▪ Spatial technologies – virtual maps, satellite images, GPS ▪ Visual representations – photos, aerial photos, illustrations, flow charts, annotated diagrams, multimedia, mind maps, web tools.
Assessment summary for this unit:	No formal assessment – assessment of class work and skills application in case study will contribute to overall class mark.		

Unit developed by Leah Arthur, Nowra Christian School, using the Fire-wise *Fire Challenge Unit* developed by the Department of Education and Training in consultation with the Rural Fire Service, 2007.

Key Inquiry Questions -

- How are bushfires prevented and managed?
- Can traditional Indigenous Knowledge improve the way bushfires are prevented and managed?

Framing Questions related to this unit-

- Why do Bushfires occur?
- How do we use geographical skills in the management of bushfires?

What are the traditional Indigenous approaches to fire management?

Key Geographical Language

Fire	Scale
Humidity	Relief
Vegetation	Gradient
Precis Map	Sclerophyll
Bearing	Grassland
Direction	Scrub
Grid Reference	Sketch Map
Cold front	Traditional Burning
Containment	Cold burn
Combustible	Self determination
Aspect	Carbon credits

Geographical Inquiry Skills -

The **highlighted skills** are targeted in this unit:

Acquiring geographical information

- collect, select, record and organise relevant data and geographical information, using ethical protocols, from a variety of appropriate primary data and secondary information sources

Processing geographical information

- evaluate information sources for their reliability, bias and usefulness
- represent multi-variable data in a range of appropriate forms, with and without the use of digital and spatial technologies
- represent the spatial distribution of geographical phenomena on maps that conform to cartographic conventions, using spatial technologies as appropriate
- evaluate multi-variable data and other geographical information using qualitative and quantitative methods and digital and spatial technologies as appropriate to make generalisations and inferences, propose explanations for patterns, trends, relationships and anomalies, and predict outcomes
- apply geographical concepts to synthesise information from various sources and draw conclusions based on the analysis of data and information, taking into account alternative perspectives

Communicating geographical information

- present findings, arguments and explanations in a range of appropriate communication forms selected for their effectiveness and to suit audience and purpose, using relevant geographical terminology and digital technologies as appropriate

reflect on and evaluate the findings of an inquiry to propose individual and collective action in response to a contemporary geographical challenge, taking account of environmental, economic and social considerations; and explain the predicted outcomes and consequences of their proposal

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Content	Teaching and learning strategies	Differentiation	Resources	Registration
Explains processes that form and transform places and environments. GE5-2 Investigate human induced change across a range of scales. Investigate environmental management, including the different world views and the management approaches of Aboriginal and Torres Strait Islander peoples.	1. Students Brainstorm how fires can change places and environments. As a class view a montage of Australian fire related photos. Stop and allow discussion and back and forth conversation. 2. Ask students how fire is managed and prevented in Australia – direct students to start thinking in Geographical terms and incorporating words like: • Vegetation, terrain • Humidity, heat, wind, rainfall • Fire rating, fire danger scale • Frequency, severity 3. In pairs students look at the graphic from the CSIRO website about fire research. In pairs students should think pair share about the ultimate conditions for a bushfire. 4. Students summarise how the CSIRO forest fire danger index works. 5. As a class watch After burn – Perfect Conditions For Fire		http://www.csiro.au/en/Research/Environment/Extreme-Events/Bushfire/Bushfire-research http://www.nationalgeographic.com.au/tv/afterburn/videos.aspx http://www.csiro.au/en/Research/Environment/Extreme-Events/Bushfire/Fire-danger-meters/Mk5-forest-fire-danger-meter	
Explains processes that form and transform places and environments. GE5-2	1. Students undertake the Fire Challenge case study at their own pace. Extension students will be able to work through the material on their own with minimal input (reminders about gradient and relief are most likely). Support students will need teacher's assistance to apply the skills, but have worked examples as assistance also. The case study has been printed as a booklet for students to allow for them to write and draw the workings and answers on the maps and tables. The printed copy includes all of the planning officers instructions, firewise forms and media releases, but computers or ipads are still very valuable as these allow the students to view pictures, diagrams etc and listen to the additional content.	The website also has oral recordings of instructions which is very helpful for **support** students. A range of **extension** options can be found in the following text, including skill based, short answer and extended response: http://www.gtaq.com.au/	http://lrrpublic.cli.det.nsw.edu.au/lrrSecure/Sites/Web/fire_challenge/index.htm	

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	2. As class – discuss the learning experience of managing the fire and what the students learnt and found valuable. Ask if the students had any questions arise from the activity – discuss these as a class, moderating and guiding as required. Direct students towards the idea of prevention of fire – why in summer do we hear so much about what fires are going to be like and not how they could be prevented? Are there any ways that the students have heard or thought of that can be used to help prevent fires? Again, listen and moderate as required. 3. Have students draw up a class KWL chart on the issue.	Resources/Documents/Bushfires_final_txt_LR.pdf		
▪ explains the diverse features and characteristics of a range of places and environments GE5-1 Investigate the role and importance of natural environments. ▪ Explains processes that form and transform places and environments. GE5-2 Investigate environmental management, including the different world views and the management approaches of Aboriginal and Torres Strait Islander peoples. Analyse human wellbeing and ways to improve human welllbeing.	1. In small groups or pairs, assign students an article to read and analyse about indigenous traditional burning. 2. Have students read through the article out loud in groups or pairs (possibly using the reciprocal reading technique). 3. Individually students complete a right angle thinking activity for the article and then as a group or pair share and combine their work. (for each article the students should also make the connection between human benefits and ecological/environmental benefits – either an increase in biodiversity or storage of carbon, or a decrease in pest species) teacher may need to highlight that this is just as important as the human focused benefits. Many of these articles also talk about the importance of the connection to country, or self-determination and having relevant and important jobs for Indigenous people. Some students will make these connections, other students will need them to be clarified. 4. Have each group present their findings to the class – as the groups are presenting each student should be compiling a new right angle thinking sheet with key points. Teacher can fill in or tick off the KWL chart. 5. As a class review the activity and discuss if this approach would work in the Shoalhaven given what the students know about the vegetation, topography and climate. Allow students to take the lead, moderating to ensure all get a turn if required. 6. Individually students use their sheets to compile arguments for and against using this approach locally. Students then undertake a	Mixed ability groups will help all students to complete this task. The articles can be shortened and vocabulary removed if required for support students. And/Or support students can use the CSIRO video as their source.	http://www.abc.net.au/news/2013-10-15/australian-scientists-csiro-software-bushfires/5023968 https://www.countryneedspeople.org.au/the_spark_of_life http://www.abc.net.au/tv/programs/landline/old-site/content/2008/s2697688.htm http://www.abc.net.au/news/2017-09-10/aboriginal-rangers-using-fire-to-create-carbon-credits/8742550 http://www.abc.net.au/news/2016-09-05/traditional-knowledge-a-pathway-to-safer-healthier-country/7814628	

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	philosophical chairs debate using their notes – remind students this is a good time to practice for their assessment task later in the year.		https://www.csiro.au/en/Research/LWF/Areas/Ecosystems-biodiversity/Managing-landscapes-for-biodiversity/Indigenous-NRM/Aboriginal-wetland-burning-in-Kakadu https://www.youtube.com/watch?v=AXG_2JSW0FA&disable_polymer=true	

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Teaching and Learning Unit Evaluation

Program or Unit Title: _____ **Class:** _____ **Teacher:** _____

Element	Evaluation
Program	

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▪ Was the program well-structure and coherent? ▪ To what extent did the program engage all students in the class? ▪ Did the program assist all students to achieve the learning outcomes? ▪ What improvements could be made?	
Resources ▪ Were the resources used appropriately in terms of age level, variety and the ability to engage the students? ▪ What improvements could be made?	
Assessment ▪ Did the program incorporate a range of quality, valid assessment tasks? ▪ Reflect and comment on the level of student achievement in this program. ▪ What improvements could be made to assist students to achieve the outcomes?	

Date Commenced: _____ **Date Completed**: _____ **Signature:** _____

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