GEOGRAPHY BULLETIN Landscapes, Landforms, Hazards and Liveability



Geography Teachers' Association of New South Wales Inc.

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GEOGRAPHY BULLETIN

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Front & back cover: Deadvlei from bird's eye view (2017) Image source: Wikimedia Commons – Deadvlei_Vogelperspektive.jpg

The Geography Bulletin is a quarterly journal of The Geography Teachers' Association of New South Wales. The 'Bulletin' embraces those natural and human phenomena which fashion the character of the Earth's surface. In addition to this it sees Geography as incorporating 'issues' which confront the discipline and its students. The Geography Bulletin is designed to serve teachers and students of Geography. The journal has a specific role in providing material to help meet the requirements of the Geography syllabuses. As an evolving journal the Geography Bulletin attempts to satisfy the requirements of a broad readership and in so doing improve its service to teachers. Those individuals wishing to contribute to the publication are directed to the 'Advice to contributors' inside the back cover. Articles are submitted to two referees. Any decisions as to the applicability to secondary and/or tertiary education are made by the referees. Authors, it is suggested, should direct articles according to editorial policy.

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GEOGRAPHY BULLETIN

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EDITORIAL

Welcome to the first edition of the GTA Bulletin for 2018. Term 1 is shaping up as a very busy term with the GTA Annual Conference on Monday April 9th and Tuesday April 10th at Novotel, Sydney Olympic Park and the first webinar of a series to be provided throughout the year.

Many thanks to our 2018 conference sponsors Landcom (Gold sponsor), Sydney Olympic Park (Bronze sponsor) and Education Perfect (Bronze sponsor). We look forward to the participation of these sponsors in our conference and encourage members and conference participants to visit their trade displays to learn about services and resources that support Geography teachers across NSW.







Thank you also to the contributors to this edition. These include:

- Jens Koff (Creative Spirits) for the second article in our series on Aboriginal Australia
- Dr Susan Bliss for two resources: Namib Desert and Earthquakes: Haiti and Chile.
- Dr John Buchanan for an interesting perspective on the Haiti earthquake titled Whose fault? Port-au-Prince, Haiti: An illustrative case study in natural disasters
- David Massingham for Game of Thrones Mapping Activity
- Melinda Rowe for Changing Places Task for Stage 5
- David Allchin for an introductory activity for Landscapes and Landforms
- Leah Arthur for sharing two teaching units:
 - Let it Burn, a Teaching Unit for Stage 5: Environmental Change and management with a focus on bushfires.
 - Push and Shove, a teaching unit for Stage 4: Landscapes and Landforms with a case study of Mount Everest.

STAGE 6 GEOGRAPHY REVIEW

NESA has release a survey for teachers to review the current Stage 6 Geography syllabus, as the first step towards a new Stage 6 Syllabus in the future. There are no timelines at this stage of the process.

GTANSW encourages members to have their say by completing this survey – https://www.surveymonkey.com/r/5RQJMS7

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GTANSW Facebook Page is used for major events and the general promotion of Geography at https://www.facebook.com/GTA.NSW/

GTANSW has two specific support groups:

- GTANSW Teachers of Senior Geography Group https://www.facebook.com/groups/841307156040600/
- GTANSW Primary Geography Teachers Group https://www.facebook.com/search/top/?q=gtansw%20primary%20 geography%20teachers%20group

Admission to these groups is on request and requires questions to be answered before approval is given.



Lorraine Chaffer, Editor

The GTANSW 2017 Annual General Meeting was held in October. The Presidents Report, AGM Minutes and Financial statement are also included in this edition of the bulletin along with a list of GTA Councillors for 2018.

GEOGRAPHY ALIVE: A new GTANSW resource for primary teachers

GTA has celebrated the launch of a new online Primary Geography resource Geography Alive. http://gtansw.org.au/geography-alive/

The initiative includes sample units of work organised by stage of learning. Currently, there are 10 units available. Each unit includes an overview linking it to the NSW Geography Syllabus (K–6), detailed lesson plans with step-by-step instructions, teaching resources and, where appropriate, student worksheets. The units have been drafted by a team of experienced Primary teachers and many have already been 'road tested' in the classroom.



The units are discrete entities. They do not represent a 'scope and sequence' that covers all syllabus requirements. Over time, additional units will be added to the site. Teachers are encouraged to share their own units with their colleagues across NSW.

See sample pages from Stage 2 Unit My Places: Picture book study in this edition.

GTA NSW Events for Semester 1 2018

- Webinar program See the GTA website for news of each new event. The first Webinar for the year was on Practical ideas for Inquiry Based Learning in Geography. The next webinar will be held on Thursday 22nd March on Geography Alive Resources for Primary Schools.
- Annual Conference See the flyer in this edition or the GTA website for all necessary information and links – http://www.gtansw.org.au
- 2018 HSC Preparation Lectures for Year 12 students and teachers:
 - Newcastle: Callaghan College, Jesmond Campus on Thursday 14th June
 - Goulburn: Trinity Catholic College on Monday 18th June
 - Sydney (CBD): NSWTF Conference Centre Surry Hills on Tuesday 26th June
 - Sydney (West): PTC NSW Training Rooms, Auburn on Saturday 30th June.

GTANSW Annual Conference My challenging Geography Classroom Monday 9th & Tuesday 10th April 2018

Click here for online registration

2017 ANNUAL REPORT

Geography Teachers Association of NSW

Lorraine Chaffer, President GTANSW

The Geography Teacher's Association of NSW (GTANSW) has had a highly successful year providing professional support for Geography teachers and students across NSW and the ACT.



GTANSW professional learning events are inclusive of all sectors and actively promote engagement with primary, secondary and preservice teachers. Professional Learning activities are open to members and non-members, except for one GIS training workshop. Fees for nonmembers remain higher to encourage membership.

Targets for 2017 included

- increasing membership
- increasing regional representation on GTA council
- maintaining regional support
- increased digital and social media presence

Membership has grown slightly, with concessional and personal memberships increasing at the expense of corporate memberships.

Five Life Memberships were presented at Annual Conference to Dr Susan Bliss, Nick Hutchinson, Dr Grant Kleeman, Barbara Heath and Paul Alger.

Fees: \$180 School / institution; \$90 personal; \$50 primary and \$40 concession.

2017 Membership was 375 (an increase of 25 members over 2016) Fees will increase to \$190 for schools in 2018

GTANSW Council had 19 members during 2017 and has increased its regional representation for 2018. Two new councilors at Tweed Heads and Wagga join regional representatives from Canberra (1) and Newcastle (2) – who were supported to attend the planning day in October and officially welcomed at the AGM. The 2018 council has 21 members.

Office Support

The GTANSW Office shares a space with the Professional Teachers' Council NSW and other teachers Associations. Monthly meetings are held in the boardroom and our resources are stored at the PTC NSW office. The Professional Teachers' Council NSW provide administrative, financial, publishing and organisational support. This work load increases before major events such as conferences.

Council activities and events

GTANSW Council is run by volunteers whose hard work and commitment is responsible for the large number of successful events held in 2017. These include:

• 2017 GTANSW Annual Conference held over two days at Novotel, Sydney Olympic Park with an extended program of 48 workshops covering syllabus content, pedagogy, skills and tools for teachers from K-10. Masterclasses were videotaped and made available to conference participants and GTANSW members. (200 attendees each day + 20 displays)

GTANSW Annual Report

- Awards for highest achievers in the HSC Examination 2016 and their teachers
- Arthur Phillip Fieldwork Awards and 2016 HSC
 Review (Annual Conference)
- Webinar program using Zoom. Five webinar Twilight Events, NESA Accredited and recorded for the GTANSW website for members.
- **Regional Conferences**, at Tamworth, Bateman's Bay and Wagga (with RivSSTA)
- Inaugural HSC Senior Geography Teachers
 Conference (100 participants)
- HSC Student Lectures were held at three locations in 2017. A declining attendance over recent years is being addressed with some revamping of this series for 2018 using new locations and one holiday workshop in Sydney.
- **GIS Workshop** in association with Esri Australia, to support now available ArcGIS Software available to schools.
- AGTA / GTANSW Skills Roadshows held in Sydney and Newcastle to support both experience teachers and those new to teaching Geography and primary teachers. GTANSW Councillors also assisted with the roadshows held in other states.
- **GTANSW Councillors** represented GTANSW at various events during the year including:
 - Representation on the AGTA Board (3 x GTANSW, 1 x ACT / NSW)
 - DoE HSIE Cross curriculum meeting
 - GTAV Annual Conference in Melbourne
 - AGTA Conference in Melbourne
 - Rural Fire Service collaboration
 - University of Western Sydney HSC Enrichment Day
 - Environmental Education Centre visits
 - School visits to assist with resources and programming (includes Distance Education, public, private, primary and secondary schools)
 - Presenting at interstate AGTA events
 - Promotion of AGTA skills and Literacy publications
 - PL Events for Centre for Professional learning
 - Liaison with NESA when required
 - Liaison with ESRI to promote their free Arc GIS for schools program and provide professional learning opportunities.

Planning for 2018 has begun with dates set for the Annual Conference (9th & 10th April 2018) and HSC Student Lectures (June 2018).

Publications and projects

- *Geography teaching resource for K–6*. A free resource for the GTANSW website, currently in progress.
- 7-10 Assessment and Skills resource (Planning stages)
- The Geography Bulletin. There were four issues produced in 2017 and two Special Editions for Senior Geography Teachers. The electronic journal is available to members online.
- **Online registration** now well established for all GTANSW professional learning events.
- Social Media:
 - Facebook page for GTANSW events and general geographical information
 - GTANSW Facebook group for Senior Geography Teachers NSW only
 - Google Drive resource folder for NSW Senior Geography resources
 - Support for two other Facebook Groups for Geography Teachers
 - Twitter Account (Events only)

2018 will see a new more attractive and user friendly website – www.gtansw.org.au





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PROFESSIONAL LEARNING

Geographical Education

Dear Colleagues,

We are writing to introduce ourselves as the incoming editors of *Geographical Education* – The journal of the Australian Geography Teachers' Association (AGTA). We would like to invite you to contribute. The first edition of the year will focus on *Assessment in Geography Education*.

Geographical Education is a refereed journal. Articles submitted are reviewed anonymously by a minimum of two referees and then selected by the Editors based on the outcome of the anonymous reviews. Contributions of varying length are invited, with a maximum of 5000 words.

Please notify us of your interest by email. Please include a 150 word abstract of your proposed paper. The final manuscript should be submitted to the Editor by email. Manuscripts for possible publication and all correspondence relating to articles should be sent to: Editor, **rod.lane@mq.edu.au**.

The details of publication requirements are included below for your convenience.

Word processing: Manuscripts should be word processed and double spaced with margins of 2.5 cm on all sides, using 12-point of Times New Roman (or CG Times) font.

Title Page: The title of the article, the name, work position, address and email of the author(s) and an abstract of no more than 150 words should be provided on a title page.

Headings: Major and minor sub-headings should be used to guide the reader and to break up the text.

Paragraphs: Paragraphs should start without indentation and should be separated by blank lines. All text should be left justified.

Quotations: These should be kept to a minimum and where over 40 words should be indented. These must be appropriately referenced.

Footnotes: These should be avoided if possible.

References: Authors are requested to use the APA (American Psychological Association) style.

Tables and Figures: All tables and figures should be submitted on a separate sheet of paper but with their position indicated on the text by leaving a 3 cm space above and inserting the words «Take in Figure X» or «Take in table Y». All tables and figures (including maps and diagrams) should be submitted in camera-ready form with captions clearly numbered, typed and left-justified below the diagram.

Reproduction: Illustrations will be reproduced in black and white. Photographs and illustrations should be black and white glossy prints or slides suitable for clear reproduction. Electronic media such as jpeg and gif files should be attached separately.

Kind regards

Rod Lane and Theresa Bourke Editors – Geographical Education



Geographical Education volume 30, 2017

Copies of Geographical Education commencing with volume 26, 2013 are only available in digital format and are available for download.. http://www.agta.asn.au/

My Induction App

AITSL's My Induction app was launched in February 2017 and has already helped thousands of beginning teachers navigate their first years in the profession. We are hoping to build on a successful first year and are seeking your help in sharing the app with those starting out as beginner teachers so that they can start using this fantastic resource too.

My Induction supports graduate teachers to make a strong start to their teaching careers by making it easy to:

- engage with resources and activities relevant to their early-career development
- · access advice and solutions to common issues from expert teaching professionals
- track their wellbeing.

Users of the app have told us that it contains high-quality, relevant information and resources and is easy to use. My Induction is available and free to **download** from the App Store and Google Play Store.



GTANSW Annual Conference My challenging Geography Classroom Monday 9th & Tuesday 10th April 2018

2018 ANNUAL CONFERENCE

Geography Teachers Association

A two-day conference for teachers of Geography K–12 incl. pre-service teachers

LOCATION

Novotel, Sydney Olympic Park (Rail – T7 line Lidcombe to SOP Station, Parking \$25 /day)

TIME: 8.30am – 3.30pm each day

REGISTRATION: Online registration is now open **CLICK HERE**

Participants can register for one or both days. Links will be emailed to members and posted on the GTA NSW website and Facebook page.

The two-day conference comprises 39 presentations & workshops.

NOTE: Participants must register for and attend FOUR sessions on the day to qualify for the NESA Registered PD hours. Presenters to include their own session if registering as a participant.

SOMETHING FOR EVERYONE – ALL LINKED TO GEOGRAPHY K–12

- Pedagogy Cultures of thinking, Flipped Classroom, PBL, Geographical Inquiry
- Syllabus content K 12 (with dedicated sessions for primary, 7–10 and HSC)
- Geographical tools and skills (Fieldwork, ICT eg Spatial Technologies, Apps and Big Data)
- Learning across the curriculum (Including general capabilities such as literacy, numeracy, ICT capabilities and critical and creative thinking as well as sustainability and citizenship)
- Leadership capabilities (eg. Instructional Leadership, Geography in the Distance Education, Promoting conceptual change through fieldwork)

COSTS

GTA NSW members	1 day \$260	2 days \$500	Members of other state
Non-members	1 day \$320	2 days \$620	associations welcome at GTA NSW member rates. Venue parking \$25 per day
Concession – Primary, Pre-service	1 day \$170	2 days \$300	

SPONSORS







GTANSW Annual Conference My challenging Geography Classroom

CONFERENCE PROGRAM – DAY ONE

MONDAY 9TH APRIL

Session 1 - PRESENTATIONS (50 minutes)

- 1.1 Masterclass presentation: Academic Literacy in Geography Stages (4–6)
- 1.2 Literacy in Geography EAL/D Students (Stages 4 & 5)
- 1.3 Wilderquest Learning environments, national parks and Aboriginal culture of NSW (K–6)

Session 2 - PRESENTATIONS (50 minutes)

- 2.1 Mobile connections: An Inquiry based program for the Interconnections topic (Stages 4 & 5)
- 2.2 Developing Future Geographers (Stages 4 & 5)
- 2.3 West Connex and Priority Precincts: Change in Sydney' Inner West (Stages 4–6)
- 2.4 Linking International trade with the Australian Curriculum (Stages 4 & 5)
- 2.5 Flip your Geography Class (K-12)
- 2.6 Unpacking the new GTA Primary Resource (K–6)

Session 3 - PRESENTATIONS (50 minutes)

- 3.1 Microplastics & AUSMAP Community Citizen Science Program (Stages 4–6)
- 3.2 GIS and threatened species management: an educational resource (Stages 4–6)
- 3.3 Promoting conceptual change through fieldwork (Stages 4–6)
- 3.4 A challenging Geography classroom? Cultivate Food and Fibre Education (K–10)
- 3.5 Cost effective interstate fieldwork (Stage 6)
- 3.6 Co.Lab (K–12)

Session 4 - WORKSHOPS (80 minutes)

- 4.1 Instructional Leadership (For teachers seeking leadership guidance) (Stages 4 6)
- 4.2 The value of water in a liveable city (Stages 4-6)
- 4.3 Developing a spatial technology program in your school (K-12)
- 4.4 Immersive Worlds: Using Google tools for Geographic inquiry (K–6)
- 4.5 Apps for action: IPads for communication (K-12)
- 4.6 Running a whole day fieldwork activity a practical guide (K–12



Geography Teachers Association of NSW through the Professional Teachers' Council NSW – NSW Education Standards Authority (NESA) as the endorsed provider of QTC Registered professional development for the maintenance of accreditation at Proficient, Highly Accomplished, and Lead levels.

Completing the **GTA NSW Annual Conference 2018 – Day 1, 9 April 2018** will contribute **5 Hours and 30 Minutes** of NESA Registered PD addressing **2.1.2; 6.2.2; 6.4.2; 7.4.2** from the Australian Professional Standards for Teachers towards maintaining Proficient Teacher Accreditation in NSW. NOTE: Participants must register for and attend FOUR sessions on the day to qualify for the NESA Registered PD hours. Presenters to include their own session if registering as a participant.

GTANSW Annual Conference My challenging Geography Classroom

CONFERENCE PROGRAM – DAY TWO

TUESDAY 10TH APRIL

Session 5 - WORKSHOPS (80 minutes)

- 5.1 *Masterclass Workshop:* Building a culture of thinking in the Geography classroom (K–12)
- 5.2 We are all data analysts. Gathering, representing, evaluating and communicating Geographical information in the age of big data (K–12)
- 5.3 Applying online spatial technologies to explore a question (Stages 4 & 5)
- 5.4 Marking senior Geography responses (Stage 6)

Session 6 - PRESENTATIONS (50 minutes)

- 6.1 Famine in a world of plenty (Stages 4 & 5)
- 6.2 Zombie Geography linking ideas and skills (K–10)
- 6.3 Integrating fieldwork into new curriculum teaching and learning programs (Stages 4 & 5)
- 6.4 Geography and the distance of education (Stages 4 & 5)
- 6.5 The urban dynamics shaping Sydney: A large city in the developed world (Stage 6)
- 6.6 Innovative programming (Stages 4 & 5)

Session 7 - PRESENTATIONS (50 minutes)

- 7.1 "You expect me to do what? Using PBL to teach Geography, Civics and Business
- 7.2 Misadventures in blended learning
- 7.3 Spatial technologies and PBL (K–12)
- 7.4 GEO Flipped 7–12 (Stages 4–6)
- 7.5 Case studies for Stage 6
- 7.6 Geography fieldwork in urban environments (Stages 4-6)

Session 8 - WORKSHOPS (80 minutes)

- 8.1 Sydney Harbour: A diverse and changing marine environment (Stages 3–6)
- 8.2 The ultimate school fieldwork toolkit (K–12)
- 8.3 Galactic mappers (K-10)
- 8.4 Flipped learning for humanities (Stages 4–6)
- 8.5 Meaningful field data collection with ESRI GIS Apps (Stages 4–6)



Geography Teachers Association of NSW through the Professional Teachers' Council NSW- NSW Education Standards Authority (NESA) as the endorsed provider of QTC Registered professional development for the maintenance of accreditation at Proficient, Highly Accomplished, and Lead levels.

Completing the **GTA NSW Annual Conference 2018** – **Day 2, 10 April 2018** will contribute **5 Hours and 30 Minutes** of NESA Registered PD addressing **2.1.2; 6.2.2; 6.4.2; 7.4.2** from the Australian Professional Standards for Teachers towards maintaining Proficient Teacher Accreditation in NSW. NOTE: Participants must register for and attend FOUR sessions on the day to qualify for the NESA Registered PD hours. Presenters to include their own session if registering as a participant.

ABORIGINAL AUSTRALIA SERIES

Part 2: Aboriginal Fire Management

Author Jens Korff , Creative Spirits

This is part 2 of a series of four issues articles titled Aboriginal Australia by Jens Korff, owner and author of Creative Spirits. The series is relevant to many sections of the K–10 Geography Syllabus

Part 1: Aboriginal Land Care (Edition 4 2017) Part 2: Aboriginal Fire Management (Current edition) Part 3: Indigenous Protected Areas Part 4: Threats to Aboriginal Land

SYLLABUS LINKS

Cross Curriculum Priority Area Aboriginal and Torres Strait Islander Histories and cultures

Stage 1: Features of places / People and Places

Students investigate:

- features of places and how they are cared for
- activities that occur within places

Stage 2: The Earth's Environment

Students investigate:

 sustainable practices that protect environments, including those of Aboriginal and Torres Strait Islander Peoples

Stage 3: Factors that shape places

Students investigate:

- the ways people change the natural environment in Australia and another country

Stage 4: Landforms and Landscapes

Students investigate:

- ways people, including Aboriginal and Torres Strait Islander Peoples, manage and protect landscapes

Stage 5: Sustainable Biomes / Environmental change and management

Students investigate:

- the human alteration of biomes to produce food, industrial materials and fibres and the environmental effects of these alterations
- environmental management, including different worldviews and the management approaches of Aboriginal and Torres Strait Islander Peoples



Controlled Burning During Dry Season – Most fires are lit by land managers during the Dry Season (May-June) Source: http://www.scienceimage.csiro. au/tag/fire-management/i/329/controlled-burning-during-dry-season/

Meaning of fire

Fire is an important symbol in Aboriginal culture. Traditionally it was used as a practical tool in hunting, cooking, warmth and managing the landscape. It also holds great spiritual meaning, with many stories, memories and dance being passed down around the fire.

Aboriginal fire management

Fire management is part of how Aboriginal people look after country.

After World War II; missions, towns and cattle stations lured Aboriginal people away from their homelands with promises of work and education [9]. Fire management stopped with severe consequences for the land. Lightning strikes ignited large, hot fires late in the dry season, between August and December, when there was plenty of fuel.

The devastating 2015 Christmas bush fire at the Great Ocean Road in Victoria, triggered also by lightning, was only able to destroy a third of homes in Wye River and "entire streets" because "this country has not burnt, had a fire in it, in decades," as Craig Lapsley, Victoria's Emergency Management Commissioner admitted [12].

This trend has not been reversed yet. "Since European settlement, fires in the north have increased in size and severity. This has threatened biodiversity as well as increased greenhouse gas emissions," says Dr. Garry Cook from the Commonwealth Scientific and Industrial Research Organisation (CSIRO) [10].

When Aboriginal people returned to country and properly managed it, the area that burned was cut in half [9]. Fire is an inevitable force in the dry season and needs to be managed. Fire burning has created a variety of habitats including places that are very sensitive to fire like rainforest. Managing fire requires knowledge about when to burn, where to burn and how to execute a burn [1].

When to burn

The timing of fire management is critical and needs to happen at the right time of the year. Ideal is the **early dry season, between May and July**, when fuel loads are low. You don't want to burn when certain seeds or fruits are ripe for harvest. If burning too early, big thick shrub develops after the fire which can become a big fuel load and is hard to manage. If burning occurs too late, trees 'explode' during the fire and not much will be left after the fire goes through.

The right time depends on the ecosystem of the burn area because each system has its own identity and needs. An ecosystem is for example a forest of boxwood or tea trees, rainforest, or heath areas along rivers and springs. A central idea in fire management is to have a cool fire. Night time or early mornings are ideal for cool fires as during the day plants sweat out flammable oils, and a nightly dew helps cool down the fire.

During a morning burn the wind is often gentle and supports Aboriginal people direct the burn. Without the help of the wind burning cannot happen at the right time.

The sun, in contrast, encourages the fire to burn.

'The trunks show that they know fire, they live and understand fire, they're trees that belong to the fire' Dr Tommy George, Kuku Thaypan Elder [2]

Where to burn

Like a non-Aboriginal person reads a book, Aboriginal people can read the land to determine which areas need fire management.

They prepare a burn by looking at the different ecosystems, patches, fuel loads, grasses, soil type, and the kinds of ashes a fire will leave behind. It is not "one big grass area to be burnt".

Trees tell Aboriginal people about the soil type and this tells them what type of fire is needed. Aboriginal people know which areas will burn and where the fire is going to stop. Some areas "want to be burnt" while others need to rest and regrow.

'Indigenous [fire management] knowledge is really Indigenous science and must be recognised as this'

David Claudie, Kuuku I'yu Northern Kaanju traditional owner [3]

Burning usually occurs at the edge to the next ecosystem to not affect it as it might require a different approach of fire management at a different time.

How to manage a burn

Traditional fire management applies cool and quick burns. It has several benefits:

- Saves flora and fauna. For example, ant colonies or young trees can survive and it keeps grass seeds intact. The heat doesn't ignite the oil in a tree's bark.
- Self-extinguishing. The fire extinguishes straight after it burns the grass ("self-extinguishing fire").

You can tell if a fire was a cool burn when the burnt grass still has its previous shape.

Aboriginal people read the systems of fire—the grass, soil type, what animals live there and how they benefit from it. Burning styles differ depending on how "sick" the land is.

To start a fire, Aboriginal people traditionally used a tea tree bark torch. Contemporary fire management uses either a kerosene bark torch (the oil in the bark keeps torch alive) or a drip torch (hot fires).

The first fire burns a circle around Aboriginal people's living area so they are safe.

Early dry-season, cool fires trickle through the landscape and burn only some of the fuel, creating a network, or mosaic, of burnt firebreaks. These stop the late dry-season, hot fires.

The canopy is sacred

A cool fire preserves the canopy of trees. This is very important for several reasons:

- Protection and provision. The canopy provides shade, fruit flowers and seeds. It allows animals to come back quickly.
- Carbon reduction. Unlike a cool burn, a canopy fire releases too much carbon. Local land managers can then sell carbon credits for the emissions avoided [10].
- Fire refugee. When there's a fire insects and other small animals crawl up the tree to safety.
- Preserve tree cycle. With its canopy intact the tree does not miss its cyclic renewal.
- Trigger for germination. The smoke from a cool burn goes through the canopy and triggers off a reaction for seeds up there to germinate.

No wonder that Aboriginal people consider the trees' canopy "sacred".

This is in stark contrast to how non-Aboriginal people understand fire. "Non-Indigenous mob, their fires are based on their money," complains David Claudie [4].

Non-Aboriginal people, like pastoralists or officers in land management departments and other government bodies, are trying to learn how to manage fire correctly on their own, but the knowledge is right there under their nose, with Aboriginal people. All they need to do is ask for help. Some do.

'The land has become sick and the land is pushing [pastoralists] to us [Aboriginal people].'

Victor Steffensen, Tagalaka man from North Queensland [5]

'Fire cannot be managed from the air alone, you need to have people on the ground. The problem is not the fire, it's people with no proper relationship with the land'.

David Claudie [6]

The "Two Toolbox" approach to fire management

Aboriginal Elder Terrah Guymala is a senior member of the Bordoh clan of the Warddeken people in remote west Arnhem Land and director of Warddeken Land Management.

Below: A grass fire burns through an open area. September 1983. Photo credit: Malcolm Source: http://www.scienceimage.csiro.au/library/ fire/i/1327/bush-fire/



Aboriginal Australia Series – Part 2

He uses a "two toolbox" approach to manage fire: One virtual toolbox contains **traditional knowledge** and land management skills, the other **Western knowledge** like using helicopters and satellite imaging [9].

This combined knowledge lets the Warddecken people manage their country successfully.

Elsewhere the Commonwealth's Carbon Farming Initiative motivates Aboriginal people to restore traditional fire management practices on their homelands. They combine modern environmental and fire science with traditional "mosaic" burning practices [10].

'People here see burning as like mowing the lawn. It's how they maintain and manage their land.'

Shaun Ansell, chief executive, Warddeken Land Management [9]



Rod Mason, indigenous land manager, at a Landcare field day on the Monaro plains demonstrating Aboriginal cool-burn patch burning. Source: http://www.abc.net.au/news/2016-05-24/rod-mason-indigenous-landmanager/7441310

Fighting carbon with fire in western Arnhem Land, Northern Territory

Watch a video by the United Nations University about how the "two toolbox" approach saves thousands of tonnes of carbon each year.

Source https://www.creativespirits.info/aboriginalculture/land/aboriginal-fire-management#ixzz53bJEPqLI

Fire, fauna and flora

The discussion around the sacred canopy of trees already indicated the intricate links between fire, animals and plants.

During a fire, bush turkeys hunt for bugs and insects at the fire line while hawks scour it for small animals. Animals know how to protect themselves from fire: ants and snakes go deep down into their nests and burrows, kangaroos find safe spots on rocky outcrops.Regular burning is also an effective weed control to introduced species like the African gamba grass which can increase fuel loads 10-fold [9].

After a fire, if it was cool, the new grass growing after a burn holds the soil together and attracts game for hunting. Brolgas (Australian cranes) eat insects that have been burnt.

Wallaby, birds and other animals bathe in the cool ash to cleanse themselves, for example to get rid of lice. The black coals can also be used as medicine.

Passing on fire management knowledge

Aboriginal people understand that fire is part of the healing process of the land. Children as young as four learn how to lose their fear and manage fire.

Going back to their homelands, Aboriginal people want to heal the land from colonisation. Proper fire management is an essential part of this healing process.

Did fire influence Australian trees?

For thousands of years, Aboriginal people have used fire to hunt and to manage the landscape. Some scientists have argued that when people first arrived in Australia about 45,000 years ago they set a large number of these fires, which **reshaped the country's ecosystems**. This theory has become an accepted idea.

A study from the University of Tasmania examined this theory by analysing the genetic fingerprints of a particular fire-sensitive tree found across the continent [8]. It found that fluctuations in populations of these trees across the continent since the arrival of people were **driven primarily by climate, not fire**. Aboriginal use of fire seems not have caused a major restructuring of vegetation across the continent. "The effect of Aboriginal landscape burning is a lot more subtle. It's still important, but it's subtle and it's region-specific," the researchers concluded [8].



Fact: NSW Rural Fire Service Crews use burning Banksia cones to start fires for back burning.

Teaching resources

Cool Australia

Educational website CoolAustralia.org has prepared lessons and supporting material like worksheets for primary and secondary students.

Lessons revolve around cool burning, fire management, benefits, climate change and the Fire Triangle model.

A login is required to access the material.

Check out primary student and secondary student material – https://www.coolaustralia.org/wpcontent/uploads/2013/03/73_C3.jpg



Firesticks

Firesticks is an Aboriginal-led network that aims to reinvigorate the use of cultural burning. It offers cultural learning pathways to fire and land management and is open for Aboriginal and non- Aboriginal people to look after country, share their experiences and collectively explore ways to achieve their goals. Firesticks offers fire workshops and burning forums and demonstrations.

Source: https://www.creativespirits.info/ aboriginalculture/land/aboriginal-firemanagement#ixzz53bJRLFDS

View article sources (12)

- [1] 'Fire And The Story of Burning Country', Cape York Elders & Community Leaders, photographed & recorded by Peter McConchie, Cyclops Press 2013
- [2] ibid., p. 41
- [3] ibid., p. 62
- [4] ibid., p. 71
- [5] ibid., p. 16
- [6] ibid., p. 60
- [7] ibid., p. 61
- [8] 'Genes extinguish Aboriginal fire theory', ABC Science 30/10/2013
- [9] 'New generation returns to care for country', SMH 28/9/2014
- [10] 'Old ways are new again: reducing greenhouse gas emissions by fire', ABC Environment 7/11/2014
- [11] 'More than 100 homes destroyed, conditions set to worsen', SMH 19/10/2013
- [12] 'Victoria bushfires: Rain to give short-term relief, danger to remain all summer', The Age 26/12/2015

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www.CreativeSpirits.info, Aboriginal culture – Land – Aboriginal fire management, retrieved 9 January 2018



Editors suggestions for further reading

Traditional Aboriginal burning in modern day land management by Christopher Gillies https://landcareaustralia.org.au/project/traditionalaboriginal-burning-modern-day-land-management/

Aboriginal fires management – part of the solution to destructive bushfires by David Bowman http://theconversation.com/aboriginal-fire-management-part-of-the-solution-to-destructive-bushfires-55032

Monaro farmers use Aboriginal cool-burn fires to recover biodiversity, rejuvenate degraded farm land http://www.abc.net.au/news/2016-05-24/ monaro-farmers-use-aboriginal-cool-burn-fires-torecover/7440824



INTEGRATING GENERAL CAPABILITIES

Civics and Citizenship, Difference and Diversity, and Work and Enterprise Literacy, Numeracy, ICT, Critical and Creative Thinking, Personal and Social Capability, and Ethical Understanding

HAITIAN EARTHQUAKE JANUARY 2010

The Caribbean consists of islands surrounded by the Caribbean Sea and Atlantic Ocean. Located on the Caribbean Plate the area has experienced major earthquakes over the past 300 years. On 12 January, 2010 the Caribbean Plate moved east in relation to the North American Plate. The movement created a M7 earthquake which struck Haiti, and devastated the capital city Portau-Prince containing a population of 2 million people.



1. Causes: map locating tectonic plates Visual literacy, Numeracy, ICT

* The dotted lines on the map indicate fault lines Source: http://www.npr.org/templates/story/story. php?storyId=122531261Alyson Hurt/NPR **Geofacts:** The Caribbean Plate is moving about 6mm per year, relative to the North American Plate

Located in the Caribbean is the Republic of Haiti. The island experiences continual natural disasters such as hurricanes, landslides, tsunamis and earthquakes. The epicentre of the earthquake that struck Haiti on 12 January, 2010, was only 20km from Port-au-Prince, and the hypocentre was shallow. The shallow earthquake located close to the large urban population, created greater shaking and damage than if located deeper and further away. It also generated a tsunami with waves over 3m sweeping boats and debris into the ocean.

By 24 January 2010, there had been at least 52 aftershocks measuring M4.5 or greater. Approximately 230,000-316,000 people were killed and over one million became homeless. This natural disaster had a cataclysmic impact on poor Haiti with a population of only 10 million people, compared to the 2004 Indian Ocean tsunami causing 282,517 deaths spread across a populous 13 countries.

Geomorphic Hazards: Earthquakes

2. Causes: map locating 2010 Haiti earthquake Visual literacy, Numeracy, ICT



Source: http://news.bbc.co.uk/2/hi/8466385.stm

3. Impacts: photograph showing impacts of earthquake on people and places *Visual literacy, Personal and Social Capability*



Source: https://i.pinimg.com/originals/58/33/9b/58339b8d0fcef8f4f1896d79 32a3eeec.jpg

4. Impacts: Haiti tsunami after 12 January 2010 earthquake

Numeracy, Visual Literacy, ICT



Source: http://wcatwc.arh.noaa.gov/previous.events/01-12-10_Haiti/Images/ Haiti2010_TT.jpg



5. Impacts: tsunami swept away buildings located on coastal Haiti *Visual Literacy, Personal and Social Capability*

Source: https://news.nationalgeographic.com/ content/dam/news/photos/000/130/13011. ngsversion.1421958768942.adapt.1900.1.jpg

LOCAL AND GLOBAL CITIZENSHIP – HAITI

6. Impacts and management: aftermath of the Haiti Earthquake infographic Visual Literacy, Numeracy, ICT, Critical and Creative Thinking, Work and Enterprise, Civics and Citizenship



Source: http://infographiclist.files.wordpress.com/2011/10/coolinfographicsblog_4e60f4dca3121.jpg

Problems living in Haiti-before and after earthquake

Haiti is a poor developing country. Even before the earthquake only 30% of the population living in the capital city of Port-au-Prince had access to sanitation and 54% access to clean water. The country was also prone to natural disasters such as hurricanes and floods, and of course earthquakes.

As a consequence, the government had inadequate resources to manage a disaster of this magnitude. Governments, non-government organisations (NGOs), private enterprises and individuals provided aid to Haiti. Unfortunately aid was hampered by:

- number of aftershocks
- damaged infrastructure such as roads
- nonoperational airport and harbours
- cuts in power and communications
- weak government made worse by the collapse of

government buildings, such as Parliament House. This impeded the coordination of effective disaster responses in the same year, the earthquake was followed by a cholera epidemic and a hurricane.



Port-au-Prince Harbour facilities, collapsed crane. Source: https://upload. wikimedia.org/wikipedia/commons/b/b7/Port-au-Prince_harbour_crane_ after_2010_earthquake.jpg

INFORMATION AND COMMUNICATIONS TECHNOLOGY AND LITERACY – HAITI

a. New media and communications technologies saves lives

Though natural disasters are common in Haiti, the humanitarian response was different. New media and communications technologies were used in unprecedented ways to aid the recovery effort. The most notable innovations were: crowdsourced data into actionable information; use of SMS message broadcasting in a crisis; and crowdsourcing of open maps for humanitarian application.

Haiti became a real world laboratory for several new applications, such as interactive maps and SMS texting platforms. These tools were used to create dialogue between citizens and relief workers, to help guide search-and-rescue teams, and find people in need of critical supplies.

http://mediashift.org/2011/01/how-mapping-sms-platforms-saved-lives-in-haiti-earthquake011/



The Haitian Presidential Palace in Port-au-Prince, Haiti. Originally a two-story structure; the second story completely collapsed. Source: https://commons. wikimedia.org/wiki/File:Haitian_national_palace_earthquake-edit.jpg

b. Communication with Disaster Affected Communities (CDAC)-effective disaster management

After the earthquake, broken communication channels led to establishing

Communication with Disaster Affected Communities (CDAC)

'CDAC Haiti was created as a short-term initiative with the purpose of providing a system-wide communication coordination mechanism. The objective was to enable humanitarian operations to distribute crucial information to affected populations and to ensure the voices of the affected population were channelled back to aid organisations.

http://www.cdacnetwork.org/tools-and-resources/i/20140610200806nudon

CDAC Haiti took on the role of a communication cross cluster during the hurricane season and cholera outbreak that followed the earthquake.



Collapsed Teleco Building, Haiti. Source: https://upload.wikimedia. org/wikipedia/commons/a/af/Teleco_Building_%28Haiti_Earthqua ke_-_2010%29_%284322474854%29.jpg

c. BarCamp-crises camp reduces deaths

A crisis camp is a BarCamp gathering of IT professionals, software developers, and computer programmers to aid in the relief efforts of a major crisis such as those caused by earthquakes, floods, or hurricanes. Projects that crisis camps often work on include setting up social networks for people to locate missing friends and relatives, creating maps of affected areas, and creating inventories of needed items such as food and clothing.

Following the 2010 Haiti earthquake, many crisis camps were set up around the world, often under the name "Crisis Camp Haiti", to help with the relief effort.

https://en.wikipedia.org/wiki/Crisis_camp

Slideshare: Mapping Haiti – OpenStreet Map Community's Response to January 2010 earthquake https://www.slideshare.net/sabman/haiti-qake2010-bar-campcanberra2010



Building transitional shelters, post earthquake. Source: https://upload. wikimedia.org/wikipedia/commons/2/2a/Building_transitional_shelter_after_ the_earthquake_in_Haiti_%284776467337%29.jpg

7. Humanitarian responses using ICT

Civics and Citizenship, ICT, Ethical Understanding, Personal and Social Capability, Numeracy, Visual Literacy, Work and Enterprise



LOCAL AND GLOBAL CITIZENSHIP - HAITI

Civics and Citizenship, ICT, Work and Enterprise, Personal and Social Capability, Ethical Understanding, Critical and Creative Thinking

International organisations rescued people, buried the dead, and provided medicine, water, food and shelter. 'Sniffer' dogs rescued people, field hospitals were established and 500 camps provided shelter for the homeless. A UN 'Food Aid Cluster' feed 2 million people. Project Ushahidi provided thousands of people with the internet, mobile phones and radio to inform organisations about structural damage to buildings, lack of water and food, and missing people. The 'Hope for Haiti Now' telethon raised more than \$57m for the victims of the earthquake.

As of 2013, ReliefWeb reported relief funding of \$3.5 billion was given, however a further \$1 billion was pledged but not given.

8. Galaxy of stars help raise money in 'Hope for



Source: http://i.dailymail.co.uk/i/pix/2010/01/23/article-1245447-07FA942E000005DC-57_634x428.jpg

Geomorphic Hazards: Earthquakes

Oxfam: non-government organisation responds

The level of destruction and logistical challenges were among the worst Oxfam had ever faced.' 'By providing paid employment to people in camps; to keep camps clean, build latrines and clear destroyed neighbourhoods, we put money in the pockets of those who needed it most and helped them improve their living conditions. We reached 300,000 people with aid in the first three months.'

Vanessa Guillaume, earthquake survivor who was employed by Oxfam to promote public health in the aftermath: "Imagine your house being totally ruined after a natural disaster. In less than a minute, you lost what you've been fighting for years to keep. The little things you possessed, the little money or business you had, even your loved ones. But as you look around, you realize you're not the only victim, because hundreds of people surrounding you are in the same situation. The earthquake may have caused a lot of wreckage, but it also gave people like me a chance to help repair our country and build a better future."



Source: Defense_gov_photo_essay_100118-F-1644L-088.jpg

Source: https://www.oxfam.org/en/haiti-earthquake-our-response

PROBLEMS OF HUMANITARIAN RESPONSES – HAITI

Civics and Citizenship, Work and Enterprise, Personal and Social Capability, Ethical Understanding, Critical and Creative Thinking, Visual Literacy





Long term effects of humanitarian response

As of 2015, 5 years after the earthquake, over 500,000 victims were still living in temporary shelters without electricity, plumbing or sewage. Lack of proper sanitation is thought to be the foundation upon which the ongoing cholera outbreak is based. Much of the US aid funding was hindered by US statutory restrictions limiting spending to US products, materials and employees, which had to be transported to Haiti. This not only raised the costs involved, compared to local, but also prevented the aid from stimulating the Haitian economy.

Source: https://en.wikipedia.org/wiki/Humanitarian_response_to_the_2010_ Haiti earthquake



The tsunami generated by the M 8.8 earthquake carried many boats onto land – in some cases hundreds of meters inland. The tsunami wave height at this location in Concepcion Harbor (Talcahuano), Chile was about 4-5 meters Source: https://upload.wikimedia.org/wikipedia/commons/6/61/Tsunami_ Carried_Boat-Chile_2010-Talcahuano.jpg

CHILEAN EARTHQUAKE FEBRUARY 2010: COMPARATIVE STUDY

Located on the Ring of Fire, Chile suffered a larger earthquake of M8.8 triggering a tsunami, on 27 February 2010. About 280 people died and buildings were destroyed. The magnitude of the earthquake was larger than experienced at Haiti, however destruction was less severe. Fortunately, Chile's stricter building codes and less dense population, contributed to different impacts.



10. Maps: Chile earthquake and tsunami Visual literacy, Numeracy, ICT Cause and impacts: Chile earthquake



Source: http://www.lunarplanner.com/EGM/10-02-27-Chile_Quake/chile_ quake_2010-02-27.gif

Impacts: tsunami



Source: https://www.unavco.org/highlights/2010/M8.8-Chile-earthquake-spread.jpg

Geofacts: The first tsunami wave from Chile's earthquake in 2010 struck Hawaii about 14 hours after the tremble. It measured approximately one metre

LEFT: In Concepción, the 20-story Alto Río building collapsed as a result of the earthquake of February 27, 2010. Source: https://upload.wikimedia.org/wikipedia/commons/4/49/2010_Chile_earthquake_-_Building_destroyed_in_Concepci%C3%B3n.jpg

11. Tale of two earthquakes-Haiti and Chile Causes, impacts, management preparedness

CASE STUDY: Haiti vs. Chile quake comparison

Date	and Magnitude:	Date and Magnitude:
	3:34 a.m., Sat. Feb. 27th.	 Tues. Jan. 12th.
•	8.8, epicentre 35km deep.	 7.0 (with 52 aftershocks, all greater than magnitude 4), epicentre 13km deep.
Loca • •	ttion: (Fig.2) Chile is an HIDC with the lowest birth rate in South America and a GDP per capita of almost \$15,000. World's largest copper producer. Majority of industry based in north of country. Booming wine, fruit and forestry industries. Economic growth of around 5% per annum before quake. 20% of pop. lives in urban areas.	 Location: (Fig. 1) Epicentre near the town of Léogâne, approximately 25 km west of Port-au- Prince, Haiti's capital. Haiti is a poor LEDC with little Infrastructure.
•	legy: Chile lies on Pacific Rim's 'ring of fire' – NAZCA PLATE is subducting beneath the SOUTH AMERICAN PLATE at 80mm per year. Gives rise to the Andes Mountains. Plate boundary marked by a trench 100km offshore. Epicentre deep + far from population centres.	 Geology: On the ENRIQUILLO-PLANTAIN GARDEN fault zone (EDP2) is a system of coaxial left lateral-moving strike slip faults which runs along the southern side of the island of Hispaniola, where the Dominican Republic and Haiti are located. The quake occurred in the vicinity of the northern boundary where the CARIBBEAN PLATE shifts eastwards by about 20mm per year in relation to the NORTH AMERICAN plate. The strike-slip fault system in the region has two branches in Haiti, the Septentrional- Orient fault in the north and the Enriquillo-Plaintain Garden fault in the south; both its location and focal mechanism suggest that the January 2010 quake was caused by a rupture of the Enriquillo-Plaintain Garden fault, which had been locked for 250 years,
Preș • •	aredness: Quake-prone region, so preparedness high. Quake awareness among public. Building codes require shake-resistant construction and rapid emergency response systems. Country withstood the global economic recession very well due to policy of saving profits from soaring copper prices. Slobn still available, which new president Sebastián Piñera can use to rebuild roads, bridges, ports and the	Preparedness: • The Pacific Tsunami Warning Center issued a tsunami warning immediately after the initial quake, but quickly cancelled it





Source: https://image.sli desharecdn.com/chilevsh aitiquakecomparison-100326041353-phpapp01/95/chile-vshaiti-quake-comparison-1 Source: http://huldufolks.wordpress.com/tag/ urbanism/728jpg?cb=1269577168

Geofacts: In 2017, on the Human Development Index, Haiti was ranked 163rd out of 188 countries compared to Chile 38th

Activities

Inquiry and skills

1. Refer to 1:

- a. What geological phenomena transpired in Haiti in January 2010?
- b. Where was the epicentre in the 2010 earthquake in Haiti?
- c. Distinguish between epicentre and hypocentre.

2. Refer to 2:

- a. What were the earthquake intensities at Gressier and Miragone?
- b. Compare the damage from the earthquake in Leogano and Jacmel.

3. Refer to 3, 4, 5 and 6:

Prepare a media report on the impacts of the Haitian earthquake on people, places and environments, using ICT.

4. Refer to 7:

- a. How did ICT contribute to the humanitarian response such as SMS, Crowdflow, Facebook, Twitter and blogs?
- b. Explain how maps and the media became useful tools in a humanitarian crises
- c. Describe the purpose of CDAC and BarCamp in the Haitian disaster

5. Refer to 8:

- a. Aid agencies' appeals for donations to the Haitian earthquake received massive public responses:
 - Why were so many people motivated to respond?
 - How and why was the 'Hope for Haiti now' charity telethon a success
- b. Explain how aid is hampered in a developing country, such as Haiti
- c. Discus how international organisations, governments. NGOs and individuals worked to improve the lives of the Haitian people suffering from the adverse impacts of the earthquake.

6. Refer to 9:

In pairs present a TV report on the problems of effective aid to Haiti.

7. Refer to 10:

Explain where the Chilean earthquake occurred and its connections to the ocean.

8. Refer to 10:

- a. Where are Haiti and Chile located in relation to geomorphic processes (geology) fault lines, volcanoes and plates?
- b. Distinguish between location, date, and Richter scale of the Haitian and Chilean earthquakes.
- c. Which country experienced the greatest number of fatalities? Explain the reasons for the differences.
- d. Compare and contrast the cause and impacts of earthquakes in 2010 in Haiti and Chile. Present as a Prezi.
- e. Explain why an earthquake has a greater impact on a poor country and on the poorest people.

Knowledge and understanding

- 9. Imagine you worked for an aid agency. What would you tackle first: rescuing survivors; providing generators; or opening the airport to bring in equipment and rescue workers? Whose help would you require? e.g. teachers, doctors, police officers, water and ICT engineers, managers, cooks, builders and people to pay for supplies. Make a list of what, and who you think, is most important. Justify your answer.
- 10. Civics and citizenship: How would you organise a fundraising activity in your school for natural disaster victims. The Oxfam Education Support for Fundraising booklet may help – http://www.oxfam.org.uk/ education/teachersupport/fundraising_support/
- **11. Debate:** 'Should people, organisations and countries, send aid to countries following a natural disaster.'
 Divide information into yes and no. Using evidence and your opinion propose or oppose the motion.
 Present your motion as an oral report.
- **12. Narrative:** Write an essay on why the impact of the Haitian earthquake was catastrophic. Include: location on tectonic plate; magnitude; epicentre; hypocentre; state of infrastructure; and location to the city with two million people the majority of these people being poor.
- **13. Group work:** Unfortunately recovery had been slow. The poorest country in the Americas was devastated. The world rallied, but not for long – much of the promised aid has not materialised. And while their government falters, many of the 1.5 million displaced Haitians are still sleeping rough (The Guardian). Investigate the long-term recovery of Haiti. Suggest strategies to improve the population's wellbeing.

ICT activities

- Investigation: Refer to the article and answer the questions – http://www.news- media-watch.com/ images/UNICEF-appeal-Haiti-link.jpg
 - a. Discuss the achievements of UNICEF in Haiti. b. Explain the problems of delivering aid.
- **Group work:** Special coverage of Haitian earthquake-Alertnet insight http://www.alertnet. org/thenews/newsdesk/126378336711.htm.

This site covers numerous topics such as: Africans pledge support to devastated Haiti; Haitian girls face increased vulnerability after quake; How could Haiti aid efforts be coordinated better? Doctors perform hundreds of amputations in quake-hit Haiti daily; Q+A with OCHA on Haiti relief; Get people working and not looting says UNDP; U.N. troops guard Haiti's largest food depot; Fuel shortages, damaged infrastructure delay Haiti aid effort; and Haiti's children are the most vulnerable.

In groups select one news item and discuss the issue as an oral report. Determine whether the article is biased or presents different perspectives.

- Photo story: Select 10 pictures from the United Nations photographs. Summarise the 2010 Haiti earthquake as an annotated photo story

 http://www.unmultimedia.org/photo/gallery.
 jsp?query=subject%3A%22Haiti%20Ea rthquake%22
- Mind map why so many people died in Haiti's earthquake – http://news.bbc.co.uk/2/hi/ americas/8510900.stm (comparative study)
- Discuss the phrase 'It's OK to be upset by the news' – http://news.bbc.co.uk/cbbcnews/hi/ newsid_2330000/newsid_2333800/2333893.stm.
- **Explain** how you can learn to understand complex world events http://esrnational.org/special-projects/understanding-world-events/
- Describe how you contact organisations in Haiti to find out what they are doing on the ground or in the field? – http://alertnet.org/db/crisisprofiles/ HT_QUAKE.htm?v=whowhatwhere
- Summarise Project Ushahidi and its advantages http://www.ushahidi.com/





Vespucio Norte Highway, Chile 2010 Source; https://upload.wikimedia. org/wikipedia/commons/6/63/Vespucio_Norte_Highway_after_2010_ earthquake.jpg

YouTube

- Oxfam's work for cash scheme in Haiti (1.16 min)

 http://www.oxfam.org.au/explore/conflict-andnatural-disasters/current-emergencies/majorearthquake-in-haiti
- The Week in Haiti after the earthquake (10.48 min http://www.youtube.com/watch?v=IfBdiFyxKOk
- We are the World 25 for Haiti (8.32 min) 75 artists – http://mashable.com/2010/02/12/we-are-theworld-25-for-haiti/
- United Nations releases Haiti relief appeal (3.57 min)
 http://news.bbc.co.uk/2/hi/americas/8462796.stm

Interactive video

• Haiti's earthquake – http://www.abc.net.au/news/ events/haiti-earthquake/interactive-video.htm

PowerPoint

- Haiti earthquake assembly slides http://www. oxfam.org.uk/education/resources/haiti_earthquake/
- Earthquake hits Haiti http://www.nytimes.com/ slideshow/2010/01/13/world/20100113- HAITI_ index.html

Maps

- Haiti earthquake http://www.abc.net.au/news/ events/haiti-earthquake/map.htm
- Haiti earthquake affected areas outside Port-au-Prince – http://epmaps.wfp.org/ maps/03655_20100122_HTI_A4_OMEP_Haiti,_ Earthquake_Affected_Areas_outside_Port-au-Prince,_21_January_2010-_HIGH_RESOLUTION.pdf
- USAid humanitarian assistance http://www.usaid. gov/our_work/humanitarian_assistance/disaster_ assistance/countries/haiti/template/maps/fy2010/ haiti_01142010.pdf
- USGS earthquakes http://earthquake.usgs.gov/ earthquakes/eqarchives/poster/2010/20100112.jpg

LEFT: Concepcion Chile 2010. Source: https://upload.wikimedia.org/ wikipedia/commons/7/7f/Destruction_in_Downtown_Concepcion%2C_ Chile_%284478649113%29.jpg

Civics and Citizenship: Global Education

- Teaching about the Haiti disaster http://www. globaldimension.org.uk/index.aspx?id=1338; http:// www.teachingcitizenship.org.uk/page?p=101
- Talking about Haiti with children http://www. unicef.com.au/Unicef/SchoolRoom/ForTeachers/ TalkingwithChildrenaboutHaiti/tabid/491/Default. aspx
- Resources for Teaching and Learning about the Earthquake in Hait i– http://learning.blogs.nytimes. com/2010/01/13/resources-for-teaching-andlearning-about-the- earthquake-in-haiti/

Earthquakes

- Resources on earthquakes http://www.geography. org.uk/resources/earthquakes/resources/
- Animated guide on earthquakes http://news.bbc. co.uk/2/hi/science/nature/7533950.stm
- Interactive guide on Haiti's earthquake http://www.guardian.co.uk/world/interactive/2008/ jan/23/earthquakes
- Why was the Haiti earthquake so disastrous? http://news.bbc.co.uk/cbbcnews/hi/ newsid_8450000/newsid_8456900/8456976.stm

- Haiti Earthquake follows years of turmoil http://tv.oneworld.net/2010/01/14/earthquakefollows- years-of-turmoil/
- More information on earthquakes http://earthquake.usgs.gov/earthquakes/ world/?regionID=27

Aid and Haiti earthquake

- Earthquake in Haiti aid starts to arrive interactive map of map with areas receiving aid http://www.guardian.co.uk/world/interactive/2010/jan/15/haiti-earthquake-aid-problems-map
- Global Voices: Community of more than 200 bloggers around the world with an emphasis on voices that are not ordinarily heard in international mainstream media. – http://globalvoicesonline.org/ specialcoverage/haiti-earthquake-2010/
- Disasters Emergency Committee http://www.dec. org.uk/
- Red Cross http://blogs.redcross.org.uk/ emergencies/2010/01/help-not-hinder-haiti/
- UNICEF http://www.tagd.org.uk/Latest/ CurrentEmergencies/EmergenciesHaiti.aspx
- United Nations http://www.un.org/en/ peacekeeping/missions/minustah/



Survivor receives Red Cross humanitarian aid. Source: https://upload.wikimedia.org/wikipedia/commons/e/ec/US_Navy_100125-N-6266K-163_A_Haitian_ earthquake_survivor_leaves_a_local_Red_Cross_distribution_site_after_receiving_non-perishable_items_in_Port-au-Prince.jpg

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- summarising and referencing the work of others
- A focus on the responsible use of social media

is available for purchase from the GTANSW website: www.gtansw.org.au

ILLUSTRATIVE STUDY: A NATURAL DISASTER

Whose fault? Port-au-Prince, Haiti

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Syllabus links, Stage 4: Interconnection: natural hazards and the liveability of places Outcomes: GE4-1; GE4-2; GE4-3; GE4-4; GE4-6

Key inquiry questions: How are people and places connected to other places? What are the consequences of a globally connected world for people and places?

If you look to the right-hand side of the photo below, you'll see a fault line from this aerial photo over Haiti. You can probably see how the land is being pushed or squeezed up – a convergence zone.



Have you ever had to leave your home, because of damage or threats from bushfires, floods, cyclones or storms? Or crime or riots? What options did you have? Who was there to help you and how? If you've never had to evacuate your home, you might need to use your imagination. Even if you have had to evacuate, you might still need your imagination to help you understand the situation for some people in Port-au-Prince, Haiti.

Picture yourself...

No, I'm not asking you to take a selfie. Imagine that you were born on 12 January 2005, in Portau-Prince, Haiti. It's now 2018 and you're 13 years old. You can't remember the earthquake very well, and you can't remember anything about the time before the 'quake. It happened just before 5 o'clock in the evening. You were at your parents' shop. You can remember the violent shaking. The adults had felt minor earth tremors before, but nothing like this. It was scary to see how terrified the adults were. You can remember the crying and screaming, the building crumbling, the noise and the dust, and everything going dark. Your dad was out shopping for goods to sell in the store, and was uninjured. You woke up two days later on the floor of a hospital – there weren't enough beds. A day later, your mother had still not been located, and was declared dead. The following day, her body was pulled from the rubble. Her body was bruised and covered in blood – but she was alive! She was also severely dehydrated, and had some broken bones, but had no life-threatening injuries. Fortunately this might not sound fortunate – she probably went into shock when the earthquake occurred, slowing down her vital functions, and allowing her to survive longer; the body's survival mechanism. You're not sure whether to thank The Catholic saints - maybe Saint Martin, after whom you were named? - or the voodoo spirits, for keeping her alive. All that happened on your fifth birthday. Now, every year, your birthday is a sad day for Port-au-Prince, as people commemorate the earthquake.

You ended up with a scar on your forehead from the earthquake, but some of your friends think that's pretty cool, thanks to a famous movie and book character. Your mother has since fully recovered, except that she walks with a limp. And the 'shop' is now about two kilometres from where you live, in a tent city (on an old golf course). There is no shop anymore. Your parents continue to sell

Illustrative study

clothes outside the front of your old shop building. You went to school off and on for a few years after the earthquake, but you're now old enough to guard the shop when your parents have to be away. You can read basic texts. You speak Haitian Creole (or Kreyòl) fluently. You can also understand quite a bit of Spanish, Portuguese and English, as there are many words from these and other languages in Creole. You're good at understanding languages, and are often asked to translate if a customer doesn't speak Creole.

Night time is the scariest. Sometimes you have to guard the shop after dark, against adults, sometimes armed, and much bigger than you, and sometimes in gangs. In your tent at home, there is little protection from theft, and you keep anything valuable inside your clothes. You sleep with a knife under your 'pillow' (which is a bunch of your clothes). You still

Activity 1

Discuss with a partner how you think Martin, above, might respond. There are some prompting questions at the end of this unit, in Appendix 1, but think of your own responses first. Martin is a made-up person. You can read an account of some survivors of the earthquake at http://www.motherjones.com/politics/2010/11/haitirape-earthquake-mac-mcclelland/ but be warned, parts of the account might be upsetting.

Activity 2

Have a look at the map of Haiti and the region below. Why might Haiti be strategically important, and to whom?



remember the morning you woke up and the knife was gone. All you knew was that someone had got into the tent while you and your parents were asleep, and had taken your knife. Fortunately, they hadn't hurt you or your parents. Among the family's most useful possessions are their two phones. But finding somewhere to charge the battery is always difficult. Your cousins Marie and André live not far up the hill in Pétion Ville, a suburb of Port-au-Prince. Their house wasn't badly damaged. Marie and André go to a local school, and want to go to university. It seems so unfair. Still, your uncle and aunt, even though they're poor, have helped as much as they can, and let your family live with them for a while – but their house was too small for eight people as the kids got older.

Imagine, if someone from the United States or Australia told you 'this is all your fault', how might you respond?

The map doesn't give away many clues. Here are some hints to start your thinking:

The division of the island of Hispaniola into Haiti and Dominican Republic (a reminder of colonization).

Prior to the development of trains, in the first half of the 1800s, long-distance travel was mainly by water (oceans, seas and navigable rivers). The names the Windward Islands, and the Leeward Islands, give hints of this sailing history.

Pirates.; Minerals. (Christopher Columbus noticed that the native Taíno wore gold jewellery.; Slavery; Trade.



Source: https://www.worldatlas.com/webimage/countrys/namerica/caribb/ht.htm

Activity 3

Below is a very brief timeline of some significant events in Haiti's history. Think about how some of them show who 'wanted a piece of' Haiti, and why, and how Haiti's location has affected its history.

600 CE – First humans, Taíno 'Indians', arrive in presentday Haiti, from South America (the Orinoco delta – present-day Venezuela). They named the land Ayiti (land of the high mountains). Their society was organised as hereditary chiefdoms.

1492 – the night of 24/25 December, Christopher Columbus's ship, the *Santa María*, runs aground at Cap- (Cape) Haïtien (northern Haiti, see map). He used materials from the shipwreck to make a fort, which he called Navidad (Christmas). Columbus claimed Hispaniola (the island made up by Haiti and Dominican Republic) for Spain's King Ferdinand and Queen Isabella. Columbus was looking for a westward trade route with 'The Indies' (Asia), hence the names The West Indies, and Indians, for North American native peoples.

1492–1518 – Known as the Taíno Genocide. It is estimated that about 85% of Taíno were already dead when smallpox broke out in 1518, which killed an estimated 90% of the remainder.

1660 – The English, concerned that Pirates had taken over Tortuga (Turtle) Island, put a Frenchman, Jérémie (note the town name in southern Haiti, on the map above) Deschamps, in charge, under condition that he looked after British interests. Deschamps claimed the island for King Louis XIV of France! (Turtle Island is shown as **î**le de la Tortue on the map above, just north of the mainland.)

1664 – The French West India Company is set up to 'run' Haiti (which they called Sainte Domingue).

1697 – The Treaty of Ryswick 'gives' the western third of Hispaniola to France, and the rest to Spain.

1749 – Port-au-Prince established. It was named after a ship, Le Prince. (I'm not sure which, if any, Prince, the ship was named after.)

1751 – An earthquake destroys most buildings in Portau-Prince.

1700s – Sainte Domingue became France's richest colony, known as 'The Pearl of the Antilles' (Antilles, the French term for 'The West Indies' probably means 'the isles on the opposite side' – perhaps of the ocean, or of

the (known) world). The main exports were the cash crops coffee and sugar. During this time, Haiti was central to the trans-Atlantic slave trade. By the 1780s, there were more than 750 000 slaves in Haiti, ruled over by about 32 000 whites.

1756 – 1763 – Britain, and France, and their allies, fight the Seven Years' War – a war that spread globally.

1770 – Earthquake and tsunami in Port-au-Prince kill 300, and another 30 000 later, from famine and disease.

1789 – French Revolution; Declaration of the Rights of [sic] Man.

1790s – First and only ever successful slave uprising/ revolution, led largely by Toussaint ('Allsaint') Louverture, and Jean-Jacques Dessalines, against France's Napoleon Bonaparte. (The US Civil War, which led to the liberation of slaves there, did not occur until 1861–65.)

1804 – Haiti declares independence from France.

1821 – Santo Domingo declares independence from Spain.

1842 – Major earthquake in Cap-Haïtien. Much of the 1800s was characterised by political instability, coups and political assassinations.

1915 – (During World War I) the USA invades Haiti, and occupies it until 1931. The invasion was mainly because Haitian banks owed American banks large sums of money, but the period of occupation also saw some democratic reforms and infrastructure development. The Great Depression decimated the value of Haitian exports.

1957–1986 – Dictatorship under the Duvaliers – François 'Papa Doc' and his son Jean-Claude 'Baby Doc'. They ruled in part by the use of a security force, known colloquially as Tonton Macoute 'Uncle Hessian Bag' – named after a mythical character that takes away naughty children in his hessian bag.

1964 – Hurricane Cleo. > 130 deaths.

1990 – First popularly elected President, Jean-Bertrand Aristide, who rules by force.

1991 – Military coup against Aristide.

1994–1995 – US-led military intervention overturns the coup. Aristide reinstated.

2004 – Aristide resigns/is overthrown in a (US-initiated?) military coup?

2008 – Haiti impacted by four hurricanes (the term used in the North Atlantic and Caribbean for what we call tropical cyclones in Australia): Fay, Gustav, Hannah and Ike (note the alphabetical order and alternate gender names). Deforested hillsides led to severe flooding and mudslides. > 360 deaths.

2010 – 12 January, 4:53 pm. A 7.0 magnitude earthquake hits Port-au-Prince, mainly affecting the downtown (Central Business District) area, largely because the CBD is built on sandy soil, as opposed to the hillside suburbs, on more solid rocky soil. The earthquake killed an estimated 300 000 people. Most buildings were not earthquake-resistant. There had not been a severe earthquake in Port-au-Prince since 1770, that is, 240 years.

2012 – Hurricane Sandy. > 50 deaths.

2016 – Hurricane Matthew. > 500 deaths.

2018 – 11 January (the eve of the eighth anniversary of the 2010 earthquake) US President Donald Trump is reported to have made disparaging (insulting) comments about Haiti and its people.

Below is a picture of Haiti's Parliament building before and after the earthquake in 2010. http://a.abcnews.com/ images/Technology/ht_haiti_ba_9_100115_ssh.jpg You can also watch some dramatic footage of the building during the earthquake at https://www.youtube.com/ watch?v=BiE0gxImOTM The ruins have now all been cleared away. A time lapse of this process can be seen at https://www.youtube.com/watch?v=eoxNMttTAEc



Activity 4

	Haiti	Australia
Population	10 647 000 approx.	
Area	27 750 sq km (It would fit into Tasmania almost 20 times)	
Population density		
Capital	Port-au-Prince	
Main exports	clothes, manufactures, oils, cocoa, mangoes, coffee	
Unemployment	40%	
Life expectancy	64.2 years	
Infant mortality	47 deaths per 1000 live births	
Highest point	Chaine de la Selle (the Saddle) 2,680	
Main religions	Catholic (55%) (official) Protestant (29%)	
	Voodoo (2%) (official)	

Main source: CIA, 2018

About 95% of Haiti's population is of African heritage, which explains a great deal about the extent of the slave trade. Very few people of Taíno descent remain. Statistics are difficult to find.

Illustrative study



Look at the image of the Haitian flag. This one has the centerpiece enlarged, to show more detail. It is based on the French flag, minus the white stripe. Find out about some of the flag's symbolism and history. http://www.newspapercountry.com/Haiti.png



The Haitian currency is called the gourde. Can you find out why? What can you tell about Haiti from looking at this 250 gourde note (featuring Jean-Jacques Dessalines – see timeline), below?

Activity 5

Looking at the photos of Port-au-Prince, below, and Martin's story, above, brainstorm what you believe to be the most urgent problems facing Port-au-Prince. Then discuss possible ways of responding to these problems. Try and devise up to five major response strategies. Determine what you think might be the costs, and the equipment, including personnel and expertise, needed. Who would you consult for advice? There are also some observations by the author at the end of this unit.



The Cathedral was among the buildings destroyed in Port-au-Prince.



In both pictures above, you can see that shopkeepers have 'set up shop' outside the ruins of their condemned buildings.

Activity 6

Draw up two lists, as below, and think of three or four (or more) items for each list – see timeline.

Benefits of US interventions in Haiti	Drawbacks of US interventions in Haiti

Activity 7

'Australia has no moral obligation to help the people of Port-au-Prince.' Discuss.



Children in Pétion Ville, suburban Port-au-Prince, getting their shoes shone before school.

Activity 8

To think about: 'Haiti's slave uprising/revolution in the 1790s was inspirational and influential, if not instrumental, in the abolition of slavery in the USA (1861-65) and the world. That is Haiti's gift of civil-isation to the world. The world has an obligation to help Haiti in its time of need.'

Provocation: Is there anything you are a slave to? (maybe your phone or other gadgets, or clothes, or accessories, hobbies or (watching) sport, or ...?) Could you devote a bit of the money or time you usually spend on those instead to help other people, in Haiti or elsewhere, as a gesture of solidarity and action against slavery? Maybe organise something at your school.

Appendix 1

Prompts for Martin's story

- Think of the heading in this unit 'whose fault?'
- If locals (including Martin's cousins) haven't helped, why should we?
- Should rich countries in the area, e.g. the USA and Canada, provide most of the aid? Should Australia look after its own region instead?
- Should France and the French-speaking world, bear some responsibility?
- Should the Catholic Church help?
- Maybe all of the above, and others?
- How might helping be an *investment*? How might it help Martin to get a better education (remember, he's good with languages, so would probably be fairly good at school, given the opportunity)? Might that then help Martin and his family to earn more money, and pay more taxes, to raise their own standard of living, and that of all Haitians?

Appendix 2

Author's observations on downtown Port-au-Prince, January 2018

I've travelled widely, and it takes a lot to shock me these days. But nothing prepared me for downtown Port-au-Prince. Some of the images are much more stark than the ones included here. My experience adds a whole new meaning to the word 'aftershock'. Eight years after the earthquake, little seems to have been done to help the commercial enterprises of Port-au-Prince. Government buildings are being rebuilt, but the commercial area appears much as it must have just after the 'quake. Given that the area affected is relatively small, a budget for repairs would be also relatively small, in international aid terms. A local observer commented: "For you to address the housing problem in Haiti, you also have to address all of the other problems in Haiti — employment, investments, education. All have to run parallel" (Charles, 2015).

And yet, progress is being made, even if too slowly. The Guardian (2014) reported that, "according to the IOM [International Organisation for Migration], 171,974 people – down from 1.5 million – were living in ... lean-tos [makeshift tents]".

One possible response that occurred to me, was, if not to reconstruct the shops as they were, with more earthquake-resistant buildings, might be to construct covered marketplaces, with stalls inside. (Think Paddy's Markets in Sydney, or Victoria Markets in Melbourne.) Given that the weather is never cold in Port-au-Prince, the buildings would not need solid walls of brick or similar. Some form of sealing the building would be necessary in the event of hurricanes, though. This would allow commerce to take place in a safe and dignified manner, and under protection from the hot tropical sun and heavy tropical rains. This would also permit commerce, the profits of which would be taxed by the government, and/or the government could lease the stalls to shopkeepers at a nominal rate, also generating government income. Here's an image of such a structure already in Port-au-Prince.



Once Port-au-Prince returns to a safer state of commerce, cruise ships might be more likely to dock there, further boosting commerce. Cruise lines might like to adopt the term 'New Port-au-Prince' to attract travellers.

Educating the world about Haiti is crucial to its recovery. Someone might like to dramatise in novel or film form, the Haitian slave uprising. Surely this would resonate with people worldwide. Any novelists or film directors out there? Some of the profits might be devoted to
Illustrative study



Cap Haïtien, Haiti. Source: Wikimedia Commons

Port-au-Prince repair works. Many individuals and corporations have already made a good deal of profit from the *Pirates of the Caribbean* franchise. Some existing profits might be devoted to the repair works?

Final thoughts: Thinking back to Martin's story, above, it seems that a generation of children has grown up/ is growing up in central Port-au-Prince, who have experienced anarchy and poverty as *normal*. Hopefully it's not too late to rescue this generation of children from becoming angry, bitter and perhaps violent adults, thereby perpetuating the system. Repairing the infrastructure might be a relatively straightforward way of creating 'a better kind of normal'. I'm appropriating an old slogan for a laxative product in using that expression. I'll resist the urge to make a reference to US President Donald Trump's alleged comments about Haiti.

Part of the response needs to be political. Perhaps urge local and other politicians to keep Haiti in mind in terms of international development aid.

If you donate money to an organisation, such as World Vision, The Red Cross or UNICEF (there are many others as well), you might like to specify that the money goes to Haiti.

At least two days appear to have been set aside in the cause of abolition of slavery: 10 October and 2 December. Perhaps use these days to raise awareness of Haiti's circumstances and history.

Maybe support Haiti by travelling there one day. Hopefully, by the time you're old enough to travel independently, Port-au-Prince might be in better shape. Even if you don't visit Port-au-Prince, you could travel, perhaps on a cruise liner, to Cap Haïtien, which is undamaged and beautiful.

RIGHT: Cap-Haitien, Haiti (Feb. 2, 2010) Red Cross volunteers carry an evacuated patient from a helicopter. Source: Wikimedia Commons

References, further reading

Note: Many of these make for depressing reading. The most positive is probably the Guardian report.

Antillean Media Group (2015). Are Haiti's tent cities being forgotten? Retrieved from https://www.antillean. org/are-haitis-tent-cities-being-forgotten-125/

Charles, J. (2015). Tens of thousands still living in tents 5 years after earthquake. Miami Herald. Retrieved from http://www.miamiherald.com/news/nation-world/world/americas/haiti/article6005817.html Journalists and newspapers such as the Miami Herald are to be congratulated for continuing to report on the situation in Port-au-Prince.

CIA (2018). World fact book: Haiti. Retrieved from https://www.cia.gov/library/publications/the-worldfactbook/geos/ha.html

The Guardian (2014). Port-au-Prince: Collision of ideals and aid has yoked progress. Retrieved from https:// www.theguardian.com/cities/2014/jan/27/port-auprince-collision-progress-haiti-earthquake

McClelland, M. (2011). Aftershocks: Welcome to Haiti's reconstruction hell. Mother Jones. Retrieved from http://www.motherjones.com/politics/2010/11/haiti-rape-earthquake-mac-mcclelland/

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Photos: Collection of the author unless otherwise specified.



COMPETITION



Australian Marine Environment Protection Association

NSW – Year 7 & 8 Geography

Stage 4 'Interconnections' Unit of Work

It's never been easier for students to use and apply spatial technologies.

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A unit of work has been written for you, in line with the National Curriculum.



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"We are currently working on the unit. Last week we were able to visit the Port and I am a few lessons into the unit you have written up. The content is relevant, and the kids are enjoying doing and seeing something different. There are lots of geographic skills that they can practice, and the websites and activities are interactive"... Darwin

"Please pass on my congratulations to your writer(s), the tasks engaged my class and stimulated lots of discussion. Fantastic Unit!" Bunbury Senior High School

About the competition

The competition, can begin from Term 1 through to Term 3 in 2018.

The unit of work will also involve a class, group or individual communication project which to be submitted to AUSMEPA and your closest port. The group communication project will be judged by a panel and first place is a prize for the Geography Department of \$1500. At this stage, there will be opportunities to promote the competition and the winners, by the port and the schools.

The unit of work is supported entirely by online data. Everything students need for their learning experience is online. They will interpret graphs, tables of data and manipulate online maps choosing overlays that explain what they intend to communicate. Students will use geography skills to explore, question and discover why ports are a major component of interconnecting places, trade and consumption.

If you and your school is interested in participating, please email Julie. In 2017 other states participated and teachers and students alike loved this unit. For further information and student's submissions see **We are Ports**

Contact

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LANDSCAPES AND LANDFORMS: DESERTS



OLDEST, FOGGIEST DESERT, HIGHEST SAND DUNES

The Namib is a narrow coastal desert, located lengthways along the Atlantic Coast of South West Africa. The desert stretches for 1,900km incorporating countries such as Angola, Namibia and South Africa. It subsequently extends inland to meet the Kalahari Desert in Botswana.

The Namib is thought to be the oldest continuous desert in the world, as it has endured an arid climate for 50 – 80 million years. This lengthy dry period influenced the evolution of endemic plants (e.g. Welwitschia) and animals (e.g. Barking Gecko).

DEM. REP. TANZANIA Indian OF THE CONGO Ocean ANGOLA Atlantic Ocean MOZAMBIOUE ZAMBIA Namib MALAWI ZIMBABWI Desert BOTSWANA NAMIBIA Kalahari Desert SWAZIEAND SOUTH LESOTHO Benguela Current

Map showing the desert region of Southern Africa

Source: C knoll, Geography in the News
Namib-Naukluft National Park



The onshore winds are responsible for creating towering sand dunes, with some over 300 metres high. However, different types of dunes and their colour varies across the Namib Desert:

- Inland dunes: Deep orange stabilised dunes have evolved over time. The iron in the sand has been oxidised, contributing to the colour.
- Coastal dunes: The prevailing coastal winds enables greater movement of the sand. This has resulted in lighter coloured dunes, as the oxidation process has lacked sufficient time to develop.

The Namib Desert contains the Namib-Naukluft National Park that was the location of the movie '*Mad Max Fury Road*'

Source: https://voices.nationalgeographic.org/2014/08/18/geography-in-thenews-the-strangest-desert/

Director George Miller shot the film *Mad Max: Fury Road,* on location in Namibian deserts to capture post-apocalyptic visuals



Photograph: http://www.traveller.com.au/content/dam/images/1/m/d/l/w/ image.related.articleLeadwide.520x294.1mcxrv.png/1431647076865.jpg

Image: source: Wikimedia Commons

LOCATION AND FORMATION OF THE NAMIB DESERT

Location: South-west side of Africa between 30° S and 15° S

Reasons for formation of the Namib Desert

ATMOSPHERE HYDROSPHERE HIGH PRESSURE SYSTEM BENGUELA COLD CURRENT The area is dominated by strong Ocean current flows northwards from South Atlantic high pressure systems. cold South Pole towards Equator, along A high pressure system or an-SW coast of Africa. ticyclone, lies around latitudes The cold upwelling water, rich in 30°S-15°S. nutrients, attracts a diversity of marine species. **EFFECTS ON LAND EFFECTS ON LAND** Winds moving around a high Cold ocean currents forms fogs that sometimes reach 100km inland. Lowers pressure system tend to blow temperatures, near the coast.

Fogs are an important source of moisture for desert ecosystem

pressure system tend to blow offshore and are therefore dry. Few clouds form to produce precipitation. Both factors contribute to the formation of a desert biome.

HYDROSPHERE: BENGUELA OCEAN CURRENT

The Benguela current is where you encounter the ocean's ultimate predator, the great white shark. Attracted to the nutrient-rich cold waters that contain vast kelp forests, the current provides food for diverse marine species such as the Cape clawless otters.

BENGUELA UPWELLING SYSTEM

It was established 5–10 million years ago. The upwelling brings cool, nutrient rich water from the bottom of the ocean up into the upper water layers at the coast.

The nutrients contribute to high rates of phytoplankton that sustains the productive Benguela ecosystem. However about once per decade, thick warm, nutrient poor water, enters the northern part of the Benguela upwelling system. This is referred to as the Benguela Niño that is similar to the Pacific El Niño.

Diagram: Benguela current



Source: https://www.quora.com/How-do-oceans-regulate-temperature

Agrine Box January Hole January

Temperatures of ocean currents

u/modules/oceancurrents/images/ c01_20080203_ostia_sst.jpg

ACTIVITIES

- Discuss the main reasons for the formation of the Namib Desert. Present reasons as an oral report.
- In groups, investigate the Benguela current and its importance to the marine ecosystem. Present as a diagram

ATMOSPHERE: BENGUELA CURRENT AFFECTS LAND

Climatically, the Namib Desert is puzzling. Though it receives less than 10mm of precipitation a year, the air is frequently saturated, with fogs

FOG

The fog is formed by the following process:

- 1. Cold Benguela current interacts with warm moisture above the sea
- 2. Atmosphere cools to form fog
- 3. Prevailing onshore winds push the fog inland, into the desert

Swakopmund on Namibia's Atlantic coast experiences about 300 days of fog each year. The fog forms in the early morning and remains until about 10am when it gets sufficiently warm to clear the fog

Swakopmund, Namibia





Sand Sea

The Sand Sea, is a UNESCO World Heritage Site. It receives more than 180 days of fog a year. Desert plants like Welwitschia take water from the fog through its roots, and the Namib Beetle harvests water by pushing its bottom up into the air. Fog condenses on its behind and water droplets drain towards its mouth. Another example is the Lepidochora porti beetle that digs trenches in the sand which collects fog-a valuable source of moisture

Diagram: Namib beetle



http://www.bing.com/images/search?view=detailV2&ccid=Sn3kCzGE&id=8 A3F0DD894764742BF87355B80D8E4C180F2336C&thid=OIP.Sn3kCzGEyzEyd jVpjXFdagHaGn&q=Namib+beetle&simid=608048056994631433&selectedI ndex=63&aiaxhist=0

ICT ACTIVITIES

- YouTube: How the Benguela Upwelling system works – https://www.youtube.com/ watch?v=8C9p6_qxgEl
- Namibian coastline http://www.nacoma.org.na/ about-our-coast/namibias-offering.php
- Protecting Benguela Current Large Marine Ecosystem Project – https://stories.undp.org/ protecting-benguela- together
- Namib Beetle http://jerryscience7collingwood. weebly.com/group-project.html

ATMOSPHERE: DESERT CLIMATES

Coast: Swakopmund, The Skeleton Coast

Swakopmund	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Minimum Temperature (°C)	15	16	15	13	11	11	9	9	10	11	13	14	
Maximum Temperature (°C)	20	21	20	18	18	20	18	16	16	16	18	19	
Sea Temperature (°C)	17	17	17	16	15	14	14	14	14	14	15	16	
Precipitation (mm)	1	2	2	2	0	0	0	0	0	0	1	0	8
Days of precipitation	0	0	0	1	0	0	0	0	0	0	0	0	1

Coastal area:

- Annual precipitation 2–20mmpa. Rarely rains.
- Thick fog for more than 180 days a year.
- Temperatures are low as a result of the cool air coming off the Benguela Ocean Current.
- Daily (diurnal) and seasonal temperature changes are low. Daily difference only 2°C- 5°C
- Only in the northernmost part of the Skeleton Coast, does the ocean becomes warmer. It reaches 23°C in March.



Lighthouse & State Building, Swakopmund. Source:https://commons. wikimedia.org/wiki/Swakopmund#/media/File:Leuchtturm_Swakopmund.jpg

Inland: Tsumeb, Namibia

Tsumeb	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Minimum Temperature (°C)	18	18	17	15	11	8	8	10	15	18	18	18	
Maximum Temperature (°C)	31	30	29	28	26	24	24	27	31	33	32	31	
Precipitation (mm)	120	140	80	40	6	0	0	0	1	20	55	95	556
Days of precipitation	12	12	9	5	1	0	0	0	0	3	6	11	59

Tsumeb, is located in the north of the Namib Desert reaching 1,300masl. It is the wettest area in country. Nearby is Etosha National Park, where the Etosha Pan (salt lake) is located. The Pan is dry most of the year, but becomes a shallow lake during the rainy season.

Inland area:

- Annual precipitation-maximum of 85mmpa in some places
- Fog is rare
- Daily and seasonal temperatures have large variations. Temperatures vary from below 0°C to above 50°C
- Because of the cooling influence of the sea on the coast in summer, the temperatures inland are higher than on the coast



Downtown Tsumeb. Source: https://upload.wikimedia.org/wikipedia/ commons/9/97/Downtown_Tsumeb.jpg

ACTIVITIES

- Draw and label the two climate graphs.
- Compare the following:
 - temperature range in Swakopmund and Tsumeb
 - annual precipitation and days of precipitation in Swakopmund and Tsumeb
 - provide reasons for the differences



Average annual rainfall in Namibia

http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/ climate/rainfall-annual.jpg

ACTIVITIES

- Using the map, calculate the difference in average annual precipitation between Walvis Bay and Windhoek.
- Using statistics, describe the variation in precipitation from the west coast to north east Namibia

SKELETON COAST: WHERE OCEAN MEETS DESERT

The Skeleton Coast is a challenging but aesthetically beautiful landscape. Here the icy surf from the Atlantic Ocean pummels the SW African coast, and the dry desert winds from the east produces less than 10mmpa of precipitation.

The Bushmen of the Namibian interior called the Skeleton Coast '*The Land God Made in Anger*' and Portuguese sailors referred to it as '*The Gates of Hell*'. For centuries, the Skelton Coast has lived up to its sinister name, haunted by huge bleached whalebones, crumbling shipwrecks and dead plants and animals.

The Skelton Coast's name originates from:

- Whale and seal bones that were remnants of the industry
- Skeletons or wrecks of ships that fell victim to hidden rocky outcrops and dense fog. More than a thousand vessels litter the coast, notably the Eduard Bohlen, Benguela Eagle, Dunedin Star and Tong Taw.



Photograph: https://wild-wings-safaris.com/s3_local/all/940/ship_skeleton,_ skeleton_coast.jpg

THE SKELETON COAST: MARINE AND TERRESTRIAL ENVIRONMENTS CONVERGE

WATER

Marine

Benguela current carries sand northwards, to be deposited back onto land by the ocean's surf. Wind then carries sand inland to form dunes.

Terrestrial

Coastal fogs provide moisture for lichens and other desert flora. Underground water nourishes vegetation, and provides water for animals. West flowing rivers such as the Hoarusib and Uniab rivers, called linear oases, allow species to move between coast and inland areas, and vice versa

LANDFORMS

Marine

Waves produce sand dunes (fordunes, cusps), and sand grains move via longshore drift northwards.

The Benguela current produces some of the longest surf barrels in the world.

These high erosive waves produce prime surf sports for board riders.

Terrestrial

The Skeleton Coast contains different types of sand dunes e.g. hummock, traverse and crescent. It also has rugged canyons and coloured volcanic rocks.

Dunes shift at a speed of up to 15 metres per year. As they move they 'roar'. This is caused by air trapped between billions of grains of sand that creates a low rumble resembling a low flying airplane



Namib Desert meets the sea. Source: https://i2.wp.com/lh5.ggpht.com/-x-4oahYr4ao/UWO4tZf0Etl/AAAAAAAAJI/Aw9DdSy2yCw/namib-desert-meets-sea

ECOSYSTEMS

Both the coastal desert and the Benguela cold ocean current possess abundant but different plant and animal species.

Marine

The Benguela Current Large Marine Ecosystem (BCLME) is one of the richest ecosystems on Earth. The nutrientrich ocean off the Skeleton Coast attracts prolific bird life.

Coral, wetland and mangrove ecosystems provide a diversity of fish species.

Terrestrial

Despite aridity, animals abound. The Skeleton Coast National Park (SCNP) is home to gemsboks (oryx), springboks, jackals, hyenas, lions, giraffes, zebras, ostriches, rhinos and elephants. The SCNP is an important ancient wildlife migration route to Etosha National Park. Many wildlife species rely upon west flowing rivers (known as 'linear oases') that pass through the Park

ACTIVITIES

- Explain how the marine environment impacts on the terrestrial environment.
- Compare the different ecosystems at the Skeleton
 Coast

THE SKELETON COAST: MANAGING MARINE AND TERRESTRIAL ENVIRONMENTS

The Namib Desert is protected in a series of National Parks, World Heritage Sites, Recreation Areas and Protected Diamond Areas.

MANAGING MARINE ENVIRONMENT

The Benguela Current Large Marine Ecosystem (BCLME) produces a diversity of species such as fur seals, whales, and migratory seabirds that serve as prey for the Skeleton Coast's lions. Up to 250,000 Cape fur seals gather at Cape Cross Seal Reserve-one of the biggest seal breeding grounds.

The marine environment is vulnerable to destruction from human activities such as fishing, boats, mining, and land pollution that runs off into the ocean and destroys habitats.

Aimed to protect the BCLME, the governments of Angola, Namibia and South Africa established the transboundary Benguela Current Commission (BCC). The three countries, in partnership with the United Nations Development Partnership (UNDP) and Global Environment Facility (GEF) are working to sustainably manage the ecosystem, such as the Namibian Dolphin Project

MANAGING TERRESTRIAL ENVIRONMENT

The Skeleton Coast National Park, was proclaimed in 1971. In its present form it extends from the Ugab River in the south to the Kunene River in the north. The park protects about one third of Namibia's coastline. It possesses wind swept dunes, roaring and fossilised dunes, ancient lava flows, volcanic rugged canyons, mountain ranges, castles of clay and saltpans.

There are plans to extend the Park to include the entire Namibian coastline and rename it the Namib - Skeleton Coast National Park (NSCNP). This park aims to become the sixth-largest terrestrial protected area globally, covering an area of 107,540 km²

The Park an example of conservation on a grand scale as it protects some of the most varied and extraordinary ecosystems in Namibia

> Left: At Walvis Bay, flamingos are attracted to the nutrient rich Atlantic Ocean upwellings (J. Bliss))



MANAGING THE NAMIB SAND SEA: WORLD HERITAGE SITE

The Namib Sand Sea is the only coastal desert in the world that includes extensive dune fields influenced by fog. Over millions of years, the massive dune field was developed from the physical processes of erosion, transportation and deposition. It encompasses fluvial (river), marine (ocean currents) and aeolian (wind) processes, as well as chemical weathering such (e.g. exfoliation of rock surfaces from the extreme daily range in temperature).

Map: Location of the Namib Sand Sea



Source: https://www.africanworldheritagesites.org/assets/files/Maps_and_ Satellite_Images_of_the_Namib_Sand_Sea_World_Heritage_Site_includi ng_Sossusvlei.pdf The Namib Sand Sea was declared a World Heritage Site in 2013. It lies along the arid African coast of the South Atlantic lying wholly within Namibia's Namib - Naukluft Park.

'It is the only coastal desert in the world that includes extensive dune fields influenced by fog. Covering an area of over three million hectares and a buffer zone of 899,500 hectares, the site is composed of two dune systems, an ancient semi-consolidated one overlain by a younger active one. The desert dunes are formed by the transportation of materials thousands of kilometres from the hinterland that are carried by river, ocean current and wind. It features gravel plains, coastal flats, rocky hills, inselbergs within the sand sea, a coastal lagoon and ephemeral rivers, resulting in a landscape of exceptional beauty. Fog is the primary source of water in the site, accounting for a unique environment in which endemic invertebrates, reptiles and mammals adapt to an everchanging variety of microhabitats and ecological niches'

Source: http://whc.unesco.org/en/list/1430

ACTIVITIES

- Summarise the slideshow on the Namib Sea Sand

 http://www.africanworldheritagesites.org/naturalplaces/deserts/namib-sand-sea-namibia3.html
- Explain why the Namib Sand Sea was declared a World Heritage Site. Present as a media report

DESERT LANDSCAPES AND LANDFORMS

The Namib Desert is ancient. It dates back, about 37 million years, when the cold, desert- forming Benguela Ocean current started to flow. Since this era, wind patterns and dune patterns have shifted. With drier climates and stronger winds, north-oriented dunes have moved north and east. However, nature has not removed the old sand dunes. Instead these older dunes form the rectangular dune network, observed today.

WINDS SHAPE LANDFORMS

There are different types of sand dunes in Namibia such as linear, crescent and star. The crests of the sand dunes are aligned in a northwest-southeast orientation. The dunes are moving northwards, driven by prevailing southerly winds. Famous dunes include Big Daddy, and Dune 45 (located 45 kilometres from the Sesriem gatemain entrance to Namib-Naukluft National Park).

Namib-Naukluft National Park

Big Daddy sand dune, red Sossusvlei Lake (dry clay pan), world heritage area (Photo: J. Bliss)



Dune 40, world heritage Photo: (J/S Bliss)



Star dunes

The result of weaker multidirectional winds



Source: https://au.pinterest.com/susannejanecke/geology-dunes-yardangsand-arid- processes/?lp=true

Linear dunes

Are generally aligned parallel to the predominant wind from the south. The dunes move north until they come across a barrier, such as the Kuiseb River



https://www.nasa.gov/image-feature/linear-dunes-namib-sand-sea

TSAUCHAB RIVER AND ITS LANDFORMS

The Tsauchab River, an ephemeral stream, is approximately 100 km long. From the river's source in the Naukluft Mountains it erodes and transports material, until it meets sand dunes that prevent the river flowing any further. These sand dunes, located at Sossusvlei in the Namib-Naukluft National Park, are the highest in the world.

The Tsauchab River seldom flows as far as Sossusvlei and Deadvlei, except after rain in Naukluft Mountains. The pans then become filled with water and a lake appears. The pan is called a vlei which is a large shallow hollow that fills with water during infrequent rains.

http://www.africanworldheritagesites.org/assets/files/Namib%20Sand%20Sea%20-%20Sossus%20Vlei%20Brochure.pdf



Aerial view of the Tsauchab River

Sources: https://emorfes.com/2015/10/20/satellite-images-get-an-aesthetic-makeover/a-namib-desert-africa/Sossusvlei

The Tsauchab River flows through Sesriem Canyon, Sossusvlei and Deadvlei.

Deadvlei was once an oasis, now a white clay pan located between towering orange dunes. The dead acacia trees are between 600 and 700 years old.



Source: https://upload.wikimedia.org/wikipedia/commons/2/21/ Baumgruppe_Deadvlei_Sossusvlei.JPG

Sesriem canyon, was formed by the Tsauchab River. Over the past two million years the river carved a 1km long and 30m deep canyon in sedimentary rock. Past the canyon, the Tsauchab River flattens and grows broader, and is surrounded by a riparian forest as it slopes towards the Sossusvlei salt pan (Photo: J/S Bliss)



GRAVEL PLAINS, SALT LAKES, MOUNTAINS, DEEP CANYONS

Naukluft Mountains

Located on the eastern edge of the central Namib Desert contain numerous, largely inactive, fluvial tufas within headwater streams of the ephemeral Tsondab River which currently terminates in a vlei in the Namib SandSea



Photo: (J/S Bliss)

Organ Pipes

Volcanic basalt rock formations near Twyfelfontein in Damaraland



Source: http://thevagabondadventures.com/us/twyfelfontein-to- sesfontein-photo-diary

The Spitzkoppe

A group of bald granite peaks or inselbergs located between Usakos and Swakopmund in the Namib desert.. The highest peak is 700 metres.



Source: https://upload.wikimedia.org/wikipedia/commons/8/83/ Spitzkoppe_Sonnenaufgang.jpg

Satellite: Brandberg Mountain

Namibia's tallest mountain, a granite massif which rises 1728m above sea level



https://commons.wikimedia.org/wiki/File:ISS-47_Brandberg_Mountain,_ Namibia.jpg

Fish River Canyon

A gigantic ravine, located 30km to the west, Karas region, southern Namibia. The canyon is 160km long, 27 km wide and 550 meters deep.



https://commons.wikimedia.org/wiki/Fish_River_Canyon#/media/File:Fish_ River_Canyon_Namibia.jpg

GEOMORPHIC PROCESSES SHAPE DESERT LANDFORMS

The desert experiences continual erosion and weathering which forms different types of landforms such as:

- REG (sandy desert)
- ERG (stony desert)
- HAMADA (rocky desert)

Geomorphic processes also shape landscapes displaying desert pavements, inselbergs and saltpans.

Satellite image: Kuiseb River nears the ocean



SAND STORMS SHAPE DESERTS

- Sand storms are common in June, July and August
- Sand storms appear regularly in regions with dry conditions and scarce vegetation
- South of Kuiseb River, giant sand dunes march northward, driven by winds

Satellite image: Tendrils of dust swept off the west coast of Namibia and spread over the Atlantic in early July 2005. To the north and east of the dust is the Etosha Pan, a low expanse of land filled with clay, silt, and mineral salts. In this image it appears as a white rectangular shape.

Satellite image: West coast of Namibia



NASA image. Source:https://commons.wikimedia.org/wiki/File:Namibia. A2002221.0920.1km.jpg

At left a natural-colour satellite image of the Kuiseb River. Around Walvis Bay, where the Kuiseb has traditionally drained into the sea, salt works appear as rectangular shapes of orange and brown. Nearby shallow water appears green. Irregularly shaped dark patches indicate standing water on the desert surface where water has apparently pooled at the end of the Kuiseb River. In the east, the river's braided channels resemble dark, tangled threads. Image at left – Source: https://commons.wikimedia.org/wiki/File:Kuiseb_ River_Nears_the_Ocean.jpg

Swapkomund Saltpans



Source: http://ellybrooksphotography.com.au/wp-content/uploads/2014/10/ Photo25252020141005183544-3.jpg

THREATS TO NAMIBIAN DESERTS

- CLIMATE CHANGE, increases droughts and higher temperatures. This produces more wildfires that alter desert landscapes. It eliminates native slow- growing trees and shrubs, and replaces them with fastgrowing introduced grasses
- **MINING** uses Potassium Cyanide in gold extraction process, oil and gas production, dumped nuclear waste and nuclear testing. These activities poison wildlife and disrup ts sensitive ecosystems.
- LICHENS are sensitive to mechanical damage as they grow and repair slowly. Mining company vehicles on prospecting expeditions, cause most damage
- **TOPNAAR PASTORALISTS** overgrazed goats and donkeys over the Kuiseb Riverbed and along the edge of the dunes. It resulted in a decline in understory plant growth
- WATER TABLE DROPPED, along Kuiseb River from over extraction for domestic consumption and the Rossing Uranium Mine.

If water is found, roads, pipelines and powerlines would need to be constructed through the pristine dune desert

- **TOURISM** to the Namib-Naukluft National Park, one of the largest game reserve in Africa. The prominent attraction is the Sossusvlei area, where high orange sand dunes surround white salt pans
- OFF-ROAD DRIVING has greatest impact on gravel plains where vehicle depressions remain for more than 40 years, because rainfall is too episodic and sparse to erase them

ACTIVITIES

- Using ICT, design an annotated collage of desert landforms in Namibia.
- In groups, describe the threats to Namibian Deserts, and suggest strategies to manage these threats.
 Present as an oral report

NAMIB DESERT BIODIVERSITY

Plants have adapted to an arid environment

Despite aridity a diversity of succulent plants exist, such as the shrub *Welwitschia mirabilis* that has only two leaves and can live for over 1,000 years! In fact Welwitschia plants possess the longest-lived leaves in the plant kingdom. It is estimated that some Welwitschia plants are about 2,500 years old

Namib Desert is a living place. Animals have adapted to an arid environment, including the mountain zebra, gemsbok, short-eared elephant shrew and Karoo bustard. Lions of the Namib, live mostly at the northern edge of the desert. They survive in extreme conditions, feeding on gemsbok, ostriches, and seals captured along the Skeleton Coast.



Botanical illustration and a Welwitschia in the petrified forest of Khorixas Source: https://en.wikipedia.org/wiki/Welwitschia#/media/File:Welwitschia_ mirabilis0425.jpg

ACTIVITIES

- In groups, investigate how deserts in Namibia are alive with plant and animal species. Present as a photo story.
- On gravel plains and rocky outcrops close to the coast, lichens are endemic and an important link in the food chain. Draw a lichen food web in a desert environment.
- Inland after rain, gravel plains support annual grasses that attract abundant herds of wildlife to the area. Research five animals that are attracted to the grasslands.
- In 2016 three desert-adapted lions were killed after being poisoned in a Namibian human-wildlife conflict incident. Research the incident and steps taken to conserve these species. http://www. wilderness- safaris.com/blog/posts/a-humanwildlife-tragedy-namibia-s-desert-lions

DESERT INHABITED BY TRADITIONAL HIMBA PEOPLE

A large proportion of the Namib Desert is unused and unoccupied, except for indigenous pastoral groups-Ovahimba (Himba) near the Skelton Coast, Obatjimba Herero in the north, and Topnaar Nama in the central region. These pastoralists, living a traditional lifestyle, herd livestock between water holes.

The innermost steppes in the southern half of the desert consist of private farms, operated by Europeans using local labour, devoted to raising Karakul sheep. Most of central and northern Namib has been set aside for recreation and conservation. Additionally mining for diamonds and uranium occurs across Namibian deserts

The Himba;

- Since the 16th century Himba have lived in scattered subsistence settlements. Today most of Namibia's Herero have become sedentary to breed cattle and subsist on the milk and meat of their animals.
- There cone shaped houses are made of mud, cow dung and mopane trees to withstand the desert's extreme temperatures. Their main food is porridge made from either maize or manhangu flour.
- The Ovahimba are polygamous. They practice child marriages, with girls aged ten or younger. Boys are circumcised before puberty. They worship the God Mukuru and their clan's ancestors.



- They apply an ochre and butter mix to their bodies to protect their skin from the sun. Their hair is braided and covered with a special ochre mixture called 'otji'. They wear goat skins and jewellery made from leather, metal and shells.
- Traditionally women do not wash themselves, choosing instead to use aromatic plants, but undertake a 'smoke bath' daily.
- The women's role includes raising children and milking cattle, while men herd sheep and goats.

CONTROVERSIAL ISSUE: BUILD OR NOT BUILD DAMS

NAMIBIA: AN ARID COUNTRY, AFFLICTED BY DROUGHTS

Namibian Government addresses water scarcity

Large rivers only flow along Namibia's northern and southern borders, and are a long distance from population centres and mines, which are large water users.

In order to confront this challenge the government has:

- Built dams to capture water flow from ephemeral rivers
- Constructed pipelines to transport water over long distances
- Pioneered potable water reuse in its capital city
 Windhoek
- Built sub-Saharan Africa's first large seawater desalination plant to supply water to a uranium mine and the city of Swakopmund

Main sources of water in Namibia:

- Fog
- Groundwater, ephemeral rivers and perennial rivers
- Kunene River provides drinking water for northern
 Namibia
- Developments planned for Omdel Scheme and the Lower Kuiseb aquifers. Aimed to supply sufficient water for the next 20 years to the central area

Kunene/Cunene River

Over decades, the Namibian government has intended to build a hydroelectric scheme on the Kunene River.

The Kunene River is one of five perennial rivers in arid Namibia. This precious resource has for centuries supported the semi–nomadic Himba people.

The Himba community opposes the Government's plans to construct the Epupa dam on the Kunene River, as dam will flood the valleys where they live and their burial grounds, as well as threaten ancient traditions and lifestyles.

In 2014, the Himba marched in protest against the dam.

In 2017, the chief of the Ovahimba community in the Epupa area faced a leadership challenge over his decision to drop his opposition to the proposed hydroelectricity scheme near Epupa Falls (https:// www.namibian.com.na/168440/archive-read/Himbabrothers-fight-over-leadership)

Map: Epupa Dam location



Source: https://www.internationalrivers.org/sites/default/files/styles/600height/public/images/campaign/admin-old/map.jpg

IMPACTS OF EPUPA DAM ON KUNENE RIVER

The Epupa Falls, created by the Kunene River, are located on the border of Angola and Namibia. The river is 0.5km wide and drops in a series of waterfalls, with the greatest drop at 37m. As the lush banks of the Kunene River contrast starkly with the surrounding desert, it is a haven for diverse wildlife, such as crocodiles and rhinoceroses.

Impacts will include:

LOSS OF RIVERINE RESOURCES

The inundation would destroy the riverine forests, and result in the loss of hundreds of tonnes of palm nuts. The fruit can be eaten and used to brew drinks, similar to whisky. The Himbas peel the outer skin of the seed and make objects of art to sell.

LOSS OF MARKET GARDENS

The alluvial soils along the Kunene River are prime commercial agricultural locations. About 75% of Himba households engage in commercial agriculture to produce supplementary food

LOSS OF WILDLIFE

The wildlife would move elsewhere and be lost as a community resource

LOSS OF ANCESTRAL GRAVE SITES

A dam at Epupa would flood 160 graves. Graves demonstrate a continuity of settlement and long term ownership of the land

Epupa Falls on Kunene River



Source https://en.wikipedia.org/wiki/Cunene_River#/media/File:Epupa_ Falls_3.jpg

INCREASE IN WATERBORNE DISEASES

The Epupa dam is expected to produce higher incidences of malaria and bilharzia (schistosomiasis), a disease caused by a parasite associated with still or slow–flowing water.

LOSS OF CONTROL OVER AREA

Poses a serious threat to Himba culture and their livelihoods

ACTIVITIES

- List the main sources of water in Namibia.
- Explain how the government has provided water to the Namibians over time.
- In groups list the economic, social and environmental advantages and disadvantages regarding the construction of the dam on the Kunene River. Present as a table

DID YOU KNOW?

- The name Namib, is from the Nama language meaning 'immense'.
- Namib-Naukluft National Park is the largest game park in Africa.
- Although Benguela Niños do occur, they are less intense and less frequent than Pacific El Niños.
- Most significant river in Namibia is the Fish River, which is 650 km long. Its flow is seasonal, and during winter the river bed dries up.
- Highest point is Brandenburg (Konigstein) at 2,606 metres.
- Cold-water currents tend to have a cooling effect on coastlines they border.

ACTIVITIES

- Circle the correct answer in the following questions:
 - East coasts generally have warm/cold ocean currents
 - West coasts generally have warm/cold ocean currents
 - East coast climates will generally be warmer/ cooler than anticipated
 - West coast climates will generally be warmer/ cooler than expected
 - Ocean currents travel in a clockwise/ anticlockwise in the northern hemisphere
 - Ocean currents travel in a clockwise/ anticlockwise in the southern hemisphere
- Climatically, the Namib is a contradictory area: It is almost rainless, yet its air is normally at or near the saturation point, as fog is common. Explain how fogs are formed.
- Describe the Benguela Upwelling System. Explain its relationship to marine species.
- List the different landforms located in the Namibian desert landscape.
- The Namib Desert's most famous landforms are its sand dunes, which are some of the oldest in the world. Sketch and annotate four different types of sand dunes.
- Huge salt pans are located in Namibia's desert landscapes. Investigate: Where some are located? How they are they formed?
- Draw and explain the Namib Desert food web.
- In pairs research the importance of two of the following mining activities in Namibia and their importance to the economy and peoples' lifestyles: diamonds, tungsten, zinc, tin and salt. Present as an e-poster



NARA

Nara is endemic to the Namib Desert. The shrub produces round spiky fruits, the size of a large orange, once a year. The fruits are nutritious and hold water. The plant has adapted to the arid environment with a taproot that penetrates to a depth of 50 metres, and has spikes instead of leaves.

The Nara is eaten by gemsbok, hyenas, porcupines and birds. Jackals swallow the seeds, distributing them via faeces over many kilometres.

Nara sustains indigenous people, and the Topnaars harvest the fruits annually

ACTIVITY

In pairs, using ICT, answer the following questions:

- How has Nara adapted to the arid environment?
- What is the value of Nara for people living in the Namib Desert?
- Discuss the importance of conserving Nara.
- Research two other plant species that have adapted to the arid environment in Namibia. Sketch the plants and explain how they have adapted



https://commons.wikimedia.org/w/index.php?search=Nara+fruit&title=Sp ecial:Search&go=Go&searchToken=4enxmbd0fqxi3xyj7duqyn07q#/media/ File:Nara_cut_fruit.jpg



CIRCLES – NATURE'S GREAT MYSTERY

The Namibian desert contains a 1,800km-long strip of grass-ringed patches called 'fairy circles'.

Millions of circles occur in a band where arid grasslands transition to desert. Most flank the red sands of the Namib Desert.

The Himba, claim the circles are footprints of the gods. Scientists haven't come up with a definitive explanation for their existence.

Is it caused by poisonous soil, ostriches, ants or termites?

ACTIVITY

Answer the following questions:

- What are fairy circles?
- Where do fairy circles occur?
- Research theories concerning the formation of fairy circles. Which theory do you support and why?
- Collect and annotate two photographs of 'fairy circles' at different scales. Present answers as an e-poster. Source: http://www.bbc.com/earth/story/20140916-mystery-fairy-circlesdefy-explanation

USING ICT

- Review global wind patterns within the Causes of Climate Change module, to identify and understand the predominant winds along the Namibian coast. http://www.ces.fau.edu/nasa/content/resources/ global-wind-patterns.php.
- View video showing an animation of how surface currents form http://higheredbcs.wiley.com/legacy/ college/strahler/0471417416/animations/ch05/pa ge6.mov. As these currents flow along the edges

of continents, they affect the land's climate. In this activity, students will identify and label the major surface currents, especially those along the SW coast of Africa.

• Life differs in the two contrasting ocean currentscold and warm. Research the differences. Include diagrams, causes and effects. https://images-na.sslimages- amazon.com/images/I/51KBM3JPCXL.jpg

ICT

- Exploring the Skeleton Coast http://edition.cnn.com/ travel/article/namibia-skeleton- coast/index.html
- Landsat imagery Google Earth (earth.google.com) and NASA Zulu site (https://Zulu.ssc.nasa.gov/mrsid/ mrsidpl).
- Desert landforms in Namibia-a Landsat interpretation https://web.natur.cuni.cz/geografie/vzgr/ monografie/gm/gm_goudie2.pdf
- Skeleton Coast http://www.thedailybeast.com/ namibias-spooky-skeleton-coast
- Namib Sand Sea: Maps http://whc.unesco.org/en/ list/1430/multiple=1&unique_number=1915
- Salt flats http://www.sharonmcelvain.com/Category/ SKELETON-COAST- AERIUS/i-tHmvN5N/A
- Climate, weathering, crust formation, dunes, and fluvial features of the Central Namib Desert http://www.the- eis.com/data/literature/Climate_ weathering_crust%20formation_dunes_and%20 fluv ial%20features%20of%20the%20Central%20 Namib%20Desert.pdf
- YouTube https://www.youtube.com/ watch?v=B3EXopTRzew
- Primary resource http://www.pbs.org/edens/namib/.
 How hot is Namib? My life as an insect in Namib. The Sidewinder. How much water will the desert hold?
 Who's in charge? How can I hide in Namib? Namib from Space.

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- Investigating Mangroves
- Bennelong and the Wangal

Stage 4

- Landscapes and Landforms Coastal Wetlands
- Water in the World Wetlands
- Water in the World Urban
- Place and Liveability

Stage 5

- Environmental Change and Management
- Changing Places

Stage 6

- Biophysical Interactions
- Urban Places Urban Renewal
- Ecosystems at Risk

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For more details on excursion programs and related syllabus outcomes please visit our website. sydneyolympicpark.com.au/education | 02 9714 7888 | education@sopa.nsw.gov.au

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PRIMARY RESOURCE

GEOGRAPHY ALIVE: A NEW GTANSW ONLINE RESOURCE FOR PRIMARY TEACHERS

GTANSW has celebrated the launch of a new online Primary Geography resource Geography Alive – http://gtansw.org.au/geography-alive/

The initiative includes sample units of work organised by stage of learning. Currently, there are 10 units available. Each unit includes an overview linking it to the NSW Geography Syllabus (K-6), detailed lesson plans with step-by-step instructions, teaching resources and, where appropriate, student worksheets. The units have been drafted by a team of experienced Primary teachers and many have already been 'road tested' in the classroom.

The units are discrete entities. They do not represent a 'scope and sequence' that covers all syllabus requirements. Over time, additional units will be added to the site. Teachers are encouraged to share their own units with their colleagues across NSW.

The following pages are samples from Stage 2 Unit My Places: Picture book study.

GEOGRAGHY ALIVE WEBSITE can be found within the GTANSW Website at http://www.gtansw.org.au

This is a screen capture from the website

				• Stage 2	• Stage 3			
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			Unit	1: Natural and I	Human Feature	es of Places		
	Торіс	Topic 1: <u>Features of places</u>		Unit 2:				
Stage 1 (YEARS 1 & 2)	1			Unit 3: Unit 1: People, places and connections Unit 2: Tourism: Connecting People and Places				
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Geography Alive – Stage 2

STAGE 2 (YEARS 3 & 4): TOPIC 1: PLACES ARE SIMILAR AND DIFFERENT

UNIT 2: MY PLACES: PICTURE BOOK STUDY

>> Unit 2 lessons

Content focus:

In this unit students examine the natural and human features of an Australian community through the study of an award winning picture book, *My Place*. They explore the changing land uses, settlement patterns and demographic characteristics of a place and use this information to imagine what it would be like to live in that place. Students have the opportunity to reflect on how people's perceptions of places determine the nature of their interactions with the environment with particular attention attached to protection of places.

Syllabus content area:

Similarities and differences between places

Students investigate the changing settlement patterns and demographic characteristics of places and the lives of the people who live there

Perception and protection of places

Students investigate how the protection of places by people's perception of places. Description of how and why people perceive places differently

Key inquiry questions:

- How do the places change over time?
- How and why do people observe places differently?
- How do peoples' perception of places influence the protection of places.

Note: This unit provides schools with an opportunity to develop and implement an integrated unit incorporating studies in Geography, History and English (literacy).

Outcomes:

A student:

- examines features and characteristics of places and environments
- describes the ways people, places and environments interact
- examines differing perceptions about the management of places and environments
- acquires and communicates geographical information using geographical tools for inquiry.

Inquiry skills:

Acquiring geographical information

- pose geographical questions
- collect and record geographical data and information by observing and using visual representations

Processing geographical information

- represent data by constructing mental maps
- draw conclusions based on interpretation of geographical information sorted into categories

Communicating geographically

- present findings in a range of communication forms
- reflect on their learning and suggest responses to their findings

Geographical concepts:

- Place: the significance of places and what they are like. For example: places students live in and belong to and why they are important.
- **Space:** the significance of location and spatial distribution, and ways people organise and manage the spaces that we live in. For example: location of a place in relation to other familiar places.
- Environment: the significance of the environment in human life, and the important interrelationships between humans and the environment. For example, how and why places should be looked after.
- Interconnection: no object of geographical study can be viewed in isolation. For example: local and global links people have with places and the special connection Aboriginal and Torres Strait Islander Peoples maintain with Country/Place.



Geographical tools: Maps

mental (sketch) maps

Visual representations

 story book-based illustrations and maps G

eograph	y Alive – Stage 2		
	INTERNATIONAL AND	that places undergo	lace' in the centre of a

Content focus:		Resources:
In this lesson students have an o developing appreciation of the k change, connections and enviror with Nadia Wheatley and Donna Students focus on the history of Sydney from 1788 to 1988 throu children who have lived there. Is: environmental change, land use, multiculturalism and Indigenous	pportunity to consolidate their ev geographical concepts of place, ment. They do this by engaging Rawlins' picture book, <i>My Place</i> . one particular piece of land in gh the stories of the various ues addressed in the story include settlement patterns, concepts of country.	 Picture book: Nadia Wheatley and Donna Rawlins' (1388), <i>My Place</i>, Walker Books publisher. <i>My Place</i> is a classic Australian picture book, is a 'time machine' that takes the reader back into the past. It focuses on the history of one particular piece of land in Sydney from 1788 to 1388 through the stories of the various children who have lived there. It aims to teach the reader about the history of Australia, about families, settlers, changing land uses, multiculturalism, and the perceptions and cultural heritage of the traditional owners of the land. Each child's story cores a decade in time, showing their particular dress, customs and family life. The book also features maps that the successive generations of children have 'drawn' which demonstrate the things that have changed – as well as the things that have remained constant.
Key inquiry questions:	Outcomes:	Lesson sequence:
 How are people connected to places? 	A student: • demonstrates a developing appreciation of the concepts	• Step 1: Read the book <i>My Place</i> to the class explaining the concept of place and its importance to people. Point out that places undergo change and that there are elements of places worth protecting.
 What factors affect peoples connection with places? 	of place, change, connections and environment	The discussion focusing on the meaning of place could be initiated using a brainstorming activity. Write the word 'place' in the centre of a whiteboard. Ask student to write down three or four synonyms and words associated with place. Students can then share their words with the person next to them, adding words that were not on their list. Groups of students can then report back to the class outlining the
 What impact do people have on environments? 		synonyms and words listed. A whiteboard-based mind map summarising the feedback from groups can be developed.
Note: This unit is designed to		 Step 2: Draw the students' attention to the front cover of the book. Questions to ask: What is the connection between the title of the book (My Place) and the front cover artwork? What is the significance of the tear across the bottom of the cover? What is revealed underneath? What does it symbolise?
provide a conceptual 'bridge' from the emphasis on place in Stage 1 to the broader consideration of this key		 Step 3: Have the students turn to the timeline presented on the opening pages of the book. Questions to ask: What is the significance of the spiral in the top left-hand-corner? What does it symbolise? What events are listed on the timeline? Which of these relate to Australia's involvement in armed conflicts? Which events are of significance to Aboriginal people?
geographical concept.		 Step 4: Have students turn to the first double-page spread (1988). What are the key elements of each double-page spread? – the narrative text, the illustrations and a map. Make a list of the subject matter covered in text-based element of the double-page spread – the name and the age of the principal character, their place of origin, their animals and pet/s, and a reference to the 'big (fig) tree'. The illustrations provide an insight into the dress, customs and family life of the eras traversed in the story.
		 Step 5: Point out to students that the story progresses from relatively recent times (1988) to Australia's Aboriginal past (pre-1788). What is the significance of this approach?

© Geography Teachers Association NSW

Lesson 1: My Place: A picture book study

Lesson 3: My Place: Analy	sing maps	
Content focus: In this lesson students focus on t <i>Place</i> . They identify the role of th story and how they reveal chang, how maps, such as those feature important insight into a person's also focus on how transport tech identify those features that rema covered by the story.	he map-based elements of <i>My</i> he maps in the context of the e over time. They also consider d in <i>My Place</i> , provide an view of their surroundings. They nologies change over time and in a constant over the timespan	• Class set of My Place
Key inquiry questions:	Outcomes:	Lesson sequence:
 What are the principal features and characteristics of specific places and environments? How do people, places 	A student: • demonstrates a developing appreciation of the concepts of place, change, connections and	 Step 1: Refer students to one of the double-page spreads in My Place. Make the point that an important element of the spread is the map the author and illustrator have included. The maps feature a lot of information about the world as experienced by the characters in each part of the story. Note that maps, as used in the story, provide the reader with a range of information. They offer an insight into what the principal character considers important in the place in which they live; they reveal the changes taking place in the neighbourhood over time including land uses; and they provide an important insight into the changes taking place in the natural environment.
and environments interact? In what ways do the	 environment describes features and characteristics of specific 	 Step 2: Discuss the role of maps in geography. Note that geographers use maps to find out information about places (including its location) and to identify patterns and changes in the landscape. Point out that the maps in My Place show the changes taking place in a specific area over 200 years (1788 to 1988).
mental maps people draw reveal information about people's differing perceptions about places?	 places and environments appreciates that mental maps provide important incircles into the wave 	 Step 3: Make the point that the maps included in My Place are called 'mental maps'. Mental maps are the maps people draw using the knowledge they have about a place. They are a person's point-of-view (perspective) of an area. They are sketch maps and are not drawn to scale. Students will have an opportunity to draw their own mental maps in the next lesson.
	perceptions of places and environments differ	 Step 4: Ask students familiarise themselves with the maps in My Place. As they work through My Place students are asked to locate the following features on each of the maps: 'home' or 'my place'; the 'big fig/tree'; and the 'creek' and/or 'cana'. Note that these are constants in a changing neighbourhood.
	determine the ways beople, places and	• Step 5: Working from the back of the book, ask students to comment on the changing complexity of the maps featured.
	environments interact.	• Step 6: One of the principal themes of <i>My Place</i> is change. Between 1788 and 1988 there are at least three significant changes to he house that is home to the <i>My Place</i> families. Based on their developing understanding of he book ask students to identify the changes and draw each of the different homes.
		• Step 7: Students study both the <i>My Place</i> text and the accompanying maps to identify the various modes of transport used over time. Ask students to make a list of the changes and discuss how these have changed people's understanding of 'place' over time.

	ronmental change	
Content focus: In this lesson students focus on particular interest is how the ac transformed the natural enviror of these changes with a particul in the creek/canal. Also address tree' in the life of those living in	environmental change. Of tivities of people have ment of the area and the nature lar focus on air and water quality ed is the role played by the 'big the home central to <i>My Place</i> .	Resources: • Class set of My Place • Worksheet 1: The big (fig) tree
Key inquiry questions:	Outcomes:	Lesson sequence:
What are the principal features and characteristics of specific places and environments? How do people, places and environments interact? How do the activities of people affected water quality.	A student: • demonstrates a developing appreciation of the concepts of place, change, connections and environment • describes some ways in which people, places and environments interact.	 Step 1: To begin the lesson, revise the concept of environment with the class. Note that the environment consists of our total surroundings. It includes elements that are natural (physical) and those that are the product of human activity. Step 2: Starting at the back of the book, ask students to read through <i>My Place</i>, tracking the changes taking place in the environment over time. Focus on questions such as: Step 2: Starting at the back of the book, ask students to read through <i>My Place</i>, tracking the changes taking place in the environment over time. Focus on questions such as: How have the elements of the natural environment been modified by the activities of people? How have the elements of the natural environment been modified by the activities of people? What happens to the water in the creek? What causes the water to change? What happens to the water in the creek? What causes the varier to change? What happens to the varie on the last page of the book is featured throughout <i>My Place</i>. It plays a symbolic role, linking the lives of those featured in the book. Using Worksheet 1 ask students to study the relevant pages and fill in the boxes for the selected years. Ask them to briefly outline the role played by the "big (fig) tree' cater for the needs of children? Think in terms of imaginative play, a place of solitude and reflection, and sense of continuity in a big (fig) tree' cater for the needs of children? Think in terms of imaginative play, a place of solitude and reflection, and sense of continuity in changing world. Why has an element of the natural environment been selected for such a role? Additional task: <i>My Place</i> makes a point about the long-term impact that people have had on the natural environment. Ask students to interview someone (family or friend) about how the area in which they live may have looked in the past. Have students compare thein finding with those of their dassmates.

Lesson 5 – Worksheet 2

Task: One of the elements linking the lives of those children featured in *My Place* is the 'big tree'. Fill in the boxes below, briefly outlining the role played by the 'big tree' in the life of the character featured in each of the specified double-page spread.



Lesson 7: My Place's Indig	enous heritage	
Content focus: In this lesson students focus on t explore the relationship betweer Country. In doing so, they reflect Aboriginal and Torres Islander pe events in the post-1788 experien addressed is the diversity of the <i>i</i> changing nature of the family.	hose elements of the book that i Indigenous Australians and on the relationship between oples and the land and identify key ce of Indigenous Australians. Also Australian population and the	• Class set of My Place
Key inquiry questions:	Outcomes:	Lesson sequence:
 What are the principal features and characteristics of specific places and environments? How do people, places and environments interact? 	A student: • demonstrates a developing appreciation of the concepts of place, change, connections and environment • describes features and	 Step 1: Direct students to the 1788 double-page spread and the following two pages. Ask them to read the relevant text and study the map included. Discussion questions: What is meant by the statement 'Everywhere we go is home'? How does this differ from the meaning attached to 'home' in the rest of the book? What is special about the nature of Barangaroo's family? What role does the creek play in the life of Barangaroo and her family? What clebration did Barangaroo participate in? What does this tell us about the relationship between Aboriginal people and the environment?
 How do people perceptions about places differ? In what ways does the 	characteristics of places and environments describes some ways in	 Step 2: On the very last page of My Place, Barangaroo climbs to the top of the big fig tree and dreams that she is the only person in the world. Barangaroo's grandmother makes the point: 'We've always belonged to this place.' 'For ever and ever'. What is meant by the grandmother's statement?
meaning of 'home' for Indigenous Australian's differ from that of non- indigenous Australians?	wnich people, places and environments interact • explains, in simple terms,	 Step 3: Class discussion. Based on your students' developing understanding of Country pose the question: How and why do Indigenous Australians and non-indigenous Australian's often perceive places differently. How might this impact on the ways we protect places. Ctep 4: Act the students to revisit the timeline on bases 18. 3 of My place Identify the key executes in Australia's Indigenous history noted in the
 What factors have contributed to the diversity of the Australian 	the meaning ascribed to Country by Indigenous Australians	 Step 5: Barangaroo lives with her extended family – parents, siblings, grandparents, aunties, uncles and cousins. Ask students to reflect on the
population?	 Identifies important events in the post-1788 lives of Indigenous Australians recognises the diversity of Australia's population. 	 ways in which families have changed over the time span covered by <i>My Place</i>. Step 6: Have students study their <i>My Place</i>: Story Summary Sheet completed in Lesson 2. What was each family's country of origin? What does the information reveal about the changing composition of the Australian population? What is mean by the term 'multiculturalism'?

Lesson 8: My Place: Prote	cting places hypothetical	
Content focus:		Resources:
In this lesson students focus on f engage in a multi-stage hypothet values clarification task, a debate of active and informed citizenshi	orotecting places. In doing so, they tical that incorporated group work, e, a writing task and the role playing p.	 Class set of <i>My Place</i> <i>Resource Sheet 1: Hypothetical development proposal</i> Kleeman, G. (2017). <i>Geography Literacy Unlocked</i>, AGTA – Unit 3.3, Debates pp. 100–102.
Key inquiry questions:	Outcomes:	Lesson sequence:
 How do people, places and environments interact? How do people perceptions about places differ? How do people's perceptions of places impact on decisions related to the protection of elements of the natural and built environments? 	 A student: demonstrates a developing appreciation of the concepts of place, change, connections and environment recognises the need to protect elements of the natural and built environments appreciates how and why people perceive places differently explains how people's perceptions influences decisions related to the protection of places. 	 Step 1: Read the hypothetical development proposal to the class. Hypothetical: A group of property developers plans to redevelop the site occupied by McDonald's and the adjacent ar park (see the 1388 map). Part of their plan includes the purchase of the open space currently covered with grass and the old fig tree. The tree is a historic proposes that a 10-story office lobar pre-detes the arrival of the First Heet in 1738. The development application loaged with the local council proposes that a 10-story office lobar pre-detes the arrival of the First Heet in 1738. The development application loaged with the local council proposes that a 10-story office lobar and nexuses of 300 peeh will work in the building orce complete. The pro-development council proposes that a 10-story office lobar diverse of 300 peeh will work in the building orce complete. The pro-development council proposes that a 10-story office lobar diverse of 300 peeh will work in the building orce complete. The pro-development council measy parts the students to read and Environment Court in an effort to have the weekpenent struct are a judge of the Land and Environment Court. Will you allow the development to go ahead? Step 2: Ask the students to read action of the evelopment proposal and a separate list of the statements that are in favour of the evelopment proposal and a separate list of the statements that are in favour of the velopment proposal and a separate list of the statements that are not. Step 2: Ask the students individually determine the point of view they agree with. Then, in small groups of four of the statements that are not. Step 2: Class debate. Have the peole on each side of the discussion undertaken in <i>Step 3</i> present the case for the other side, using exact arguments and a debating format (see Meana, 2013, Filer, They are required to reach agreement to mobile the students they discuss the stiments and a debating format (see Meana, 2013, Filer, They are stort stored do a hord to de

Lesson 8 – Resource Sheet 1

Development proposal hypothetical

Hypothetical: A group of property developers plans to redevelop the site occupied by McDonald's and the adjacent car park (see the 1988 map). Part of their plan includes the purchase of the open space currently covered with grass and the old fig tree. The tree is a historic landmark in the local area and pre-dates the arrival of the First Fleet in 1788. The development application lodged with the local council proposes that a 10-story office block with ground-level retail outlets be built on the site. One of these will house a modern McDonald's outlet. Fifty jobs will be created during construction and more than 300 people will work in the building once complete. The pro-development council has agreed to a land swap with the developer. A new park will be developed on another site as compensation. The new park will feature three newly planted fig trees. Those opposed to the development have gone to the Land and Environment Court. Will you allow the development to go ahead?

Community views on the proposed development





2018 HSC PREPARATION LECTURES FOR YEAR 12 STUDENTS & TEACHERS

Once again this year, GTA NSW has organised lectures for HSC Geography students and teachers. The presenters are experienced educators and HSC markers. Sessions cover: Ecosystems at Risk, Urban Places, People and Economic Activity and Geography skills and exam advice.

DATES AND LOCATIONS

Thursday 14 June	Newcastle: Callaghan Secondary College (Jesmond Campus, Janet St, Jesmond)
Monday 18 June	Goulburn: Trinity Catholic College (Cnr. Clinton & College Sts, Goulburn)
Tuesday 26 June	Sydney: NSWTF Conference Centre (Reservoir St, Surry Hills)
Saturday 30 June	Auburn: PTC NSW Training Rooms (CFCU Building, Cnr. Hall & Percy Sts, Auburn)

TIME

9.30am – 3.00pm, registration from 9.00am

COST (inc GST)

\$40 per student for member schools/teacher\$60 per student for non-member schools/teacher

Teacher attending with students admitted FREE. Teachers attending with students will receive a link to lectures presented on the day for distribution to students after the event. **Teacher attending without students – \$80 member and \$100 non-member**

ONLINE REGISTRATION – CLICK HERE

Supply a list of attendees with your school's registration • Registration closes one week prior to each event • Students are encouraged to bring writing equipment and paper or tablet devices to mind map key concepts and advice.

SECONDARY RESOURCES



Battle of the Goldroad from Game of Thrones - Season 7 Episode 4. Artwork for the official Game of Thrones tapestry produced in Northern Ireland. Source: Wikimedia Commons

Game of Thrones Mapping Task

David Massingham The King's School, Geography Faculty

Students will be given an A2 sized map of Westeros (one map between two students) to assist them with answering the following questions. These questions are to be written in Student Exercise Books.

1. Name the body of water in 3044.	8. Calculate the distance from Moat Cailin (2452) to The Dreadfort (2655).
2. What physical feature is in 2547?	
	9. Name the three man made fortifications situated along The Wall (Northern quadrant of the map).
3. Prince Oberon of Dorne was from Sunspear. Provide the grid reference for Sunspear.	
4. Name the town in 3047.	10. Name the three roads that lead directly to Kings Landing (2546).
5. Using the answer for Question 4, name the mountain range closest to the town listed in Question 4.	
	11. List any five (5) bays that can be found on this map.
6. Name the castle located at 251483.	
7. 1cm on the map equals what distance on the ground?	12. What direction is Casterly Rock (2147) from Kings Landing?

Game of Thrones Mapping Task

- 13. Jamie Lannister is commanded to lead the Lannister Army from Kings Landing to Riverrun (2348). From Riverrun he is ordered to march south to Highgarden (2243) to siege and take control of the city and then march back to Kings Landing. What is the total distance travelled (in kms) of this military campaign?
- 14. Provide the grid reference of Winterfell (Northern quadrant of map).
- 15. Name the town where the Green Fork, Red Fork and Blue Fork Rivers meet (middle quadrant of the map).
- 16. If I was to travel approximately 5.25km due east from Casterly Rock, what town would I arrive at?
- 17. What direction is Bear Island from Shipbreaker Bay?
-
- 18. Provide the area reference of the source of the Last River.

- 19. Name a physical and human feature in 2256.
-
- 20. Name the castle at 274447.
-
- 21. Calculate the distance from Old Town (2142) to Kings Landing.
- 22. Torrhens Square is situated on a Lake. Provide the area references for the lake.
- 23. Jon Snow travels 2kms directly west from Ashford (2444), he then travels directly north for 4kms and then then travels 5kms due east to finish his journey. Where does Jon Snow end up at?
- 24. How many islands can you count off the east coast of Westeros?
- 25. If Euron Greyjoy>s fleet was to sail directly north from the northern most tip of the island of Tarth (east coast) for 11kms, what would be the closest town on the east coast of Westeros that he would find?



Game of Thrones Mapping Task

Map of Westeros and the Free Cities



Workable Answers

1. Name the body of water in 3044.

Sea of Myrth

2. What physical feature is in 2547?

Isle of Faces / Lake

3. Prince Oberon of Dorne was from Sunspear. Provide the grid reference for Sunspear.

281415

4. Name the town in 3047

Pentos

5. Using the answer for Question 4, name the mountain range closest to the town listed in Question 4.

Velvet Hills

6. Name the castle located at 251483.

Harrenhal

7. 1cm on the map equals what distance on the ground?

500m

8. Calculate the distance from Moat Cailin (2452) to The Dreadfort (2655)

(answer range 3.3 - 3.5km)

9. Name the three man made fortifications situated along The Wall (Northern quadrant of the map).

Shadow Tower, Castle Black, Eastwatch-by-the-Sea

10. Name the three roads that lead directly to Kings Landing (2546).

Kingsroad, Gold Road, Rose Road

11. List any five (5) bays that can be found on this map.

Lorath Bay, Shipbreaker Bay, Blackwater Bay, Ironman's Bay, Bay of Crabs, Blazewater Bay, Bay of Ice, Bay of Seals

12. What direction is Casterly Rock (2147) from Kings Landing?

West / North West

13. Jamie Lannister is commanded to lead the Lannister Army from Kings Landing to Riverrun (2348). From Riverrun he is ordered to march south to Highgarden (2243) to siege and take control of the city and then march back to Kings Landing. What is the total distance travelled (in kms) of this military campaign?

(answer range 11.5 – 11.9km)

14. Provide the grid reference of Winterfell (Northern quadrant of map).

242558

15. Name the town where the Green Fork, Red Fork and Blue Fork Rivers meet (middle quadrant of the map).

Lord Harroway's Town

16. If I was to travel approximately 5.25km due east from Casterly Rock, what town would I arrive at?

Duskendale

17. What direction is Bear Island from Shipbreaker Bay?

North West

18. Provide the area reference of the source of the Last River. (Northern quadrant of the map)

2457 or 2557

19. Name a physical and human feature in 2256.

Wolfswood/Forest; Deepwood Motte (town)

20. Name the castle at 274447.

Storm's End

21. Calculate the distance from Old Town (2142) to Kings Landing.

(answer range 5.8 – 6km)

22. Torrhens Square is situated on a Lake. Provide the area references for the lake.

2254 and 2354

23. Jon Snow travels 2kms directly west from Ashford (2444), he then travels directly north for 4kms and then then travels 5kms due east to finish his journey. Where does Jon Snow end up at?

Bay of Crabs

24. How many islands can you count off the east coast of Westeros?

34

25. If Euron Greyjoy>s fleet was to sail directly north from the northern most tip of the island of Tarth (east coast) for 11kms, what would be the closest town on the east coast of Westeros that he would find?

Karhold

SECONDARY RESOURCES

Introducing landscapes and landforms

David Allchin – HSIE Teacher St John the Evangelist Catholic High School, Nowra

An introductory 2–3 lesson sequence for Year 7 Geography which addresses the NSW Syllabus for the Australian curriculum

At St. John the Evangelist Catholic High School in Nowra, the Year 7 HSIE teachers decided to introduce this topic by creating a learning experience based on the creation of play dough models. The initial aims of the lessons were to introduce students to the variety of landscapes (natural and manmade) which exist in our world.

Students formed groups of three and were asked to produce a model of a landscape and its associated landforms (if natural). A series of laminated images were provided to stimulate students. It soon became apparent that students enjoyed this activity as it gave them an opportunity to express their prior knowledge visually and work collaboratively. Students began to speculate about what the landscapes would look like in the future given that certain geographic processes persisted. Students also began to build a vocabulary of new terms associated with this topic. The activity enabled groups of students to share their understanding with other students and receive feedback from their peers in a positive manner.

Lesson Plan

- 1. Divide class into groups of three. Number each group. Organise desks in groups.
- 2. Issue play dough (8 colours see recipe below) and laminated images.

- 3. Teacher nominates two landscapes per group.
- 4. Students create two landscapes on their desk.
- 5. Place models in photocopier paper box lids. (easy to store/ pass around classroom)
- 6. Students make paper labels for 10 key features of their landscapes eg river, beach, headland etc
- 7. Students photograph models and upload photographs to shared Google Doc. with table. (See page 70.)
- 8. Students from each group will examine two models from another group and write a constructive evaluation of the model via the shared google doc. The evaluation will be 50 words. Teacher to review verbally with class the meaning of evaluation.
- 9. Each group researches and writes brief (50 word) answers to questions i) and ii) in the shared Google Doc. SEAL (Statement, example, analysis, link) paragraphs.
- 10. Finally, each group discusses their model and learning in front of the class. Teacher to project Google Doc Table with OHP.

Play dough recipe

Ingredients

1.5 cups of flour, 1/2 cup of salt, 2 tbs of cream of tartar,1 tbs of oil, food colouring, 1 cup of boiling water.

Directions

Mix all ingredients except the boiling water together into a large mixing bowl. Add the boiling water and mix well (Note, the food colouring will mix in better if added to the boiling water) Please take care when using boiling water around children. Stir well until the mixture is well combined. Roll it out on a flat surface and you are ready for some playdough FUN!



Landscapes

Select eight different landscape images such as those shown here to create a stimulus resource for the initial class discussion.

















Suggested Google Doc table

Group Number	Title of Landscape	Photograph of Models	i) How was the landscape formed?	ii) How will the landscape change?	Evaluation by another Group
1					
1					
2					
2					



ENTRIES in the 2018 Australian Geography Competition, 17–31 May, are now OPEN



To find out more and enter your students in the 2018 round, visit the competition website www.geographycompetition.org.au/.

Enquires to – email: competition@rgsq.org.au phone: 07 3368 2066



Follow the Australian Geography Competition on Facebook

- For students from Year 7 or younger to Year 12
- only \$4 per student, with no minimum number of students or other registration fee
- in schools from Thursday 17 to Thursday 31 May 2018
- achievement certificates for all participating students, special certificates for top 1%, major prizes for highest performing students and schools
- Competition entries close on Wednesday 21 March 2018

"The Australian Geography Competition provides a wonderful opportunity for students to challenge themselves, reinforce skills they learn in the classroom and receive acknowledgement for their participation and achievement. I think that the nationwide participation makes it very exciting for students." Melina Walton. Redlands College

International team

Australian team members to the 2019 International Geography Olympiad in Hong Kong, China, will be chosen from Year 11 students, who excel in the Competition via the 2018 Geography's Big Week Out held on Kangaroo Island, SA.
SECONDARY RESOURCES



Changing Places Task

Melinda Rowe Lindisfarne Anglican Grammar School

Aim: Investigate the management and planning of Australia's Urban Future in the context of the Altitude Aspire Estate

You are an architect who has been asked to design the grand plan for a medium density development and shared open space parkland at Altitude Aspire Estate so that it satisfies as many stakeholder's interests as possible.

Your challenge is to:

 Create a detailed map of what is to be included in terms of medium density in the Altitude Aspire Estate. http://www.altitudeaspire.com.au/ masterplan.html

You may include areas such as:

- Commercial enterprises such as shopping centres and office rental space
- Housing such as townhouses /duplex /units
- Special purpose aged care facilities, child care centres?
- What will be included specifically in the parkland in the estate? A purpose facility? Types of plants to attract native animals and environmental buffers...
- 2. Design a facility that everyone can use in the open space centre that will most accommodate the residents of the space and ensure that the space will be used by all stake holders. Include a sketch up of design features of this facility.

Your performance will be evaluated in term of how well you explain your creation in terms of the following responsibilities:

- Economic
- Social
- Environmental

To do each of these tasks, you will use the solution fluency as framework below to help you arrive at the solution to your problem.

What are the problems you need to solve?



Define

In order for us to be able to solve a problem, we have to clearly define what the problem is first. We must decide exactly what it is that needs to be solved, and give proper context to the problem.

What information do you need to find out to solve your problem?



Discover

Discovery is the stage of research, gathering, and then analysing knowledge. It gives the problem context so that we can identify with it easier, and come up with the best solution possible.

What are the possibilities after what you have found out? What are the limits to these possibilities?

Dream



In the Dream stage, we open the heart and mind to possibilities and visions of a solution the way we wish to see it. This phase of Solution Fluency is about imagination, extrapolation, and visualisation.

Changing Places Task

Now design your detailed map and community facility. What do you need to include in your design?

Design

In the Design phase we begin utilising gathered knowledge to synthesise solutions. We create goals and milestones, assign team roles, and create systems of accountability for the team as a whole.

How will you present the information to the class?



Deliver

The Deliver phase happens in two separate stages--Produce and Publish. It involves both completing the solution (Produce), and then making the actual presentation or demonstration (Publish).

Now evaluate what you have done. What would you do differently once you have seen everyone else's proposals?



Debrief

The students look at their project from beginning to end and really get to own their learning. They determine what could have been done better and ways they could improve their problem-solving approach in similar situations.



Civic Square, Wellington NZ. Source: Wikimedia Commons



TERM 1 – WEBINAR 2

Geography Alive – Resources for Primary Schools Thursday, 22 March 2018, 4.00 – 5.00pm Presenter: Dr Grant Kleeman

There is no charge for this NESA accredited webinar, **CLICK TO REGISTER** Once registered you will be sent access information prior to the day of the webinar.

SECONDARY RESOURCES

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.



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



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*.

Nowra Christian School: Unit Programing Cover Sheet 2017

leacner:	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. and human process create and change landscapes and landforms. Students will be p implication of human decisions as they interact with landscapes and other cultural re This unit also aims to give students and appreciation for the beauty and diversity of t	Students will explore how ushed to consider the ethi egions through tourism. the physical world.	geomorphic cal
Syllabus outcomes taught in this unit:	 explains processes and influences that form and transform places and environn analyses the effect of interactions and connections between people, places and accounts for perspectives of people and organisations on a range of geographi assesses management strategies for places and environments for their sustaina acquires and processes geographical information by selecting and using approfor inquiry GE5-7 communicates geographical information to a range of audiences using a variet 	nents GE5-2 l environments GE5-3 cal issues GE5-4 bility GE5-5 priate and relevant geograp y of strategies GE5-8	ohical tools
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 		

Written by Leah Arthur, Nowra Christian School. Everest Case study based on resources from the University of Montana: http://www.montana.edu/everest/

		8	iblical perspective:	S
Creation – made by E This is incorporated t Everest: What respons Nould people How does the How does the	god to be cared for by p chroughout the unit in ir ibility do people have to e expect others to make pursuit of a physical go egift of the cross compar	eople. Genesis – the I nformal class discussi consider the welfare sacrifices for them to al morph in idolising re to the promises and	role of man as custo ons and reflection o of others as they m help them achieve and superstition? I worldview of relig	odian. questions. ake life choices? a physical goal? gions like Buddhism?
Hazard identificatio r Likelihood of a risk bt The impact of a risk n	n & risk assessment of p ecoming reality must be nust be rated as: Extren	oractical activities in Prated as: Very Likely Pre, Major, Moderate	this unit , Likely, Unlikely or or Mi n or	Very Unlikely
Practical Activities:	Risk	Likelihood	Impact	Management strategies
Excursion to Gerringong	See risk assessment created in EMS			

Registration and adjustments	
Extension	Support: use sentence starters on board.
Resources	https://story maps.esri.co m/stories/20 17/seismic- illumination /index.html
Learning and Assessment strategies	 INQUIRY QUESTION: How do the Earth's plates create landscapes and landforms? I. 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 <i>digital maps allow us to overlay different types of data so we can see relationships</i>. 6. Overlay the natural disasters and volcanic activity layers and alter the transparency to allow students to use 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.
Outcomes and Content points	Students: Investigate different landscapes and the geomorphic processes that create distinctive landforms.
Time	1 lesson 3 lessons

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

		 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. Draw on the map as the students suggest things – add in the equator, the tropic of Capricorn, Tropic of Cancer etc. Draw lines of latitude and longitude in a different colour. Discuss with students using the 3D globe how the lat/long affects a place – time/temp etc. Make notes on the board. Use the large world map and lego on the floor to allow students to practice using simple Lat/long calculations. 	Latitude and Longitude quiz.docx	Alternate worksheets Sheet sets are differentiated.	
		 Students complete differentiated worksheets to practice latitude and longitude – map a variety of points. (see below) 			
2-3 lessons plus	Students: Investigate different	INQUIRY QUESTION: How does water create landscapes?		Have students draw how 3	
field trip	landscapes and the geomorphic processes that create distinctive landforms.	 Quick quiz to recall the rules of <i>latitude and longitude</i>. 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. 		landscapes are connected by water, and how that water is impacted by the human factors.	
	Students: Investigate how the operation of the			More complex maps ae available for	

STAGE 4: Push and Shove

advanced students or those who have done this	before. Simple grid and sketch maps are available for	students.	Sentence starters for	support students. Extension	students work alone, do not receive note taking assistance			
					Field work book. Resources file.			
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. Sutterns make a table of the fattescape types month 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.	 Students answer questions from textbook – page 65 for erosion. And page 67 for deposition. 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.
water cycle connects people and places.	Investigate the human cause of land degradation -including its	spatial distribution, causes and impact						

	* 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.
 As a class: teacher reads text from page 82-83. Studen say stop when something important is read out. Students suggest which category it fits into and all students write it in this category – note taking on ghos nets develops. In pairs, students use q3-5 on pg 83 to help add detail their notes – answers should be included in their notes Students complete question 6 individually. Answer INQUIRY QUESTION and Display. 	 Everest case study Where is it? 1. With your students, locate the Himalayan Mountain Rar 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 ma stalas map and another student identify Mount Everest's longitude. (27°59'17"N, 86°55'31"E) As a class, compare coordinates to your hometown and mark both Mount Ever and your hometown on the student World Map. Have your
	Case study

 http://www.geogr aphypods.com/4- fold- mountains.html simple fold mountain explanation.docx	 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 <i>geographypods</i> 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 folior that evaluate how form 	Students: Students: Investigate different landscapes and the geomorphic processes that create distinctive landforms.	
	 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 to explore the Mount Everest area using Google Earth independently, in partners or small groups, or as a class. <i>Allow students a video of someone navigating Google Earth for you by visiting:</i> http://www.youtube.com/watch?v=S5T3sfWnaGg <i>Students complete first page of folio – covers these activities.</i> Extension students com/watch?v=q4Kw7GIZcHM 		
	students study latitude to discover if Mount Everest is closer or further away from the Equator than your hometown.		

How glaciers form https://www.yout ube.com/watch?v =4wNOrFy17W E (3:50) How Glaciers shape landscapes https://www.yout ube.com/watch?v =loI584OFVpE (2:30) What is the Khumbu Icefall like? https://www.yout ube.com/watch?v =6vKLWwECCc c Crossing a Crevice on the like? https://www.yout ube.com/watch?v =q4Kw7GIZcH M How the Khumbu Glacier is receding http://youtu.be/Kt	Global warming and khumbu glacier:
fold mountains are created. A combination of <u>Deposition</u> 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 <i>in the folio</i> 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. 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 facal matter and rubbish of climbers and climate change causing glacial retreat.	
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	

/.theg //worl /23/m t- obal-		
https://www uardian.com d/2013/may, ount-everest glaciers- shrinking-gl warming		
	 What is it like? Use the <i>photograph</i> of Nepalese side of Everest to plot the routes that climbers take to the summit: Begin by plotting the Southeast Ridge route in green. Brudents 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=_YZw50g09EU	 In folio: 1. Students annotate features onto the route diagram • base camp: a place used to store supplies and get
	Investigate the aesthetic, cultural and spiritual values of landscapes and landforms for people.	

	 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	
	• Show	
	• 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	
	 ULUC widner a long narrow gract of land leading to a neal 	
	• Iluge: a lolig, liailow crest of laitu reauling to a peak or connecting several hills or monintains	
	2. Students use <i>topographic map</i> 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	
	10110) A Studente modiet why meedle cheeses to climb Erroreet	
	4. Suments predict why people choose to chimo Everest	
	and discuss which ones they identify with.	
	 Summerits use a spinergram to predict the dangers of climbing Everest. 	
Investigate how the	When is the best time to climb?	Some students
operation of the	* Some teacher direction required	will know how
water cycle	· · ·	to do a climate
connects people	1. Show students how to complete a climate graph using an image projected onto the board	graph – allow them to work
and praces.	2 Moles projected uno uno uno volatu.	
	2. Make sure to discuss flow the axis are utilitient utilits and can start at different numbers if required Discuss with	III a group to complete this
	students why average temp is used and total rainfall –	section without
	relate to farming or building as these are easy to	instruction.
Written by Leah Arthur, Nowra	Christian School. Everest Case study based on resources from the Universi	ty of Montana: http://www.montana.edu/everest/

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

Written by Leah Arthur, Nowra Christian School. Everest Case study based on resources from the University of Montana: http://www.montana.edu/everest/

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: V do you think the monsoon is likely to reach Mount	https://video.nation algeographic.com/v ideo/movies/wildest -dream-monsoon		
 Everest according to this map? 6. Show the Film Clip, "Monsoon Sets In." 7. Discuss whether the timing looks good for Conrad A to make the push for the summit. The map of monsoon onset dates is very similar to the one Jennifer Lowe- 	aker https://video.nation algeographic.com/v ideo/ng-	Some students will be able to	
Anker, Conrad's wife, viewed in the clip. Discuss the difference technology has made in both communicat and weather prediction since the first climbing attem 8. Discuss with students the ethics around these decisions around the ethics around the	adventure/170720- ons mount-everest- ots. sherpas-climbers- ns - rescue?source=relat	see many sides to the argument and some may not	
 what happens if something goes wrong? How does it impact other people? 9. Start to discuss with students the impact on local She – as these are the people that often rescue people, or die alongside climbers, as they are paid to guide then 	edvideo https://www.sbs.co who m.au/news/thefeed/ article/2017/07/10/e	 the teacher may need to carefully manage this discussion, or 	
Note that this is a chance for students to explore an ethical dilemma on their own with guidance, but not ethical dilemma on their own with guidance, but not 10. The Sherpa rescue video can be shown to the class h to start or conclude discussions, as can the video on t SBS site – this is more direct in its discussion of the ethics 11. If students are mature enough they can watch and dis the Dving for Everest (shows a dood frozen body)	<i>bias.</i> verest-dilemma- bias. when-rescuing- are climbers- ne endangers-sherpas http://mountainworl cuss dproductions.com/t he-ethics.of_everest	could use mixed ability groups with butcher's paper to draw out ideas and thoughts.	
NOTE: In this part of the course it is important to includ Christian perspectives and values in the conversation an debate – this should be lead and encouraged by the teach Keep coming back to the question of "what does the Bibl	t l er.		

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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 <i>above</i> 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.	

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
<pre>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?</pre>

		 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: 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.co m.au/news/thefeed/ article/2017/07/10/e verest-dilemma- when-rescuing- climbers- endangers-sherpas https://www.thedail ybeast.com/should- we-rescue-the- everest-climbers http://www.bbc.co m/travel/story/2014 0307-the-worlds- highest-clean-up- effort	

Students fill in the neel the fruit for each section as they		
research and then compile a written opinion piece using their research.	https://www.thegua rdian.com/world/20 06/oct/08/conservat ion.environment	
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.	https://www.cultura lsurvival.org/public ations/cultural- survival-	
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	quarterly/impact- deforestation-life- nepal	
background reading.	https://www.rgs.org /NR/rdonlyres/75A D6C2D-B268-	
 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	43A6-B5C1- C3EE440E09FA/0/ F3tourismfactsheet. bdf	
 then printed to reduce the reading comprehension levels to ensure they are accessible to students.	Decreasing the risk on the icefall: http://www.theaustr	
	alian.com.au/news/ world/the-khumbu- icefall-the-deadlv-	
	everest-route-that- climbers-fear/news- storv/670h3he674a	
	ccc92a54040ea4c8 c2c92a54040ea4c8 77182?sv=2f7c3h7	
	2fl 8a3dac300c56ec	
	8/699/be	

https://www.salon.c om/2014/03/04/mo unt_everests_massi ve_trash_problem_ nepal_cracks_down on_littering_touris ts/	https://www.summi tclimb.com/news/m ef/cleaning-up- mount-everest- news/	https://www.grida.n o/resources/5028	https://www.thegua rdian.com/world/20 15/mar/03/too- much-human-poo- on-mount-everest- says-nepal

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

Written by Leah Arthur, Nowra Christian School. Everest Case study based on resources from the University of Montana: http://www.montana.edu/everest/

Dated: 30/11/17

Leah Arthur

Teacher to sign off at the completion of the unit:

Supervisor check: C Thompson 1/12/17

STAGE 5: Let it burn

Stage 5 Ge	ography 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 an range of geographical skills. During the online and map based case study the students "manage" a fi members play in fire management and how geographical skills are real world applicable. Students the management as proposed by Indigenous communities. They explore how and why these methods are indigenous communities themselves. Student finish the unit by questioning how non-indigenous peop why not the approach may work in the Shoalhaven region given what they know of the local vegetatic Content focus : Students examine the differences in Indigenous and non-Indigenous percentees around fire and recimportance of cultural knowledge changes over time.	undertake a case study that allows ther to discover the role that RFS and other n explore the emerging research arounc proposed and why they benefit environ a would feel about these approaches ar t, topography and climate. t, topography and climate approaches ar ognise that attitudes to environmental m	em to practice a her community nd cool burn fire onments and the and discussing why or management and the
Syllabus outcomes taught in this unit:	A student:Concepts:• explains the diverse features and characteristics of a range of places and environments GE5-1explains the diverse features and characteristics of a range of a	 Geographical tools: Maps –topographic maps Spatial technologies – virtual ma GPS Visual representations – photos, illustrations, flow charts, annotat multimedia, mind maps, web too 	naps, satellite images, s, aerial photos, ated diagrams, ools.
Assessment summary for this unit:	No formal assessment – assessment of class work and skills application in case study will contribute to o	rall class mark.	
Unit developed by Leah Art	thur, Nowra Christian School, using the Fire-wise <i>Fire Challenge Unit</i> developed by the Department of Education an	Training in consultation with the Rural Fire S	è Service, 2007.

•		Geographical Inquiry Skills -
 How are bushfires prevented 	and managed?	The highlighted skills are targeted in this unit:
Can traditional Indigenous K	nowledge improve the way bushfires are	Acquiring geographical information
prevented and managed?		 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
Framing Questions related to th	s unit-	 evaluate information sources for their reliability, bias and usefulness
Why do Bushfires occur?		 represent multi-variable data in a range of appropriate forms, with and without the use of digital and spatial technologies
 How do we use geographica What are the traditional Indigence 	l skills in the management of bushfires? us approaches to fire management?	 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
Key Geographical Lang	lage	 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
- Fire	Scale	Communicating geographical information
 Humidity 	Relief	present findings, arguments and explanations in a range of appropriate communication forms selected for their effective communication forms and instead distributed in the second distributed i
 Vegetation 	 Gradient 	triell effectiveness and to suit audience and purpose, using relevant geographical terminology and digital technologies as appropriate
 Precis Map 	 Sclerophyll 	reflect on and evaluate the findings of an inquiry to propose individual and collective action in response to a
 Bearing 	Grassland	contemporary geographical challenge, taking account of environmental, economic and social considerations;
 Direction 	Scrub	and explain the predicted outcomes and consequences of their proposal
 Grid Reference 	 Sketch Map 	
 Cold front 	 Traditional Burning 	
 Containment 	Cold burn	
 Combustible 	 Self determination 	
 Aspect 	 Carbon credits 	

eaching and le	earning strategies	Differentiation	Resources	Registration
 Students Brack As a class v allow discus allow discus. Ask students to students to students to students to students to thumidity, h Fire rating. Fire rating. Frequency In pairs stud research. In conditions for conditions for students suites suites. Students suites. 	ainstorm how fires can change places and environments. iew a montage of Australian fire related photos. Stop and sion and back and forth conversation. s how fire is managed and prevented in Australia – direct start thinking in Geographical terms and incorporating , terrain neat, wind, rainfall fire danger scale ; severity ; severity ents look at the graphic from the CSIRO website about fire pairs students should think pair share about the ultimate or a bushfire. mmarise how the CSIRO forest fire danger index works. atch After burn – Perfect Conditions For Fire		http://www.csiro.au/en/R esearch/Environment/Ex treme- Events/Bushfire/Bushfire -research http://www.nationalgeogr aphic.com.au/tv/afterbur n/videos.aspx http://www.csiro.au/en/R esearch/Environment/Ex treme- Events/Bushfire/Fire- danger-meters/MK5- forest-fire-danger-meter	
 Students unc Extension stu own with min likely). Suppo skills, but hav skills, but hav skills, but hav ninted copy inclu and media release allow the students content. 	The fire Challenge case study at their own pace. Idents will be able to work through the material on their imal input (reminders about gradient and relief are most port students will need teacher's assistance to apply the worked examples as assistance also. A second examples as assistance also. A set workings and answers on the maps and tables. The the workings and answers on the maps and tables. The des all of the planning officers instructions, firewise forms as, but computers or ipads are still very valuable as these in to view pictures, diagrams etc and listen to the additional the view pictures.	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://Irrpublic.cli.det.nsw .edu.au/IrrSecure/Sites/ Web/fire_challenge/inde x.htm	

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.

STAGE 5: Let it burn

	http://www.abc.net.au/ne ws/2013-10- 15/australian-scientists- csiro-software- bushfires/5023968 https://www.countryneed speople.org.au/the_spar congrams/landline/old- programs/landli
Resources/Documents/B ushfires_final_txt_LR.pdf	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.
 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. Have students draw up a class KWL chart on the issue. 	 In small groups or pairs, assign students an article to read and analyse about indigenous traditional burning. Have students read through the article out loud in groups or pairs (possibly using the reciprocal reading technique). Individually students complete a right angle thinking activity for the article and then as a group or pair share and combine their work. Individually students should also make the connection between human benefits and ecological/environmental benefits – either an increase in bioldiversity 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 important 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. 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. As a class review the activity and discuss if this approach would work in the Shoalhaven given what the students know about the lead, moderating to ensure all get a turn if required. Individually students use their sheets to compile arguments for and against using this approach locally. Students then undertake a
	 explains the diverse features and 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 including the different world views and the management including the different world views and the management including and the management including and the management including the different world views and the management including the different world vi

STAGE 5: Let it burn

		e Rural Fire
https://www.csiro.au/en/ Research/LWF/Areas/Ec osystems- biodiversity/Managing- landscapes-for- biodiversity/Indigenous- NRM/Aboriginal- wettand-burning-in- Kakadu	https://www.youtube.co m/watch?v=AXG_2JSW 0FA&disable_polymer=tr ue	and Training in consultation with the
		e Department of Education a
philosophical chairs debate using their notes – remind students this is a good time to practice for their assessment task later in the year.		wra Christian School, using the Fire-wise <i>Fire Challenge Unit</i> developed by the
		developed by Leah Arthur, N vice, 2007.

Teaching and Learning Unit Evaluation

Program or Unit Title:	Class:	Teacher:
Element	Evaluation	
Program		

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.

STAGE 5: Let it burn

			Signature:	<i>lenge Unit</i> developed by the Department of Education and Training in consultation with the Rural Fire Service, 2007.
 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? Teflect 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:	Unit developed by Leah Arthur, Nowra Christian School, using the Fire-wise <i>Fire Chall</i>

GTANSW 2017 AGM

Minutes

- 1. Welcome to the AGM for GTA NSW from the president.
- 2. Attendance; Martin Pluss, David Latimer, Kath Donnelly, Steve Weingarth, Grant Kleeman, John Lewis, Paul Alger, Sharon McLean, Drew Collins, Alexandria Lucas, Louise Swanson. Melinda Rowe, John Petts.

Apologies: Grace Larobina, Keith Hopkins, Adrian Harrison, Karen Bowden, Nick Hutchinson, Susan Caldis

- 3. Minutes of AGM 2016. Moved: Sharon McLean. Seconded: John Lewis
- 4. Annual Report Presented by 2017 GTA President Lorraine Chaffer

Lorraine spoke of the successes of the year and the acknowledgement received from other Professional Teachers Associations on GTA NSWs service to members. Many events were held throughout 2017 and these were open to all sectors and catered for K-12 and pre-service teachers. Few restricted events.

Membership increased from 2016 353 to 375 in 2017.

The 2017 GTA membership comprised 5 Life members. 16 Councillors 4 Vice Presidents and the President. There were 3 Coopted members.

Annual Report:

Moved: Lorraine Chaffer. Seconded: Grant Kleeman

5. Presentation of Annual Financial Statement.

Documents were tabled. Moved; Grant Kleeman. Seconded: Lorraine Chaffer.

6. Election of Officers.

All nominations were accepted and welcomed to GTA NSW for 2017 - 2018.

President Lorraine Chaffer.

Vice Presidents. Louise Swanson, Sharon McClean, Susan Caldis, Grant Kleeman

Treasurer Grant Kleeman

Public Officer Louise Swanson

Editor Lorraine Chaffer

Three GTA members were coopted onto Council for 2018, two of these Melinda Rowe and John Petts are new Regional Representatives.

Motion: GTANSW to increase corporate membership by \$10 to \$190

Moved Lorraine Chaffer. Seconded: Paul Alger.

End of meeting

GTANSW 2017 AGM

Financial Report

THE GEOGRAPHY TEACHERS AS OF NEW SOUTH WALES INCOF INCOME AND EXPENDITURE SI FOR THE YEAR ENDED 30 JUN	ISOCIATION R <u>PORATED</u> ITATEMENT NE, 2017		 THE GEOGRAPHY TEACHE OF NEW SOUTH WALES II INCOME AND EXPENDIT FOR THE YEAR ENDED	ERS ASSOCIATION INCORPORATED TURE STATEMENT 30 JUNE, 2017	
Income	<u>2017</u>	2016 \$		<u>2017</u> \$	<u>2016</u> \$
Membership subscriptions Grants received Sponsorship Allendance fees Expense Reimbursements Copyright Sales Miscellaneous income Intorost rocoivod Intal income Intorost rocoivod Intal income Bank charges Bank char	58,406 3,568 18,407 97,646 10,896 10,896 10,896 10,896 10,896 10,896 10,896 11,399 82,794 1,300 82,794 1,300 82,794 1,300 17,550 82,794 17,550 82,794 17,550 82,794 17,550 82,794 17,550 82,794 17,550 82,750 82,5000 82,5000 82,5000 82,5000 82,5000 82,5000 82,5000 82,5000 82,50000 82,50000 82,5000000000000000000000000000000000000	65,436 500 500 2,595 55 55 55 55 55 50 2,592 2,592 2,592 1,767 1,017 1,017 1,017 1,017 1,017 1,075 1,172 1,075 1,075 5,48 9,789 5,48 9,789 5,48	Postage Printing & stationery Renrovalist Rent Socretariat Socretariat Sills Books purchased Tellephone and internet Travel and accommodation Websile Iotal expenses Iotal expenses Iotal expenses Iotal expenses from Ordinary Activities from Ordinary Activities from Ordinary Activities from Ordinary Activities from Ordinary Activities from Ordinary at the beginning of the financial year Retained earnings at the end of the financial year	2,211 8,248 1,4,715 14,715 19,166 15,813 66 5,308 5,308 9,178 9,178 313,737	238 409 8,480 20,046 20,046 1,235 45,265 45,266 45,266 304,559 304,559
			The accompanying notes form part of these fin	nancial statements.	

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Card Number	/_		/	_/		-
Cardholder Name						
Signature						

GEOGRAPHY

ADVICE TO CONTRIBUTORS

Editorial policy attempts to:

- promote material which will assist the study and teaching of geography
- encourage teachers to share their ideas on teaching geography
- provide a means by which teachers can publish articles
- inform readers of developments in geographical education

Articles are sought reflecting research and innovations in teaching practices in schools. From time to time issues of the Bulletin address specific themes.

Refereeing

All suitable manuscripts submitted to the Geography Bulletin are subject to the process of review. The authors and contributors alone are responsible for the opinions expressed in their articles and while reasonable checks are made to ensure the accuracy of all statements, neither the editor nor the Geography Teachers' Association of New South Wales Inc accepts responsibility for statements or opinions expressed herein.

Books for review should be sent to:

The GTA NSW Council PO Box 699 Lidcombe NSW 1825

Editions

There are four bulletins each year – two published each semester.

Notice to Advertisers

'Geography Bulletin' welcomes advertisements concerning publications, resources, workshops, etc. relevant to geography education.

FULL PAGE (26 x 18cm) – \$368.50 Special issues \$649.00

HALF PAGE (18 x 13cm or 26 x 8.5cm) – \$214.50 Special Issues \$382.80

QUARTER PAGE (13 x 8.5cm or 18 x 6.5cm) – \$132.00 Special issues \$242.00

INSERTS (A4 supplied) – \$374.00 All prices include GST

Advertising bookings should be directed to:

GTA NSW Office Telephone: (02) 9716 0378 Fax: (02) 9564 2342 Email: gta.admin@ptc.nsw.edu.au

- 1. *Objective:* The Geography Bulletin is the quarterly journal of the New South Wales Geography Teachers' Association, Inc. The role of the Geography Bulletin is to disseminate up-to-date geographical information and to widen access to new geographic teaching ideas and methods. Articles of interest to teachers and students of geography in both secondary and tertiary institutions are invited, and contributions of factually correct, informed analyses, and case studies suitable for use in secondary schools are particularly welcomed.
- 2. *Content:* Articles, not normally exceeding 5000 words (no minimum specification), should be submitted to the GTANSW Office gta.admin@ptc.nsw.edu.au or by mail to: . *PO Box 699, Lidcombe, NSW 1825* who will forward to the editor: Submissions can also be sent directly to the editor: Lorraine Chaffer (lchaffer@tpg.com.au)

Articles are welcomed from tertiary and secondary teachers, students, business and government representatives. Articles may also be solicited from time to time. Articles submitted will be evaluated according to their ability to meet the objectives outlined above.

- 3. *Format:* Digital submission in Word format. Tables should be on separate pages, one per page, and figures should be clearly drawn, one per page, in black on opaque paper suitable for reproduction. Photographs should be in high resolution digital format. An indication should be given in the text of approximate location of tables, figures and photographs. Every illustration needs a caption. Photographs, tables and illustrations sourced from the internet must acknowledge the source and have a URL link to the original context.
- 4. *Title:* The title should be short, yet clear and descriptive. The author's name should appear in full, together with a full title of position held and location of employment.
- 5. *Covering Letter:* As email with submitted articles. If the manuscript has been submitted to another journal, this should be stated clearly.
- 6. *Photo of Contributor:* Contributors may enclose a passporttype photograph and a brief biographical statement as part of their article.
- 7. *References:* References should follow the conventional author-date format:
 - Abbott, B. K. (1980) *The Historical and Geographical Development of Muswellbrook* Newcastle: Hunter Valley Press.
 - Harrison, T. L. (1973a) *Railway to Jugiong* Adelaide: The Rosebud Press. *(2nd Ed.)*

Harrison, T. L. (1973b) The Spatial Distribution of Macadamia Plantations on the Far North Coast of New South Wales, *Journal of Rural and Agricultural Problems,* 13, 4, Oct. pp. 347–359.

- O'Donovan, M. J., *et. al.* (1980) "Animal life in the North Star District of New South Wales". In W.W. Murphy, (Ed.) *Readings in Regional Geography (Vol.* 2), Sydney: Williams and Sons.
- 8. *Spelling* should follow the Macquarie Dictionary, and Australian place names should follow the Geographical Place Names Board for the appropriate state.

