GEOGRAPHY BULLETIN

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Geography leacher's Association

Volume 49 No 1 2017

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PROJECTS • **REPORTS** • **RESOURCES** • **ARTICLES** • **REVIEWS**

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GEOGRAPHY BULLETIN

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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 Geography Bulletin for 2017. This edition contains two lengthy articles by Susan Bliss linked to topics in the 7-10 Geography syllabus – *Chocolate* and *Sharks in Hot Soup*. Both articles contain a wealth of information and visuals, links to other sources and a range of teaching activities to engage students in geographical inquiry. In *Teaching out of field: Teachers having to know what they do not know* Susan Caldis examines the dilemma facing many schools, a lack of trained Geography teachers to teach Geography classes.

The **2017 GTANSW Annual Conference** program was developed in response to the results of a survey conducted among participants of the 2016 Annual Conference. The inclusion of over 40 workshops, eight master classes and three keynote addresses reflects the professional learning preferences of teachers in this survey. Sharon McLean has summarised the survey results succinctly in the article *GTANSW Professional Learning Survey 2016.*

The conference flyer and program summary are included in this edition for any teachers wishing to attend. Details of workshops are on the GTANSW website. Registration is online or, if closed, by contacting GTA by phone to see if places are available.

Supporting K–6 teachers

A special effort has been made to provide workshops for primary teachers on Thursday 9th March. Supporting our primary colleagues and building networks between primary and secondary Geography teachers is an ongoing priority for GTANSW in 2017.

An inclusive event

The *HSC Exam Review, 2016 HSC High Achievers Awards* and *Arthur Phillip Fieldwork Awards* have been incorporated into the conference program after a successful trial in 2016.

Sponsorship

In 2017, GTANSW are grateful for the support of the following conference sponsors

- UrbanGrowth NSW (Platinum sponsor)
- Sydney Olympic Park Authority (Bronze sponsor)
- The Murray Darling Basin Authority (Bronze sponsor)
- Magabala Books.



Sponsorship has enable GTANSW to

- reduce registration costs from previous years
- obtain a range of experienced and engaging presenters from across Australia
- provide participants with a copy of the *Geography Skills Unlocked* book produced by the Australian Geography Teachers Association



Lorraine Chaffer, Editor

• provide generous bursaries and scholarship to assist teachers wishing to attend the conference. These are the *Urban Growth Conference Bursary* for Primary Teachers, *GTANSW Conference Bursary* and the *Murray Darling Basin Conference Scholarship*.

UrbanGrowth has worked with GTANSW to secure **Dr Chris Sarra**, a renowned educator and founder of the Stronger Smarter program to open the conference. Quite a coup.

Conference Exhibitors

The 2017 conference will have a wide range of exhibitors to support the new K–10 Geography Syllabus. These include:

Publishers

- Macmillan
- Cambridge
- Jacaranda
- Oxford
- Pearson and
- Five Senses Education

Government and Non Government Organisations

- Primary Industries Education Foundation Australia(FIEFA)
- UrbanGrowth NSW
- Murray Darling Basin (MDBA)
- Sydney Water
- Mulloon Institute
- Didi Foundation Inc.
- Cool Australia
- The Big Issue
- Oxfam
- Aboriginal Education Consultative Group (AECG)
- Tribal Warriors
- Bookminders (HSC Resources)

Experts in spatial technologies and fieldwork

- Contour Education
- NSW Environmental and Zoo Education Centres (EZEC's)
- Sydney Olympic Park
- Action Learning Initiatives



Online registration HERE before 6.00pm Wednesday 1 March

Other professional learning opportunities offered by GTANSW in 2017 will include

- Webinars (accredited hours)
- Regional Conferences
- Skills Workshops
- HSC Teachers Conference
- HSC editions of the Geography Bulletin in late Semester 1 and Semester 2

In an effort to increase GTANSW's online presence Sharon McLean, GTANSW Vic President has organised two webinars for term 1. The first webinar, *Information Technology for the NSW Geography Curriculum* with Clare Kinnane on February 21st, was highly successful. The second *Developing a Summative Assessment task* with Sharon McLean is on February 28th.

The **HSC Student lectures** will continue as in previous years at three venues (Sydney, Newcastle and Wollongong) in June. Efforts will continue to bring support to HSC students across regional NSW where feasible.

Building networks 2017 and beyond

GTANSW is increasing efforts to build stronger networks to other Geography education providers during 2017 and beyond. Already this year, as GTANSW president, I have attended the Environmental and Zoo Education Centres Conference (EZEC's) in Bowral and worked with the National Parks and Wildlife teacher Lee Middleton in Byron Bay. Adjusting fieldwork programs to better reflect the new Geography K–10 Syllabus and developing pre and post fieldwork activities were among the presentations and discussions. With other GTANSW members I have also worked with UrbanGrowth NSW and Sydney Olympic Park to secure sponsorship and develop partnerships that are mutually beneficial to

teachers and enable greater teacher input into programs developed for teachers by these organisations.

Establishing stronger links with universities is another priority area. This will help teachers and students make the link between school Geography, university courses and careers.

Lorraine Chaffer GTANW President

> Right: Lee Middlelton with one of the colourful banners used in the NPWS programs at Byron Bay





2017 is an important year for the implementation of the K–10 Geography Syllabus. The conference program has been carefully planned to support primary and secondary teachers with a mix of keynote speakers, masterclasses and small workshops designed to build teacher confidence and skills, inspire new ideas and collaborate with colleagues across the state as they develop and trial new teaching programs. Workshops linked to the HSC and 2016 HSC review are designed to assist senior teachers.

Two-day conference (Attend one or both days)

- 48 Workshops for K–12_including fieldwork, ICT, differentiation and skills
- Syllabus Masterclasses for the eight new 7–10 topics
- Targeted workshops for primary, 7–10, elective and HSC

Cost

GTANSW Members:

1 day (Thursday OR Friday) \$250

Non-members:

1 day (Thursday OR Friday) \$350

2 days (Thursday and Friday) \$450

2 days (Thursday and Friday) \$550

Urban Growth

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Magabala Books



Australian Government



GTANSW THANK THESE CONFERENCE SPONSORS FOR THEIR SUPPORT



MARCH 9th and 10th 2017

COLLABORATE, INNOVATE AND LEARN

CONFERENCE PROGRAM SUMMARY

See Workshop Selection document for details about each session





Growti **NSN**

Platinum Sponsor

conference program has been carefully planned to support primary and secondary teachers teacher confidence and skills, inspire new ideas and collaborate with colleagues across the 2017 is an important year for the implementation of the K-10 Geography Syllabus. The with a mix of keynote speakers, masterclasses and small workshops designed to build state as they develop and trial new teaching programs.

Primary teachers are catered for with specific primary workshops and those applicable across many stages from K-10. These are shown in purple. Workshops linked to the HSC and 2016 HSC review are designed to assist senior teachers.

Workshops have been chosen to support specific topics and masterclasses allowing teachers understanding across all topic areas and to choose fieldwork, skills and pedagogical options to specialise in one or two topics they are teaching in 2017 or to build knowledge and to enhance classroom teaching and learning.









GTANSW ANNUAL CONFERENCE

MARCH 9th and 10th 2017

COLLABORATE, INNOVATE AND LEARN

GTANSW ANNIJAL CONFERENCE: COLLABORATE. INSPIRE and LEARN Thursday 9th March

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Time	PROGRAM DE	TAILS *See Worl	<u>sshop selection det</u>	tails to choose optior	IS *Sessions specifi	cally for, or suited to	, K-6 teachers
8.00 - 8.50	Registratio	on in Level 1 Foyer					
Rooms	Freshwate	er Rooms 1 & 2					
9.00 - 9.40	Conference welco	me (Lorraine Chaffer]	President GTANSW) 10	0-15 minutes Conf	erence opening: Dr C	hris Sarra 15 -20 mir	nutes
	Inspiration: Video	clip: STEM & GEOGRA	PHY 10 minutes				
Session 1	1.1 Keynote: Urba	n Growth NSW 20 m	inutes				
9.40-10.30	1.2 Keynote Cool <i>H</i>	Australia 30 minutes					
10.30 - 11.00	MORNING TEA						
Rooms	Freshwater 1	Freshwater 2	Freshwater 3	Marine	Forest	Parklands (cabaret setup)	Outdoor tour
Session 2 11.00 – 11.45	2.1 Masterclass Landscapes and landforms	2.2 Workshop Living Ocean: Action for sustainability & liveability	2.3 Workshop Geography in the online world. Making connections	2.4 Workshop Water in the world in learning spaces	2.5 Workshop Global tourism	2.6 Workshop A collaborative problem based unit of study for Stage 3 Bushfire	2.7 Walking tour Sydney Olympic Park as a case study for Stage 4 Place & liveability and Water
11.45 - 11.50	Transition between	ı sessions					in the World.
Session 3 11.50 – 12.35	3.1 Masterclass <i>Water in the</i> <i>World</i> Stage 4	32 Workshop The big plan for the Bays Precinct, Sydney	3.3 Workshop Augmented reality Sandbox K-6	3.4 Workshop Renewable Energy. Status and challenges	3.5 Workshop Cocoa -chocolate supply Chains and networks	3.6 Workshop Using picture books in Geography K-10	*Double session
12.35 - 1.30	LUNCH						
Session 4 1.35 – 2.20	4.1 Masterclass Interconnections Stage 4	4.2 Workshop Brave new clan Aboriginal Perspectives	4.3 Workshop Something to whet your appetite: Water resources of the MDB	4.4 Workshop Formative assessment in Geography	4.5/5.5 Workshop EECZ centres Taronga Zoo, Field of Mars, Gibberagong	4.6/5.6 Workshop EECZ centres Observatory Hill, Longneck, Rumbalara,	4.7/5.7 Tour Sydney Olympic Park as a unique urban change case study
2.20 - 2.25	Transition between	sessions				Brewongle	
Session 5 2.25 – 3.10	5.1 Masterclass Place and Liveability Stage 4	5.2 Workshop 30 Enhancing our Asia capability	5.3 Workshop Simple spatial technologies for primary	5.4 Workshop Water in a liveable city	*Double session	*Double session	*Double session
3.15 - 3.30		Collaboration: Plena	ıry, networking, evalua	ation, discussion, feedbac	k in Freshwater Room	1 & 2	
3.30 - 4.00		AFTERNOON TEA	* 2016 HSC Revi	ew Twilight event 4pm –	6 pm. Freshwater 1 &	2 Register separat	ely for this event

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MARCH 9th and 10th 2017

COLLABORATE, INNOVATE AND LEARN

GTANSW ANNUAL CONFERENCE: COLLABORATE, INSPIRE and LEARN Friday 10th March

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1 IIIIe	FRUURAINI DE I	M aac CTIN	orksitop selection	i details to citoose of	pulotis		
7.45 - 8.45	Registration Level	1 Foyer					
Rooms	Freshwater 1 & 2						
8.50 - 9.00	Conference welcon	ne 10 minutes					
Session 6	6.1 Bruce Pascoe: I	Dark Emu 10 minute	S				
9.00-10.30	6.2 Keynote Urban	Growth 30 minutes					
	Transition time an	id awards prepara	tion				
	6.3 Awards presen Arthur Phillip Fieldv	tation : 40-50 minut work Awards, HSC T	es op Achievers, GTA Aw	vards. GTA Awards: Lifet	time Membership /Geof	f Connelly	
10.30 - 11.00	MORNING TEA	Meet	che Author Bruce Pa	ascoe - Freshwater Ro	om 3 / Aboriginal dis _l	olays in Freshwater	3
Rooms	Freshwater 1	Freshwater 2	Freshwater 3	Forest	Parklands	Marine	Flexible spaces
	7.1 Masterclass	7.2 Workshop	7.3 Workshop	7.4 Workshop	7.5 / 8.5	7.6 Workshop	
Session 7	Sustainable	Edmondson	Dark Emu:	The Global Goals	Workshop	Using BYOD in	
11.00 - 11.45	Biomes	Park Program	Black Seed	& Oxfam's 6 goals	FFC7 centres	the Geography Classroom	
11 AE 11 EO	Turneition time	un for t			Taronaa 700		
06.11 - 64.11	I ransition time				I aronga 200		
	8.1 Masterclass	8.2 Workshop	8.3 Workshop	8.4 Workshop	Observatory Hill	8.6 Workshop	8.7 Workshop
Session 8	Changing	Augmented	Riverine	Hungry and	Kumbalara	Empowering	School Site
11.50 - 12.35	Places	reality Sandbox 7 - 10	environments	Naked	*Double session	Global Change	Fieldwork
12.35 - 1.35	LUNCH						
	9.1 Masterclass	9.2 Workshop	9.3 Workshop	9.4 Workshop	9.5 Workshop	9.6 Workshop	9.7 Workshop
Session 9	Environmental	The Power of	Big Issue: Big	Elective	Mulloon Institute	Differentiation	Water resource
1.35 – 2.20	Change &	one: DIDI	Impact	Geography	Landscape	in Geography	issues done
	Management	Foundation			regeneration Pt 1		differently
2.20-2.25							
Session 10	10.1 Masterclass	10.2 Workshop	10.3 Workshop	10.4 Workshop	10.5 Workshop	10.6 workshop	
2.25 - 3.10	Human	Simple Spatial	Bringing	Coral Reef	Mulloon Institute	WildThings	
	Wellbeing	Technologies for 7 - 10	sustainable biomes to life	environments	Pt 2	Native Bee Initiative	
3.15 - 3.30	Collaboration: Ple	nary, networking, o	evaluation, discussi	on, feedback in Fresh	vater Room 1 & 2		

Sharon McLean (Vice-President)

In order to support our teachers in the best possible way the Geography Teachers Association asked members during Term 4 2016 to respond to a survey regarding Professional Learning opportunities. Seventy-seven members responded to the survey, the results of which are presented below. This survey has provided the GTA Council with valuable information that has informed the learning opportunities that will be offered in 2017. Of particular interest are the responses to Question 8 on the method of delivery of Professional Learning. Members have indicated that workshops, keynote speakers and online options all have a part to play and each is particularly suited to an aspect of teacher professional development. In response to the needs of our members the GTA Annual Conference, to be held at the Novatel, Sydney Olympic Park on Thursday 9 and Friday 10 March will offer 40 workshops as well as keynote speakers. The GTA Council will also endeavour to continue to place resources on the website as well as provide an offering of webinars during the year.





2. What is your school's postcode?







5. What type of school do you work in?











10. What time of year suits you for Professional Learning activites? 45% 40% 35% 30% 25% 20% 15% 10% 5% 0% Early Late Early Late Early Late Early Late SaturdayHolidays Term1 Term 1 Term 2 Term 2 Term 3 Term 3 Term 4 Term 4 any term between terms

GTANSW Conference 2017 program and workshop details

To assist in your selection of workshops, the program, presenter abstracts and workshop details can be found on the GTANSW website or at the following link: http://www.gtansw.org.au/files/prof_learning/2017/GTA-conference/presenter_abstracts1126.pdf



CONFERENCE

PIRE and LEA

OUTLINE OF WORKSHOP

Presentation and teaching resources prepared by experienced HSC Geography Markers

chers Association of NSW

- Session 1: Multiple Choice analysis. Identification of both strengths and weakness in student performance in Geographical skills
- Session 2: Short Answer analysis. Identification of targeted syllabus content, discussion areas of strength and weakness in student responses, advice for teachers
- Session 3: Extended Responses analysis. Identification of targeted syllabus content, discussion areas of strengths and weakness in student responses, identification of topic content case e.g. case studies and illustrative examples, advice for teachers
- Session 4: Geographical Skills workshop based on identified areas of weakness in HSC student performance

HSIE Resource Display – BookMinders Australia Pty Ltd is a NSW based publishing company specialising in the production and distribution of NSW HSC assessments including HSC Geography in 2017.

DETAILS

BOSTES Registration and Afternoon Tea: 3.30pm – 4.00pm . Teachers maintaining OR gaining BOSTES Accreditation are required to sign in at registration and record their BOSTES number

Workshop time: 4.00 – 6.00pm Venue: Freshwater 1 room, Novotel Sydney Olympic Park

Cost: GTA NSW Annual Conference attendees - no additional cost

Participants not attending Annual Conference - \$20

ALL PARTICIPANTS MUST REGISTER FOR THIS EVENT ONLINE at https://goo.gl/forms/wLYnUjXL7PD1oH8P2 REGISTRATIONS CLOSE: 5.00pm Wednesday 1 March 2017

Travel options:

RAIL to Sydney Olympic Park Station (www.sydneytrains.info/travelling_with/places_to_go/olympic_park)

CAR – Limited street parking, P3 Parking station \$5/hour, max \$25/day (www.sydneyolympicpark.com.au/parking/casual_parking)



Acceditation

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

- Scope of Endorsement
- All Standards of the Australian Professional Standards for Teachers at the level of Proficient and Highly Accomplished and Lead. Completing the HSC Examination Review Twilight Workshop will contribute 2 hours of QTC Registered PD addressing 6.2.2; 6.3.2; 7.4.2 from the Australian Professional Standards for Teachers towards maintaining Proficient Teacher Accreditation in NSW.

What would you **rather be doing** this weekend?

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TEACHING 'OUT OF FIELD':

Teachers having to know what they do not know

Susan Caldis (Immediate Past President, GTANSW)

Abstract: Teaching out-of-field is a situation many teachers experience throughout their career; particularly those entering the profession. Not only does teaching out-of-field disrupt the integrity of a subject, it inevitably results in heightened levels of student disengagement, lower than anticipated achievement of student learning outcomes, and an increasing lack of confidence amongst teachers about their ability to teach effectively. It is this cycle that fuels public perception of declining teacher guality. Research reveals that teaching out-offield is not an Australia-specific educational issue and neither is it connected to one particular subject. Whilst the span of teaching out-of-field is initially explored with an evaluation about its cause and effect according to policy, practice and research, focus will turn to the extent of and responses to Geography being taught out-of-field in Australian secondary schools.

What is the nature of out-of-field' teaching?

Ingersoll and Gruber (1996) describe teaching out-offield as being a situation where teachers are required to teach a subject(s) for which they have no specialisation, i.e. the subject(s) they are teaching is not what they studied as part of their teacher training at either minor or major level. Du Plessis, Gillies and Carroll (2014, p. 90) take a similar position to define out-of-field teaching: "teachers who are assigned to teach subjects and year levels when they are not suitably gualified to do so." These North American and Australian based researchers, respectively, suggest the teachers are qualified to teach but only in particular subjects. Professor Geoff Masters (2015) from the Australian Council for Educational Research (ACER) adds another layer to this definition by suggesting that out-of-field teaching occurs if a teacher is teaching a subject they have not studied for at least one semester at university and neither have they completed a teaching methodology unit for the subject concerned as part of their initial teacher training.

Comparatively, the British and South African media take a much starker position in their reporting about the quality of education in their national context, referring to out-of-field teachers as "untrained" (Loveys, 2011) or "unqualified" (Silva, 2010) respectively. Unfortunately this lends itself easily to an attention grabbing and inflammatory misinterpretation that teachers have not undertaken any initial teacher education program or received any qualification at all.

For the purpose of this response, the term out-of-field teaching will be used in the context of a less ambiguous definition coined by Hobbs (2013, p.271), "Teaching outof-field occurs when teachers teach a subject for which they are not qualified." In secondary school contexts this situation is often referred to as a non-specialist teacher; a simple example would be Geography being taught by a Personal Development, Health and Physical Education (PDHPE) teacher, or Mathematics being taught by an Information and Communication Technology teacher. This definition and example is also supported by McConney and Price (2009). Data available from ACER (cited in Masters, 2015) suggests an alarming forty percent of Geography classes are taught by an out-of-field teacher, although to clarify from the aforementioned example, it is absolutely not implied that forty percent of Geography classes are taught by PDHPE teachers.

Where is it occurring? Why? What subjects are affected?

Research conducted by Ingersoll and Gruber (1996) to determine the distribution of teacher quality in public secondary schools across the United States of America (USA) focused on the proportion of students being taught by out-of-field teachers (rather than the amount of teachers teaching outside their subject of specialisation). Concerning data emerged from this study as it revealed that between 1990-1991, approximately one-fifth of students were taught English by an 'out-of-field' teacher; almost twenty-five percent of students were taught Mathematics by an out-of-field teacher; and between thirteen and seventeen percent of students were taught Social Studies and Science (respectively) by on out-of-field teacher. Additionally, it was evident from the research data that the highest proportion of students being taught by out-of-field teachers were in areas identified as "high poverty" and having "high minority" group enrolment (Ingersoll and Gruber, 1996, pp 15–18). Therefore, it can be deducted

from these findings that the cycle of socio-economic disadvantage would continue to be perpetuated as a result of these students being assumingly exposed to a reduced quality of education compared to those students who are taught core subjects by a subject specialist teacher. By 2002, Ingersoll, still in the USA, had built on this research about out-of-field teaching and was able to determine two of its most likely causes:

- teachers being directed by the school leaders to teach subjects that do not match their qualifications to fill timetable gaps and meet other school organisational requirements; and
- in subject areas and geographical locations where there are an abundant supply of teachers, they are frequently teaching 'out-of-field' in order to obtain employment (Ingersoll, 2002, p. 2, 30 – 33)

Overall Ingersoll's research indicated that out-of-field teaching was not an issue of practice caused by poor teacher training, rather, it was an outcome of policy that was incorrectly based on the assumption that out-offield teaching occurs because of a teacher shortage and of poor teacher quality. The policy was designed to improve the rigor of teacher training and professional learning, as well as increase the appeal of initial teacher education courses. Whilst this is a commendable policy in itself for education, it is a contributing factor as to why much out-of-field teaching was occurring – too many well qualified teachers were graduating for the number of jobs available.

Moving forward in time to 2011 and across the Atlantic Ocean to the United Kingdom, media sources and education researchers were making clear statements about the connection between the significant proportion of teachers being required to teach subjects for which they are not suitably qualified and the declining educational performance of students. Statistics obtained from the British Department of Education indicated that approximately thirty percent of teachers who were teaching either Geography, Mathematics or Physics did not have a formal gualification in that subject, however, the reasons put forward in defence of the data were related to the need for policy change, firstly around teacher education courses to make them more rigorous, and secondly around the availability and emphasis on professional learning for in-service teachers (Loveys, 2011). The point around professional learning was also captured in the research by Fisher and Webb (2006) about the importance of subject specialist pedagogy being the difference between delivering a lesson generically or inspirationally to foster deep understanding of content and authentic connections between teacher and students, therefore, for teachers

regularly teaching a particular subject out-of-field, it is crucial they have the opportunity to engage with and access quality professional learning sessions for that subject (Fisher and Webb, 2006, p. 337 – 345).

Although with slightly different reasoning to Ingersoll (2002) it is again proposed directly that out-of-field teaching occurs as a result of policy (Loveys, 2011), however, Fisher and Webb (2006) are more subtle. This British team prefer to frame the problem of out-of-field teaching via a solution focused approach by outlining the importance of subject specialisation and therefore the need for policy to be more reflective of the need for an emphasis on professional learning in subject specific content.

In an Australian context, the Australian Education Act 2013 states in the Preamble that "All students in all schools are entitled to an excellent education... not be[ing] limited by where a student lives...[nor] limited by the schools location." Despite this bold and encouraging statement a significant proportion of teachers are being required to teach out-of-field in the secondary school. Dinham (2016) suggests that approximately one-third of all Mathematics classes and one-quarter of all Science classes are taught by an outof-field teacher. As mentioned previously, it is veering towards half of all Geography classes being taught by non-specialist teachers (Masters, 2015). The reasoning put forward typically relates to an oversupply of primary teachers, declining student enrolments in these subjects at secondary and tertiary levels, school organisation constraints, and an undersupply of pre-service teachers undergoing initial teacher education courses in these subjects which is then compounded by a small number of these subject specialist teachers choosing to teach in low socio-economic metropolitan areas or in regional and remote communities (McConney and Price, 2009; Dinham, 2016, Masters, 2015). The school organisation constraints were similarly identified as reasons for out-offield teaching occurring in schools across the USA and Australia, but interestingly, it is the identified shortage of subject specialist teachers overall and in particular areas of Australia that differs from the USA context. However, in the USA, the United Kingdom and Australia research demonstrates that the occurrence of out-of-field teaching arises primarily from policy although it is often publically discussed in terms of teacher practice and student performance.

Whilst acknowledging the international context and broad effect of out-of-field teaching, focus will now turn to out-of-field teaching in a specific subject at a local scale – Geography in Australian schools.

What does this mean for Geography teaching in Australian schools?

At a national level, Weldon (2015) notes that even though out-of-field teaching across a range of subjects has reduced from 2010 – 2013, there are still problematic statistics occurring in the prevalence of outof-field teaching overall, particularly for Geography. This is indicated in the graph below:



Figure 1: Weldon (2015, p. 8 – 9)

Kriewaldt (2006) raised concern about the amount of out-of-field teaching occurring in Geography amongst Victorian schools. In her article it was suggested the average age of Geography specialist teachers was mid-forties, and combined with the lack of availability and declining uptake of geography teaching method courses within initial teacher education courses, it was reasonable to deduce that students being taught Geography by a specialist teacher would become increasingly unlikely. Furthermore, data showed that within ten years, the proportion of Victorian teachers who were teaching Geography without a sub-major qualification in this subject had almost doubled, jumping from twenty-four percent to forty-three percent.

What is being done in response to the issue? Has the response been effective?

To address the concern raised by Kriewaldt (2006) about Geography being frequently taught by outof-field teachers – which resulted in Geography being questioned as a necessary, meaningful subject based on the widespread perceptions about poor teacher practice, decreasing student candidature, and a subject being bereft of rigor – two significant projects were initially developed. These projects were *Towards a National Geography Curriculum for Australia* (McInerney, Berg, Hutchinson, Maude, Sorensen, 2009) and *GEOGStandards* http://www.geogstandards.edu.au (Hutchinson and Kriewaldt, 2010). Both initiatives were developed with the intent of being a foundation for improving the status of geography as a subject and also the quality of geography teaching occurring in schools by specialist and non-specialist teachers. For each project, there was significant contribution from representatives of the Australian Geography Teacher's Association (AGTA).

It was argued strongly in the Towards a National Geography Curriculum for Australia (McInerney, et al., 2009) for Geography be included in the suite of Australian Curriculum subjects as a discrete subject across Kindergarten (or equivalent) up to Year 10. Since 2003, Geography has been offered as a core subject across Years 7 – 9 and as an elective subject from Year 10 in Victoria. In New South Wales there has been a lengthy tradition of Geography being offered as a core subject across Years 7 - 10 and also offered as an elective in Stage 5 and Stage 6. For other states and territories, Geography has been taught in an integrated way as part of a Study of Society and Its Environment (SOSE) framework until publication of the Foundation to Year 10 Australian Curriculum: Geography in 2013. Whilst this may seem a reasonable offering for students, particularly now all students across Australia have the opportunity to experience Geography up to Year 8 and then beyond as an elective subject, two significant question remain: 'Whose responsibility it is to respond to the ever increasing likelihood of Geography being taught out-offield?' and 'What would this response look like?'

The GEOGStandards action research project was funded by the Australian Research Council in conjunction with AGTA, the Victorian Institute of Teaching and the Geography Teachers Association of Victoria, and focused on identifying the characteristics of accomplished Geography teaching practice. This research was conducted nationally and across education sectors. Eight standards emerged from this research around which AGTA and the affiliate professional associations continue to frame their professional learning events for primary and secondary teachers. This has been reinforced by Purnell (2010) who recommended the GEOGStandards be used to inform geography methodology units for preservice teachers, as well as support both the specialist and non-specialist teacher in the shaping of professional learning and substantive conversations about the effective teaching of Geography. The most commonly referred to standards are the following four: "Knowing Geography and the Geography curriculum; Fostering Geographical inquiry and fieldwork; Understanding Geography teaching and pedagogical practices, and Developing geographical thinking and communication." (Hutchinson and Kriewaldt 2010, p. 34).

Drawing on **GEOGStandards**, and a literature review by Maude (2010) about the contribution of Geography to student learning, AGTA took the lead in promoting Geography teaching in schools and supporting the implementation of the Australian Curriculum: *Geography* by developing a curriculum aligned online professional learning tool called *GeogSpace*. The purpose of this tool is to showcase best practice in geography content, geography methodology and use of technology in delivering professional learning (Kleeman, 2014). A year later, AGTA was in the process of publishing a textbook about geographical inquiry, fieldwork and mapping skills. The AGTA Directors had also put together the AGTA Roadshow, a series of national professional learning workshops based on the key messages of the Australian Curriculum: Geography which were believed to be crucial for enabling out-of-field and specialist teachers to interpret and implement the curriculum as intended (Kleeman, 2015). These responses correlate with research by Du Plessis, Gillies and Carroll (2014) about the role and importance of professional learning for teachers, and from commentary by Hobbs (2015) about the value teachers place on their ability to deeply engage with subject-specific content and demonstrate its relevance to their students,

The reduction in out-of-field teaching for Geography and the improved quality of Geography teaching in Australian schools is yet to be determined by research but anecdotally it appears achievable. Over the last year, membership numbers of each state and territory professional association for Geography (the affiliates of AGTA) have been steadily increasing according to administration records; visitors to the GeogSpace website and the length of time spent on the site has been increasing according to data analytics; pre-orders for the mapping skills publication are already being accumulated: the AGTA Roadshow reached out to over 500 teachers nationally; candidature in geography teaching methodology courses are gradually rising; and the Board of Studies Teaching and Educational Standards NSW has reached out to the professional association to design an online interactive module to support the new syllabus.

What will be next?

The National Committee of Geographical Sciences (NCGS) is part of the Australian Academy of Science, and as part of the Decadal Plan, this committee is developing a research report *Strategic Directions for Geographical Sciences* for policy makers and decision makers about the role of geography and its contribution to the social, economic and environmental wellbeing of Australia and its communities. One working party in this program will be focused on writing the section of the paper about Geography in schools. AGTA has been approached by the NCGS to develop a rationale expressing the importance of geographical knowledge in the classroom and arguing for the fundamental need for Geography to become mandatory learning across primary and secondary years of schooling up to Year 10. This project commenced in 2015 and is due for completion in 2017. It is hoped the collaboration between AGTA and the NCGS will influence educational policy to extend core learning in Geography up to Year 10 (currently policy positions Geography as core learning up to Year 8 nationally). It is also hoped the aforementioned collaboration will contribute to continuing the elevated profile of Geography in schools by encouraging improved connections within universities between Schools of Education and Schools of GeoSciences (or equivalent) and also continuing to develop the existing relationship between the Associations for geography teachers and academic geographers. Ideally, a well-developed profile of Geography in schools will encourage geography teachers to remain actively engaged with the subject and Associations, as well as encourage the nonspecialist teachers to consider accessing a range of accredited professional learning opportunities available in geography education. According to Hutchinson and Kriewaldt (2010), this would result in a greater proportion of teachers meeting the standards of accomplished geography teaching, particularly in understanding the pedagogical practices, engaging effectively with inquiry and fieldwork, understanding the subject content and its curriculum requirements and therefore enabling students to think and communicate like geographers.

Conclusion: Overall, research indicates that teaching 'out-of-field' is not a recent, simple or necessarily local education issue. From 1996 to the current time, across several countries, it is evident that a range of subjects in secondary schools are frequently taught by nonspecialist teachers, leading to an increased perception of poor teacher quality and practice in response to increasing levels of disengagement and declining educational performance of students according to national and international benchmarks. The culprit emerging from the research about out-of-field teaching is policy but it is often viewed through the lens of practice. By investigating the incidence of and response to Geography being frequently taught by out-of-field teachers it is apparent that a community of expert, specialist teachers can make a difference to the practice of new and/or non-specialist teachers, despite hurdles related to the outcomes of educational policies.

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GEOGRAPHY

INTERCONNECTIONS & BIOMES



Endangered marine biomes

About 100 million sharks are killed each year in commercial fisheries for fins, meat and oil. As a result, over the last 20 years many species have dropped to 1%-10% of their original population. This has left 30% of species threatened with extinction.

The **World Conservation Union** (IUCN) noted that 150 shark species are listed as threatened or near threatened with extinction and under the **Convention on International Trade in Endangered Species** (CITES) only three sharks are protected such as the white shark, baking shark and whale shark.

At the present rate of **overfishing** it is predicted that in a few years many shark species could become extinct if **sustainable** programs are not implemented

Figure 1: Sharks threatened with extinction



Source of graph: http://www.sharksavers.org/files/cache/da92cf13c6b7afce2 95bb36f4df0b41e.jpg

SHARKS IN 'HOT SOUP'

Dr Susan Bliss

The iconic fin of a great white shark cuts through the water, but is it soup bound? Who would have thought sharks could be pushed to the brink of extinction by a bowl of soup!

Figure 2: Endangered sharks



Source of diagram: https://angelicagraceart.files.wordpress.com/2015/07/ graphiconend.jpg

Sharks – king of the ocean food web

Sharks are **predators** at the top of the aquatic **food chain.** Their diets play an important role in regulating the number of species below them, similar to the lions in Africa. Consequently a decline in sharks causes changes in aquatic ecosystems that trickles all the way down the food chain. Due to the trickle down effects sharks are able to reduce **algae blooms** that overgrow coral reefs and prevent photosynthesis. Species-rich coral reefs are frequently proof of a healthy population of sharks.

HARKS DISAPPEAR

Sharks tend to eat efficiently and hunt the old and sick aquatic species which prevents the spread of diseases as well as strengthening marine gene pools. Sharks consume the most vulnerable species while at the same time ensure stronger and healthier species remain alive. As a result when sharks are overfished marine ecosystems lose their balance.

Removing sharks in large numbers can have ripple effects that throw entire ecosystems out of balance. Since sharks reach sexual maturity late their risk of extinction is higher than most other vertebrate species.

Figure 4: Changes to a marine ecosystem when sharks disappear







Source: http://www. anonymousartofrevolution.com/2013/08/ what-happens-when-sharks-disappear.html

Figure 3: Food web of a shark



© 2010 Encyclopædia Britannica, Inc

Source of food web: https://s-media-cache-ak0.pinimg.com/736x/5a/3a/fb/5 a3afbcf9b88ea9e755052c4d9286498.jpg

Figure 5: Importance of sharks in marine ecosystems

Sharks are important **Sharks control** for the growing tourist the population of Sharks help maintain industry (marine tourism species that feed off the health of marine life and dive industry) phytoplankton When sharks disappear, When sharks disappear, seals overpopulate the stingrays overpopulate ocean causing a decline the ocean which decimates shellfish in fish populations populations Sharks regulate the nutrient balance in ecosystems Sharks are 'keystone species' Apex of the marine food web Healthy coral reefs require sharks to maintain their ecosystem. Loss of shark species can cause a loss of corals and marine habitats

Source: http://www.sharkattackdata.com/assets/images/Sharks-1920-1200.jpg

Sharks in hot soup

Sharks are a common seafood around the world such as in China and Japan (shark-fin soup), Australia (flake), India (sora) and Iceland (hákarl).

Shark finning is the practice of removing shark's fins, then discarding the finless but living shark back into the sea. This cruel **illegal activity** involving about 145 countries i**mpacts** adversely on marine ecosystems:

- **Illegal**: Shark fining is mainly unmonitored and unregulated. Even though it is prohibited in several countries, the practice continues where law enforcement is lax.
- **Impacts:** Shark finning has contributed to 14 species threatened with extinction and a decline in some shark populations by up to 98% in the last 15 years. Demand for shark fins is depleting the oceans of their top predator and destabilising marine ecosystems. If sharks disappears **lower level prey** in the ecosystem (e.g. seals, sea lions) will increase.

As most of the **shark trade** is illegal and carried out in the black market, valid statistics of the declining numbers of sharks is impossible to determine. Without accurate catch data, sustainable management of shark fisheries is problematic.

Figure 6: Shark finning inquiry questions

What is shark finning?

Practice is mostly Causes loss of 100 Threatens marine Up to 999% of sha ocean Sharks are unable of suffocation or a Loss of sharks as a

What are the laws against shark finning?

- Removal and retention of shark fins
- The fin is the most profitable part of the shark
- Practice is mostly unmonitored
- Causes loss of 100 million sharks annually
- Threatens marine ecosystems-unsustainable
- Up to 999% of shark's body is discarded in the ocean
- Sharks are unable to move normally, they die of suffocation or are eaten by predators
- Loss of sharks as a food staple for many people living in developing countries
- Each country is responsible for laws regarding fishing in their coastal waters
- Some countries have shark-finning legislation
- Some fishermen support the Code of Conduct for Responsible Fisheries
- The United Nations Convention on the Trade of Endangered Species of Flora and Fauna (CITES) lists whale sharks, great white sharks and basking sharks as endangered species unless shark fin trade is controlled
- 169 countries agreed to be legally bound by CITES

 $Photo: http://ocean.si.edu/sites/default/files/styles/colorbox_full_width/public/photos/ROTMAN_N13VZweb_1.jpg?itok=NjaP2tBirlingPatberry2tBi$

Shark fin soup – extinction in a bowl

Each year 100 million sharks are killed for their fins with 73 million used in the Asian delicacy, shark fin soup. Shark fins are among the world's most expensive seafood products, fetching up to \$1000 per kilogram in comparison with prawns retailing at \$15-\$30 per kilogram. Some soups cost \$150 a bowl!

Figure 7: Shark fin soup in Asia–causes and impacts

Biggest Asian fishers of sharks are Indonesia, India, Taiwan, Japan and Malaysia

As only 3% of a shark is used for soup, most of the shark is wasted. Sharks without fins are returned

Shark fin soup has no scientifically proven nutritional value but has been considered a health hazard

Increased demand for shark fin soup by emerging Asian middle class

Unfortunately despite attempts to regulate shark finning it still goes on as many countries lack the capacity to enforce the laws, especially in high seas Since the 1300s shark fin soup was part of China's cultural heritage for the rich. Today their fins are still a symbol of wealth. Additionally wealthy Asians who have migrated to other countries (e.g. USA and Australia) have increased the demand for shark fin soup in these countries

Modern fishing methods (e.g. long line fishing) increased the shark catch rate from hundreds to millions per year causing a decline in species

Sharks contain mercury and other contaminants

Shark finning continues due to lack of education and understanding of the damage inflicted on shark populations and marine ecosystems

Source photo: http://images.earthtouchnews.com/media/385757/shark-fin-soup_2014_08_12.jpg

Interconnections: the culprits!

The fate of the world's sharks are in the hands of twenty countries that account for 80% of the global shark catch. Indonesia is currently the world's largest supplier of shark fin products, with the trade primarily driven by China's appetite for shark fin soup. In 2011 over 10.3 million kilograms of shark fins and shark fin–based products were imported into Hong Kong.

Figure 8: Main countries that catch sharks and import sharks for soup



Countries that are the major importers of shark fins from largest to smallest:

- Hong Kong 58%
- China 36%
- Malaysia
- Indonesia
- Taiwan
- Thailand

Countries that catch most sharks from largest to smallest:

- Indonesia
- India
- Spain
- Taiwan
- Argentina
- Mexico
- Pakistan
- USA
- Japan
- MalaysiaThailand
- France

Photo: https://s-media-cache-ak0.pinimg.com/564x/b5/ab/2f/b5ab2fb3290d7792c7e9f390988d5613.jpg

Figure 9: Kesennuma, Japan – major shark fin port

Kesennuma located north of Tokyo accounts for 90% of the country's shark fin trade. It is the city's commercial lifeblood supporting 2,000 workers. In summer, busloads of tourists arrive every day to consume the country's best shark fin soup.

About 130 ships spend up to 150 days at sea casting baited lines several kilometres in length between Japan and Hawaii. Most of the shark fins are dried and sold to restaurants in Japanese cities. A smaller quantity is exported to China and Hong.

Unfortunately, large sections of the city and its port were destroyed by the 2011 Tōhoku earthquake, tsunami and fires on March 11, 2011



Kesennuma fishing pot, , Miyagi prefecture Japan. Source: https://commons. wikimedia.org/wiki/File:Kesennuma_fishing_port,_-3_Oct._2007_a.jpg

Towards sustainable shark fishing

Unfortunately conservation laws have not prevented the decline in shark species. Instead more enforceable protective measures are required to avoid possible extinction of sharks in the future such as:

- **bans** on the trade and consumption of shark fins
- enforcing local, national and global agreements that protect sharks and promote sustainable shark populations
- establishment of shark sanctuaries
- **organisations** working for sustainable shark populations
- valuing shark **tourism** versus death of species

Figure 10: Agreements



Convention on International Trade in Endangered Species (CITES)

Conservation of Migratory Sharks (CMS)

United Nations Convention on the Law of the Sea (UNCLOS)

International Plan of Action for Sharks (IPOA Sharks)

United Nations Fish Stock Agreement (UNFSA)

No Shark Fin protesters, Japan. Source: Wikimedia Commons

Figure 11: Aims of International Action for Sharks (IPOA Sharks)



Figure 12: Organisations working to save sharks









AUSTRALIAN INSTITUTE OF MARINE SCIENCE

Save Our Sharks

• This organisation aims to educate people about the importance of these amazing creatures and their significance for the healthy functioning of marine ecosystems.

Asia Shark Conservation – Project Aware

- Was formed by divers who were concerned by the decline of sharks and rays at their favourite dive locations around Asia.
- In 2013, the scuba diving community helped protect an unprecedented number of sharks and rays from international trade

WildAid

- WildAid's campaigns, in combination with government bans have contributed to a decrease in shark fin consumption. The organisation's 'Chefs against Shark Fins' has raised awareness about shark finning, resulting in the decline in shark populations.
- In 2014, 23 airlines and 5 hotel chains banned shark fins, and the Malaysian government announced a government banquet ban on shark fins.

Australian Institute of Marine Science

- Aims to protect sharks as they mature late, produce few young, and are slow to recover from depletion.
- Conservationists recommend creating marine parks (watery national parks) to protect these endangered animals



Figure 13: Marine Protected Area: Raja Ampat in Indonesia

Currently Indonesia ranks as the world's largest exporter of sharks and one of the largest contributors to the shark fin trade.

Coral Triangle

Raja Ampat is located in the **Coral Triangle** enjoys one of the **highest marine biodiversity on Earth**. It is known as the '**Amazon of the Ocean'** or '**Underwater Paradise'**. However, it has been the site of destructive fishing practices such as the use of poison and reef bombing. These practices have killed sharks and other marine species such as manta rays and turtles. As a result 75% of shark species found in Raja Ampat are

threatened with extinction.

Map of the Coral Triangle



Source: http://methoshomestay.com/wp-content/uploads/2014/02/Coral-Triangle.jpg

Shark Sanctuary

In 2010 Raja Ampat Shark and Ray Sanctuary was

established. The sanctuary covers an area larger than Denmark. This means that all harvesting of sharks for their fins, mantas for their gills and reef fish for aquariums, are prohibited in its waters. In 2012, 33 shark finners where apprehended in the Raja Ampat Marine Protected Area.

As the area is at risk from both overfishing and climate change, environmentalists support the establishment of the protection zone and its extension to 20 million hectares by 2020.

Economics versus the environment

The value of (living) sharks and manta rays outweighs the one-time profit of dead sharks and manta rays. Sharks are critical to sustainable fisheries, healthy coral reefs and the marine ecotourism industry. They contribute to the incomes of local communities as many villagers are part of the underwater ecotourism (diving) industry.



Ecotourism – Kayak paddling through the forest at Rock Islands, Palau. Source: https://commons.wikimedia.org/wiki/File:Paddling_at_Rock_ Islands,_Palau.jpg

Figure 14: Palau-ecotourism

Palau consists of 250 islands located in the Pacific Ocean. These tropical islands, SW of the Philippines, are a haven for snorkelling and diving. Unfortunately Palau was facing overfishing from rampant shark-finning by foreign long-line fishing vessels licensed by the Palau government to fish in their waters.

As a result the Palauan government implemented the **Marine Protection Act** (1994) to preserve the aquatic environment and in 2009 Palau created a **shark sanctuary** to support the local community that has selected to protect, rather than hunt, its sharks. As a consequence, Palau now forbids commercial shark fishing within it **Exclusive Economic Zone** (EEZ) waters.



Raja Ampat Islands, Indonesia. Source:https://commons.wikimedia.org/wiki/ File:Raja_Ampat_Islands_-_journal.pbio.1001457.g001.png



Pulau Gam, Raja Ampat. Source: https://commons.wikimedia.org/wiki/ Category:Raja_Ampat#/media/File:Boat_and_corals_near_Pulau_Gam,_Raja_ Ampat.jpg

Palau signs National Marine Sanctuary into Law

In 2015, the creation of the national marine sanctuary makes Palau the first country to declare the waters of its entire exclusive economic zone (EEZ) a marine protected area, with an integral part of the sanctuary a fully protected "no take" zone of 500,000 square kilometres.

The Pacific island nation now leads the world in highest percentage of its exclusive economic zone set aside for full protection. The legislation creating the sanctuary designates 80% of the nation's maritime territory as a fully protected marine reserve in which no extractive activities, such as fishing or mining, can take place. About 20% of Palau's waters will become a domestic fishing zone reserved for local fishermen and small-scale commercial fisheries with limited exports



Figure 15: News

Good news

- Public attitudes towards shark fins are changing. Leading Indian airline (Jet Airways) bans shark fins as cargo and is committed to protecting shark populations and marine ecosystems.
- In 2012 China's State Council called for a ban on serving shark fin at official government functions.
- In 2014, conservation organisations such as WildLife At Risk (WAR) contributed to a decline in the sales of shark fins in China by 70%. This change makes it essential for restaurants and caterers in China to develop sustainable menus.
- 'The British celebrity chef Gordon Ramsay highlighted the cruelty involved in finning – the

Figure 16: Citizenship: What can you do?

practice of removing fins and discarding the body – in a recent TV documentary, while several Chinese restaurants in London have removed the soup from their menus.' *http://www.theguardian.com/ environment/2011/feb/11/shark-fishing-in-japan*

Bad news

- 2014: 'The world's largest slaughtering facility for whale sharks — an internationally-protected endangered species — has been discovered, near Wenzhou, in China.'
 - 'The factory, which operates openly, is reportedly slaughtering over 600 whale sharks annually to produce shark oil for health supplements'. http://www.wildliferisk.org/china-whale-sharks/



- Don't eat shark fin soup
- Avoid eating at restaurants that sell shark fin soup
- Support one of the many organisations fighting to save sharks, such as the Humane Society International, Sea Shepherd, Shark Angels and Oceanic Defence
- Write to your local member of parliament and ask him/her to consider banning shark fin soup in your city or town
- To avoid extinction, Seafood Watch recommends everyone should avoid eating sharks, and has developed a responsible seafood purchasing guide available on mobile devices such as the iPhone.

Geofacts

- Australia imports shark fins from Asian countries
- Flake sold in fish and chips shops in Australia is frequently shark
- In 2012, a female grey nurse shark was found alive with its fins sliced off on a beach near Evan's Head NSW, and a finless shark was found within the Great Barrier Reef Marine Park.
- In 2014 Australia exported 180 tonnes of shark fins to Hong Kong, the Philippines and Singapore
- Only 3% of the shark's body weight are high value fins
- There are over 1,000 different species of sharks





Write True or False for the following statements on sharks:

- Slow to recover from depletion (T)
- Shark fin soup is nutritious (F)
- Sharks effect the health of coral reefs (T)
- Sharks are only found in salt water (F)
- You are more likely to be killed by a shark than a bee sting.(F)

Figure 1:

• Compare the number of shark species threatened with extinction in 1996 with 2011. List the reasons for extinction.

Figure 2:

- Name two endangered sharks and the causes of their depletion.
- Explain why sharks are vulnerable to extinction.

Figure 3:

• Describe the links between phytoplankton and sharks in a food web.

Figure 4:

• Explain what occurs to the marine ecosystem when sharks disappear.

Figure 5:

• Discuss the importance of sharks in a marine ecosystem.

Figure 6:

• Answer the inquiry questions as a short TV report on shark finning.

Figure 7:

• List the reasons for consuming shark fin soup.

Figure 8:

- Name three countries that catch sharks and three countries that import sharks for soup.
- Explain what 'extinction' soup means.
- Shark fin soup is a danger to humans, the environment and to sharks. Explain this statement.

Figures 10, 11, 12:

- In groups discuss how agreements, IPOA Sharks and organisations, aim to improve the number of sharks swimming in our oceans.
- 'Unfortunately conservation laws have not prevented the decline in shark species.' Explain this statement.

Figure 13:

• Where is the Coral Triangle? Why is the Coral Triangle important to sharks? Where is Raja Amput located? What is the aim of the shark sanctuary? Describe how Raja Amput has implemented sustainable laws and procedures to reduce the decline in shark populations.

Figure 14:

• Where is Palau? What strategies has Palau introduced to conserve marine species such as sharks?



Investigation

cartoon analysis

In pairs refer to the following cartoons and explain the messages



Cartoon: http://shaaark.com/shark-cartoons/2012/04/shark-cartoon-184.jpg



Cartoon: http://www.supportoursharks.com/en/education/Gallery/Cartoons/12.htm#Anchor



Cartoon: http://www.supportoursharks.com/en/education/Gallery/Cartoons/18.htm#Anchor



Investigation

Group work:

- Sharks are not commonly found in Hong Kong's surrounding ocean, but the city is the centre of the lucrative shark fin trade. The city accounts for around 50% of the global shark fin trade every year. Additionally, the WWF found that 'shark fin soup is served at 98% of Hong Kong restaurants as restaurants choose money over the environment.'
- In groups, research this topic and discuss strategies that have been introduced to reduce the consumption of shark fin soup in Hong Kong. Present your findings as an oral report.

Infographic: Sharks count

- What is the message in the infographic-Sharks count?
- Explain why sharks are worth more alive than dead.
- Discuss what is meant by 'more to be done?'

ICT: Research the following questions using the internet

- Explain the terms: predator, food chain, lower level prey, marine parks, sustainable, and Exclusive Economic Zone
- Describe the functions of the World Conservation Union (IUCN) and the Convention on International Trade in Endangered Species (CITES) and why they promote sustainability.
- In groups select one agreement for the protection of sharks such as: CITES, CMS, UNCLOS or UNFSA.
 Explain the aim of the agreement as a short report to the class.
- Refer to the OCEARCH website and the recent tracking of sharks. How is this technology useful? http://www.ocearch.org/.
- Examine the Ocean Park, one of Asia's largest shark aquariums. Describe the Park and how it promotes sustainable practices. http://www.eglobaltravelmedia.com. au/ocean-park-launches-one-of-asias-largest-shark-aquariums/



http://pinterest.com/pin/282600945337899461/



Investigation

Scaffold:

• Discuss whether'the shark is better alive than dead' using the discussion scaffold.

General capabilities: Literacy, Numeracy, Critical and creative thinking, Ethical understanding, ICT **Cross-curriculum priority:** Sustainability

Text type: Discussion

Purpose: Examine different sides of the controversial issue referring to valid facts and figures, from a variety of sources

Introduction -	Language Features:
Outline the issue	Use subject specific terminology
	Tense: past, present or future
	Person: third (first and second may be appropriate)
	Word choice: emotive, persuasive
	Specifications: words and phrases to contradict the other side of the argument
Argument 1	For (positive)
	Against (negative)
Argument 2	For (positive)
	Against (negative)
Argument 3	For (positive)
	Against (negative)
Conclusion	Summary of different points of view
	Judgement/Recommendation favouring one side of the discussion or decision on what course of action to follow

E-poster:

• Design a poster promoting the two perspectives on sharks – 'kill or keep'



Image: http://i2.cdn.cnn.com/cnnnext/dam/assets/160329184940-sleeping-with-sharks-natpkg-orig-00000000-exlarge-169.jpg

YouTube/Video/ICT

- Over 73 Million Sharks Killed Every Year for Fins
 6.25min, 23/9/2010, http://www.youtube.com/watch?
 v=m07hvOtYnck&feature=fvst
- Shark Fin Soup 2.46min, 8/4/2009 http://www. youtube.com/watch?v=mCqPXhhxZlg&feature=fvst
- Raja Amput http://www.sharksavers.org/en/blogsnews/shark-savers-blog/raja-ampat-shark-sanctuaryecomes-law-in-indonesia/
- Underwater with WWF in Raja Ampat http://www. worldwildlife.org/videos/underwater-with-wwf-in-rajaampat-coral-triangle
- Shark fining Humane Society International http://www.hsi.org/issues/shark_finning/
- Losing flavour https://www.scmp.com/sites/default/ files/styles/486w/public/2014/04/09/75f682444d6758 2fca5ceff980e23594.jpg?itok=lo42JSU0
- Refer to websites and YouTube for more information
 - http://www.fao.org/docrep/005/x3690e/x3690e1g.htm
 - http://rtseablog.blogspot.com.au/2011/10/industrialshark-fishing-shark.html
 - http://saveourseas.com/articles/how_many_sharks_ are_caught_each_year
 - http://www.sharkwater.com/education.htm
- Sharks in the Coral Triangle http://www.projectaware. org/update/poor-fisheries-management-endangerssharks-coral-triangle
- Seafood Watch http://en.wikipedia.org/wiki/Seafood_ Watch
- International Plan of Action for sharks
 http://www.fao.org/fishery/ipoa-sharks/about/en

Curriculum F–10 across subjects

- Geography and Science notes and activities

 National Geographic http://education.
 nationalgeographic.com/archive/xpeditions/lessons/14/ g912/recordsharks.html?ar_a=1
- Years F–3 http://coralreef.noaa.gov/education/educators/ resourcecd/activities/resources/elementary_sa.pdf

Students explore the natural history of sharks and recognise that humans are an interconnected part of sharks' ecosystems. The student will be able to:

- create an artistic impression of a shark and identify shark body parts;
- describe what sharks eat;
- explore ways to measure the size of a shark;
- portray a shark's ecosystem; investigate the sense of smell;
- discuss ways people impact on shark populations
- make suggestions on how people can conserve sharks
- Years 4–6 http://coralreef.noaa.gov/education/ educators/resourcecd/activities/resources/ elementary_sa.pdf.

Students discuss why sharks need conservation and suggest conservation strategies.

• Years 3–8 http://www.ocearch.org/. The website has lessons for years 3–5 (Cartography/ Geography and Maths) and years 6–8 (Oceanography, Biology, Physics, Chemistry and Maths).

CHOCOLATE

Interconnections, Biomes and Economic Activity

https://upload.wikimedia.org/wikipedia/commons/9/91/Godiva_factory_tour_and_workshop_-_piping_%283954586231%29.jpg

NSW GEOGRAPHY SYLLABUS AND AUSTRALIAN CURRICULUM

Stages 4 and 5:

- Landforms and Landscapes (soil), Interconnections (trade, production, consumption, globalisation)
- Water in the World (weather, climate), Liveability (cocoa farms)
- Sustainable Biomes (rainforests, plants), Changing Places (communities and settlements)
- Environmental Change and Management (climate change, sustainability), Human Wellbeing (inequalities, human rights, citizenship)

Stage 6: People and Economic Activity

- · Farming, manufacturing, retailing
- Local study-chocolate manufacturer or retailer (shop)

Cross Curriculum: Asia, Sustainability

Geographical inquiry and skills: maps, graphs, statistics, tables, photographs, visual literacy, infographics, ICT, spatial technology

INTRODUCTION

Chocolate provides one of life's simple and inexpensive pleasures with consumption concentrated around Christmas (chocolate Santa Claus), Easter (chocolate eggs), St. Valentine's Day (chocolate hearts) and Hanukkah (chocolate coins). This special treat supports a wealthy industry worth \$100 billion that is the equivalent to the Gross Domestic Product (GDP) of over 130 countries. However, the darker side of chocolate encompasses deforestation, pollution, poverty and child labour

WHAT IS CHOCOLATE?

Chocolate comprises of a number of raw and processed foods produced from the seed of the wild tropical *Theobroma Cacao* tree. This unique bean is the only vegetable that is solid fat (cocoa butter) at room temperature but melts deliciously in your warm mouth!

Cocoa beans are converted into chocolate to flavour biscuits, ice creams, dairy drinks and cakes. Cocoa is also employed in the manufacture of tobacco, soaps and cosmetics and used as a folk remedy for burns, fevers, malaria and rheumatism. At the core of the chocolate debate is the definition of chocolate.

Dr Susan Bliss

Since 2000, the Economic Union (EU) accepts 5% content of vegetable fats in chocolate products, such as palm oil, illipe, sal, shea, kokum gurgi and mango kernel.

Cocoa growers object to this food being called 'chocolate', as it will reduce demand for cocoa beans by 200,000 tons a year and increase unemployment in poor cocoa farming communities.

WHAT IS MEANT BY 'SWEET AND BITTER' CHOCOLATE?

While you chomp happily into your next chocolate treat, note there is little happiness for child slaves in the lvory Coast, who harvest cocoa, an essential ingredient in chocolate bars. One wonders, *if Willie Wonka was aware these child labourers had never tasted chocolate, would he still think the chocolate industry was a benevolent uncle?*

Obviously all is not sweet in the chocolate industry as it faces many challenges in the 21st century. Today, more than five million families in Africa, Southeast Asia and

the Central and South America grow and depend on cocoa for their livelihood. Many of them struggle with low productivity due to traditional farming practices, lack of access to credit and property rights, and competition from large plantations. The cocoa industry is also affected by deforestation from clearing forests for cocoa trees and the adverse impacts of pesticides and fertilisers on the environment and on people's health. Other issues include the control of the market by transnational corporations; child trafficking in the industry; impacts of climate change on cocoa production; substitution of cocoa butter with other fats; and genetically engineered cocoa species.

Stakeholders along the chocolate chain are under pressure to ensure the cocoa industry is equitable, supports human rights, and is sustainable (economically, socially and environmentally). The chocolate of tomorrow faces rising proliferation of consumer tastes with volatile cocoa markets – it is not an easy journey!

Activities

- You Tube introduction: infographics show-chocolate facts and statistics https://www.youtube.com/ watch?v=LRRKs4or5Pg
- List the good and bad aspects of chocolate in a two column table.
- Investigation: name the products in your house that have chocolate in their content.

BIOMES: WHERE ARE COCOA TREES GROWN?

Countries that grow and harvest cocoa beans to satisfy human's sweet tooth are restricted to tropical biomes.

Tropical rainforest biome

Cocoa cultivation is restricted to the hot, humid belt between 10°C and 20°C north and south of the equator experiencing an average temperature of 25.5°C. The cocoa tree grows at altitudes between 0masl and 700masl. They grow in places that are not too mountainous and do not receive monsoons or droughts.

Cocoa production between the Tropics of Cancer and Capricorn

Image: http://www.worldagroforestry.org/treesandmarkets/inaforesta/ documents/cocoa%20and%20chocolate/cocoa%20and%20chocolate.pdf





A cocoa plantation in Surinam.circa 1885 Image: https://commons.wikimedia.org/wiki/File:KITLV_-_39071_-_Muller,_ Julius_Eduard_-_Paramaribo_-_A_cocoa_plantation_in_Surinam_-_

Global expansion

As the popularity of chocolate spread, European countries established plantations in colonies located in the hot humid cocoa belt. Today nearly 60 tropical countries grow cocoa. Ghana, Cote d'Ivoire/Ivory Coast, Nigeria, Indonesia and Brazil account for 79% of the world's production. In 1900 Latin America led the world in cocoa production but today Africa asserts the largest production.

circa 1885.tif

Global trends:

- Asia's growing numbers of chocoholics are driving chocolate producers to grow and process cocoa in the region, especially Indonesia-the world's thirdlargest cocoa grower.
- Australia: at a farm near Mission Beach, in Northern Queensland a cocoa tree plantation has been established. Owners Chris and Lynn Jahnke have planted 2,000 cocoa trees and plan to open a chocolate factory and run excursions for tourists. Mr Jahnke says the chocolate farm will be one of the only places in Australia where consumers will get a 'tree-to-bar' experience.
- Computer software and 3D printers means the potential for personalised chocolate is endless!

Cocoa plantation tours, Mission Beach Qld

Image: http://www.missionbeachholidays.com.au/tour.view.charley-schocolate-factory



WHAT IS THE BIOPHYSICAL ENVIRONMENT?

Cocoa is selective as regards location, soil and climate. The optimum development of cocoa trees requires a hot, wet and humid climate. Leaves covering the ground fertilise the soil and provide a breeding ground for insects to pollinate the cocoa flowers. As cocoa trees are fragile and prefer shade and high humidity, they are generally located on the lower level of rainforests, protected from wind and sun.

Biophysical environment

Temperature high and uniform	Precipitation abundant	Humidity high	Light and shade	Soil nutrient rich
High temperatures with a maximum annual average between 27°C and 32°C and a minimum average between 18°C and 21°C.	Cocoa tree yields are affected by rainfall. The trees require 1,500mmpa and 2,000mmpa distributed through the year.	Relative humidity is high, around 100% during the day and falling between 70% and 80% during the night.	The cocoa tree was traditionally grown under the shade in rainforests.	Nutrients, to a depth of 1.5m to allow development of a good root system.

Climate statistics: Accra (Capital of Ghana, major cocoa growing country in Africa)

Manth	Tempe	erature °C	Precipitation	Relative	Humidity %		
wonth	Min	Max	mm	am	pm	-	The second
January	23	31	11	95	61		
February	24	31	22	96	61		
March	24	31	56	95	63		
April	24	31	100	96	65		
Лау	24	31	132	96	68		
lune	23	29	215	97	74		
uly	23	27	67	97	76		11.
lugust	22	27	28	97	77		
eptember	23	27	72	96	72		
October	23	29	62	97	71	NAS (1)	A and a
November	24	31	28	97	66	CB.	1 Cast
December	24	31	18	97	64	NG S	

Apart from being choosy about the biophysical environment, the cocoa tree is susceptible to fungal infections, plant diseases, and infestation by insects or rodents. As a result modern plantations devote large amounts of money into research aimed to protect cocoa crops.

Advances in knowledge and technology has resulted in efficient modern plantations producing around 1,500 kg per hectare that is more than four times the average yield of three hundred years ago.

WHAT TYPE OF SOILS ARE SUITABLE TO GROW COCOA TREES?

A productive cocoa tree requires good structured soil that contains humus. The soil is permeable and deep to enable the tap root to descend into the soil. The cocoa tree is sensitive to lack of water, so the soil must have both water retention properties and good drainage. Photograph https://rctom.hbs.org/wp-content/uploads/sites/4/2016/11/2-4.jpg

Soils for cocoa production – suitable type



Diagram: http://www.uq.edu.au/_School_Science_Lessons/55.13.GIF



Activities

- Draw the climate graph of Accra
- Complete the following table:

Answer

(Correct answers: 1. 29.6 °C, 2. 23.4 °C, 3. 26.5 °C, 4. 811mm)



Answer the following questions – True or False

- The average temperature in Accra is 26.5°C (T)
- The average temperature range is $4^{\circ}C(F)$
- The highest monthly temperature is 31°C in January, February, March and April (T)
- The lowest monthly temperature is 21°C in August (F)
- Accra receives 787 mm of rainfall per year (F)
- The driest months are January and February (T)
- The wettest weather is in June with 215 mm of rain (T)
- There are 0 days with frost in Accra (T)
- It is hotter and wetter in Accra than Sydney (T)

HOW DO COCOA TREES BECOME CHOCOLATE?

As we tuck into a chocolate truffle, we need to think about where it came from, and who helped in its transformation from the humble cocoa bean.

The world cocoa market distinguishes between two broad categories of cocoa beans, 'fine or flavour' and 'bulk or ordinary'. Generally, fine cocoa beans are produced from Criollo or Trinitario varieties, while bulk cocoa beans come from Forastero trees. Virtually all major production over the past five decades involved bulk cocoa, with the global share of fine cocoa production at only 5%.

What's in cocoa bean?



Diagram: https://s-media-cache-ak0.pinimg.com/originals/c8/63/9f/c8639fe8 7fd162f041056982f70f4ad2.jpg

Soils for cocoa production – unsuitable types

Major types of cacao cultivated around the world

	CRIOLLO	FORASTERO	TRINITARIO	NACIONAL
Main cultivation countries	South and Central America	Africa, Central and South America	Central and South America and Asia	South America
Characteristics	Yield is low.	80% of world production of cacao. Tree grows faster and	Crossbreed between the Forastero and Criollo.	Crossbreed between the Forastero and Criollo.
		gives higher yields than other types of cacao.	Resistance to disease and productivity from Forastero.	Resistance to disease and productivity from Forastero.
			Aroma from Criollo	Aroma from Criollo

Cocoa flow process-from cocoa bean to chocolate bar

FROM BEAN TO BAR

Cocoa beans grow in pods, directly from the trunk of the cocoa tree (Theobroma cacao, or "food of the gods.") One tree produces between 20 and 30 pods a year, each containing 20 to 50 almond-sized cocoa beans. A year's harvest from one tree – processed into cocoa liquor, cocoa butter or cocoa powder -- is enough to make up to 500g of chocolate.



Diagram: http://edition.cnn.com/2014/02/13/world/africa/cocoa-nomics-explained-infographic/index.html





Image: http://static.wixstatic.com/media/2f6f7d_42446e38337845608cbb22377171105f,jpg

WHAT ARE THE COCOA PROCESSES?

GROWING

- The cocoa tree grows between five and ten metres high. They begin to bear fruit in the fifth year and reach peak production around 10 years. Inside the cocoa pod is a layer of sweet pulp, with 20-60 cream coloured cocoa beans.
- Pesticide sare applied to the cocoa tree as they are affected by pests (e.g. Cocoa beetle and Cocoa pod borer), diseases and fungus causing a reduction in global production between 30% and 40%. The Black Pod fungusdries beans and Witches' Broomfungus results in trees not producing proper pods. As a result shoots grow to look like witches' brooms.

HARVESTING

• To harvest cocoa, farmers reach the cocoa pods with long handled tools or sharp machetes. After the fruit has been cut down, it is opened and the seeds (beans) with its surrounding pulp are extracted. Although fruits mature throughout the year there are usually two harvests. The main crop generally has larger yields than the mid-crop (see table below).

FERMENTING

• After the beans and pulp have been extracted, fermentationtakes place. The beans with pulp are placed in fermentation boxes or between banana

leaves, for 5-6 days, during which the sugar from the beans will turn into alcohol. During this process heat is generated. When the temperature reaches 50°C beans lose some of their raw, bitter flavours. After fermentation, the beans are spread out and dried for 14 days. Large plantations use hot air or heat from the burning wood to dry beans. Smaller farms dry the beans on raised bamboo mats. The beans are required to reduce their moisture level to 8%. Properly dried beans lose half their original weight.

ROASTING WINNOWING & GRINDING

- The next step in the preparation of chocolate is roasting followed by winnowingand grinding. After the beans are roasted the shell is removed to produce cocoa nibs. The nibs are ground to form pure chocolate in rough form. Because this cocoa mass usually is liquefied then moulded it is called chocolate liquor. The liquor may be processed into cocoa solids or cocoa butter.
- Sweet chocolate is made by combining cocoa solids, cocoa butter or other fat, and sugar. Milk chocolateis sweet chocolate containing milk powder or condensed milk. White chocolate contains cocoa butter, sugar, and milk but no cocoa solids. In recent years a change in consumers taste led to an increase in dark chocolate with perceived links to improved health.

Country	Main crop	Mid-crop
Brazil	October-March	June-September
Ghana	September-March	May-August
Indonesia	September-December	March-July
Cote d'Ivoire	October-March	May-August

Main seasons for cocoa crops

WHAT ARE ENVIRONMENTAL EFFECTS OF COCOA PRODUCTION AND SOME SOLUTIONS?

The environmental effects of cocoa production, such as deforestation, soil erosion and cocoa resistant herbicides are becoming more severe as the global demand for cocoa increases.

Cocoa farming contributes to deforestation. By clearing the land farmers increase soil erosion, and decrease biodiversity and soil nutrients. When soil erodes, land becomes less fertile and cocoa yields decrease. The more intense the farming practices-the more damage to the ecosystem.

Environmental effects of cocoa production and solutions:

• Using intercropping that involves planting trees, within cocoa trees. It helps growth of cacao plants and provides shadeto cacao plants. Intercropping

with fruit bearing trees provide additional income to the farmer.

- Burning old, fermented cocoa podsand placing them back on the soil as a form of compost and fertiliser.
- Implementing Good Agricultural Practices (GAP) such as terracing slopes, mulching soil, composting use water efficient irrigation
- Implementing Good Agricultural Practices (GAP) such as terracing slopes, mulching soil, composting use water efficient irrigation
- Replanting on current land reduces deforestation. Trees provide shade that return organic matter to the soil through falling leaf litter. The shade helps keep soil moist which results in less wasteful irrigation practices and provides more biodiversity.
- Introducing sustainable programs such as the World Cocoa Foundation, Rainforest Alliance, Roundtable for a Sustainable Cocoa Economy, and activities of regional NGOs like Conservation Alliance
- Returning cocoa farming to its sustainable roots through education programs
- Applying pest products such as biocides as an alternative to the harmful pesticides

Photohttps://upload.wikimedia.org/wikipedia/commons/a/a6/Cocoa_farmers_during_harvest.jpg



Threats and solutions – Global Eforts to Boost Cacoa Crops

Cacao trees grow only in a slim band within 18 degrees north and south of the equator. The threats to cacao crops vary from region to region. Below are representative problems and possible solutions for imperiled cacao crops across the tropics.



Maps: https://chocolateclass.files.wordpress.com/2016/05/global-efforts-to-boost-cacao-crops_scientific-american.jpg





Impacts of climate change in Côte d'Ivoire and Ghana's cocoa production

INTERCONNECTIONS: HOW HAS CHOCOLATE EVOLVED INTO A GLOBAL PRODUCT?

In Central America, 3,000 to 4,000 years ago an Indian picked up a football shaped fruit from a rainforest and started cultivation. Around 1100 BC the Olmec Indians (Maya) made cocoa beans into a drink and offered it to their gods during puberty rites, marriages and funerals.

Cocoa was made into a beverage known as xocolāt (meaning 'bitter water') by the Aztecs, flavoured with local spices (chilli, cinnamon, musk, pepper and vanilla) and thickened with cornmeal. The Aztecs saw cocoa as a gift of the serpent god Quetzalcoatl (god of light) and was considered a stimulant, intoxicant, hallucinogen and aphrodisiac. The drink was served as a cure for anxiety, fever and coughs as well as warriors counted on cacao's caffeine to assist them in battle. Today chocolate has progressed from a simple drink and food eaten by ancient Latin American tribes to a sophisticated drink favoured by the rest of the world.

Chocolate globalisation timeline – from origin until today

3,000 to 4,000 years ago

Cocoa plants were first cultivated in Mexico by the Myan and Aztec Native Central Americans

1400s

1492 Columbus brought cocoa beans to Spain

1500s

1518 Cocoa used in Aztec court of Emperor Montezuma. He built a cocoa plantation..

1600s

1606 Carletti discovered chocolate in Spain and took it to Italy. Chocolate spread to Germany, Austria, and Switzerland.

1657 First chocolate house in London

1700s

1700, drinking chocolate expanded worldwide. 1728 Fry set up first chocolate factory in England using hydraulic machinery to process and grind cocoa beans. 1750 European countries acquired cocoa plantations in colonies

1800s

1810 Venezuela produced 50% of world's cocoa. Spaniards consumed 30% of chocolate products.

1847 Fry created a paste that could be moulded - first modern chocolate bar. 1861 Cadbury created first heartshaped candy box for Valentine's Day.

1879 Formation of Nestlé Company.

1879 Lindt invented conching machine to heat and roll chocolate into a smooth consistency.

1895 Hershey sold first Hershey Bar 1899 Tobler started to produce chocolate.

1900s

1900 Price of cocoa and sugar dropped, making chocolate affordable to middle class.

1920s Chocolate became individual sized for snacking.

1990s Chocolate became a multibillion-dollar industry

2000s

2000 Fusion cuisine: exotic spices such as saffron, curry and lemongrass now commonplace in chocolate. Chocolate has organic and kosher brands.

Activities

- Explain the biome that is most suitable for growing cocoa beans.
- Describe what type of soil is most desirable to grow cocoa beans.
- Research the impact of climate change on cocoa production.
- Name four main types of cocoa produced around the world.
- List the interconnections between the cocoa bean and consuming the delicious treat.
- How is the cocoa bean grown?
- Explain the process of fermentation.
- Distinguish between the months for main and mid crops in Indonesia and Ghana.
- Describe how chocolate became a global commodity over time.

WHAT ARE THE GLOBAL INTERCONNECTIONS?

Cocoa, the key ingredient in chocolate, is the base of an intricate global system of people, families and communities who depend upon cocoa for their livelihood. From seed to sweet, chocolate began in the rainforests before it moved around the globe.

Not all countries enjoy the sweet taste of chocolate equally as there is a dichotomy between countries extracting the raw materials and countries indulging in the finished product.

Production

The eight largest cocoa-producing countries are developing countries - Côte d'Ivoire/Ivory Coast, Ghana, Indonesia, Nigeria, Cameroon, Brazil, Ecuador and Malaysia. These countries represent 90% of world production.

Changing future production:

• West Africa is running out of land and climate change affecting Ghana and Côte d'Ivoire will result in these countries becoming less suitable for cocoa production.

 Asia's environment is suited to increase cocoa production. Asia Cocoa Director at Mars stated that the growth in the next 10-20 years will be in Asian countries. In Vietnam state-owned companies are converting coffee and rubber plantations to cocoa, and the Philippines aims to produce100000 MT of dried cocoa beans by 2020 aimed to alleviate poverty and boost sustainable agriculture.

Consumption

The processing and consumption of chocolate products is dominated by western developed countries with 70% of profits from chocolate sales concentrated in these countries. Europeans consume 40% of the world's cocoa per year of which 85% is imported from West Africa. Nineteen of the top twenty cocoaconsuming countries are classified as developed, with 16 located in Europe.

Changing future consumption

World consumption will rise 2.2% from 2013/14 to 2018/19. Over the same period China and Indias consumption is forecast to grow 8%

Table: Characteristics of world production and consumption of cocoa

CHARACTERISTICS OF WORLD PRODUCTION	CHARACTERISTICS OF WORLD CONSUMPTION
 Predominantly grown by smallholders Highly concentrated – 3 major producing countries High labour requirement during harvest Increasing threats from pests and diseases Recent liberalisation of markets in major producing countries led to lower quality and increased exposure of growers to price changes Political instability in some producing countries Ageing farmers and reduced plant stock in West Africa affects future supplies Low prices led to reduced inputs and lower 	 Traditional major markets – Western Europe and North America High focus on advertising Emerging markets in Asia, Eastern Europe and Latin America Growth in China over next decade Positive health aspects (antioxidant flavinoids) and negative health aspects (fat and sugar content) influences consumption

WHAT ARE THE GLOBAL COCOA PRODUCTION AND CONSUMPTION PATTERNS?

Coco-nomics - Global production & consumption (Thousand tonnes)







Source – adapted from: http://edition.cnn.com/2014/02/13/world/africa/cocoa-nomics-explained-infographic/index.html

WHAT IS 'BIG CHOCOLATE'?

The chocolate industry has been reshaped by globalisation and downsizing. 'Big Chocolate' is essentially an oligopoly between major international chocolate companies such as Mars (USA), Mondelez (which owns Cadbury-USA) and Nestlé (Switzerland). The industry has responded to popular demand by selling health-conscious shoppers pricier treats with complex flavours, organic ingredients and less sugar. Most aim to produce sustainable and ethical products in the future.

Diagram: https://makechocolatefair.org/issues/cocoa-prices-and-income-farmers-0

Farmers are losers in the lucrative cocoa and chocolate industry

Within the global cocoa chain, most of the billions of dollars is generated after the beans have reached developed countries (manufacturing and retailing industries). On the other hand, many cocoa farmers and workers in developing countries receive less than US\$1.25 US a day. In fact cocoa growers receive about 6% of the price that consumers in rich developed countries pay for chocolate. This has led to poverty for millions of cocoa farmers.

In the 1980s the cocoa farmers share was higher at 16%. Over time profits of multinational chocolate companies have increased while incomes of cocoa farmers declined. Since the 1980s cocoa prices have been volatile and production costs have increased.

Currently farmers in Ghana earn 84 cents a day and Ivorian farmers 50 cents a day. As a result of the low wages, young farmers are leaving farms and not replacing the aging population. Company mergers and takeovers have left a few large companies dominating 80% of the value chain. Lack of education and opportunity have meant farmers are unable to voice their opinions in an organised method.

Source: https://www.worldvision.com.au/docs/default-source/buy-ethical-fact-sheets/forced-child-and-trafficked-labour-in-the-cocoa-industry-fact-sheet.pdf

Geography Bulletin Vol 49, No1 2017 45





WHO GETS THE GREATEST SHARE OF CHOCOLATE PROFITS?

Share in the value of chocolate production

THE REAL COST OF A CHOCOLATE BAR

Chocolate may be big business, but its key ingredient, cocoa, is cultivated by some of the poorest people on the planet. While demand for cocoa is growing to the point that some experts warn we may run out of affordable supplies within 20 years, the farmers who grow it earn a tiny proportion of the price we pay at the grocery store – and their share has dropped sharply over the past 35 years.



Diagram adapted from: https://chocolateclass.files.wordpress.com/2016/05/b7obgpeiiaa9gs4.jpg?w=604;

The global cocoa sector is in crisis

Firstly cocoa farmers need to receive a wage, referred to as a 'living income' as extreme poverty is the norm for West African cocoa farmers. The industry also requires improving farming practices, curbing market concentration, investing in local infrastructure and reviewing global price setting mechanisms-otherwise a sustainable cocao industry will not be achieved.

Cocoa yields need to increase by providing tenure security, improving infrastructure and enabling farmers access to current information and technology. All players in the cocoa chain need to share the responsibility to solve the industry's problems-governments, retailers, companies and consumers.

Elements of a living income



Diagram:http://www.cocoabarometer.org/Download_files/Cocoa%20Barometer%202015%20Print%20 Friendly%20Version.pdf





https://s-media-cache-ak0.pinimg.com/236x/2a/5 8/69/2a5869364bbdecb97b2a328f472f35cc.jpg

Activities

- Where is most cocoa produced?
- Where is most chocolate consumed?
- Explain the growth in Asian production and consumption.
- In groups, refer to the four maps which regions are the major producers and consumers. Include statistics in your answers
- List the five largest confectionary companies with some form of chocolate

WHY IS COCOA INDUSTRY UNFAIR TO WEST AFRICAN FARMERS?

Throughout chocolates evolution, from the first bitter beverage to thousands of ways it is enjoyed today, chocolate remains the 'food of gods'. This rich imagery of chocolate around romance, luxury, energy and health is associated with the advertising industry. When you buy a box of chocolates remember most of the money goes to transnational corporations and retailers as well as lifestyle magazines and TV stations, with little (6%) ending up in the hands of the world's small cocoa farmers.

Côte d'Ivoire

Cocoa is produced by 5–6 million farmers and contributes to the livelihoods of 40–50 million people. In Côte d'Ivoire and Ghana, this commodity accounted for more than 30% of export earnings.

In the Côte d'Ivoire, 800,000 small-scale farmers, each earn about \$300 a year. Despite growing most of their food, farmers face the following problems:

• lack of long term security due to fluctuating prices



- receive a small fraction of the sale price for their beans which means they are unable to buy essential tools, fertilisers and pesticides and pay for school fees, medicine, transport and clothes
- often underpaid by local cocoa buyers using 'fixed' (false) scales.
- caught in a trading system benefiting transnational corporations based in rich countries



Map of West Africa showing cocoa production

Map http://fortune.com/big-chocolate-child-labor/

WHAT IS 'BLOOD' CHOCOLATE?

While many of us are aware of Blood Diamonds, thanks to the movie starring Leonardo DiCaprio, most do not realise Blood Chocolate also exists as a tragic reality for a significant number of very poor people in West Africa.

The Chocolate Industry and Child Slavery



Photo and notes : https://mypullzone-wiredrdllc.netdna-ssl.com/wp-content/uploads/The-Chocolate-Industry-and-Child-Slavery.jpg

West Africa

Chocolate slavery is widespread in West African countries such as Mali, the Ivory Coast (Cote d'Ivoire), Cameroon, Ghana and Nigeria. More than 1.8 million children in West Africa are involved in growing cocoa. On a daily basis children work long hours, in hot temperatures, with dangerous tools and poisonous pesticides, and are then locked up at night to prevent escape. The majority of young children are either kidnapped or sold into slavery, robbing them of their freedom and a chance for an education.

Ivory Coast

There are 15,000 children from Mali working as slaves on 600,000 cocoa farms in the Ivory Coast. The 'locateurs' wait at Mali bus stations looking for children, mostly boys aged between 9 and 15 years, who are begging

or lost. They offer the children well paid jobs then lock them in warehouses near the bus stations overnight. They are then transported in small vans to the lvory Coast where they are sold as slaves to cocoa farmers. Mali's Save the Children Fund director described 'young children carrying 6 kg of cocoa sacks so heavy that they have wounds all over their shoulders.'

The lvory Coast, blamed transnational corporations for keeping prices low and farmers' poor, driving some into using child and forced labour. Cadbury, Hershey and Nestlé buy cocoa at commodity exchanges where lvorian cocoa is mixed with other cocoa. The industry advocates the cocoa buying chain is so complex it is impossible to guarantee fair working practices on every farm.

WHAT IS FAIRTRADE?

Infographic: What fair trade means...



For a product to be certified as Fairtrade it must comply with international Fairtrade standards. This certification provides consumers with the option of buying products that meet environmental and labour standards. In the last few years, Fairtrade chocolate sales have increased 1500%, and Coles, Starbucks, ALDI and Cadbury are sourcing and selling Fairtrade products.

How fair is Fairtrade?

Fairtrade buyers offer members a set price for their product, providing them with the means to invest in tools or machinery, and to provide them with a better standard of living. Fairtrade has helped fund new school buildings in remote villages, support community health centres, and assist farmers to move out of debt as well as giving them a voice in global markets.

However, there are critics of Fairtrade such as:

- keeps prices artificially high
- promotes poor farming or manufacturing practices by propping up low performing famers.

How green is your chocolate?

While Fairtrade certification focuses on the social and ethical practices to help growers, other groups such as the *Rainforest Alliance* is concerned with environmental standards, and Stop *the Traffik* aims to eradicate child trafficking. Five major chocolate manufacturers such as Verkade, Swiss Noir, Cadbury, Nestlé and Mars supply 'traffik-free' chocolate bars.

How can Fairtrade support cocoa farmers?

Fairtrade supports small cocoa farmers by focusing on the following principles:

- producers receive a fair price a living wage
- forced labour and exploitative child labour not allowed
- producers have access to financial and technical assistance
- sustainable production techniques are encouraged
- working conditions are healthy and safe
- equal employment opportunities for all workers



The Endangered Species Chocolate Company purchases cocoa through Fairtrade. The company encourages Indigenous people to harvest naturally grown cocoa rather than producing cocoa requiring the clear cutting of rainforests.

In 2011 more Australians selected ethically produced Easter eggs and

bunnies according to Oxfam Australia. The increase coincides with the release of a report showing only 3% of the world's chocolate supply is certified as being produced without the use of child labour.

HOW CAN WE USE AN INFOGRAPHIC IN THIS TOPIC?

Infographic: Kit Kat



Source: http://www.infographicsarchive.com/wp-content/uploads/2012/10/ KitKat-nestle.jpg

Activities

- What is Fairtrade?
- Research chocolate products traded under this accreditation.
- Kit Kat infographic. List the economic and social benefits of this initiative
- Develop your own poster which reflects your values about the social justice issues relevant to the cocoa and chocolate industry.
- Conduct a taste test of Fairtrade chocolate. Write an article about Fairtrade chocolate for your school newsletter and include your taste test results.
- Select a manufacturer such as Nestle or Nescafe and develop an oral report on the work they are undertaking with either Fairtrade or Rainforest Alliance.
- Create a digital poster for World Fair Trade Day or a blog outlining why fair trade is not fair.
- What is meant by being a chocoholic with a conscience?



http://ecotoysblog.com/2016/03/the-truth-behind-chocolate/

WHAT ARE WE DOING ABOUT IT?

In 2001, eight members of the Chocolate Manufacturers Association, including industry leaders Mars and Nestle, signed the non-binding Harkin-Engel "Cocoa Protocol" that committed the companies to eliminating the "worst of child labour" in West Africa. Participating manufacturers were supposed to have met the international agreement's standards by 2005, but hundreds of thousands of children continue to work on cocoa plantations in Ghana and the Ivory Coast

In 2009, Bill and Melinda Gates foundation provided \$48 million to support 200,000 small cocoa farmers in Cameroon, Ivory Coast, Ghana, Liberia and Nigeria The project, aims to increase the revenues of small cocoa farmers by increasing productivity and the quality of cocoa.

The Hershey Company founded in 1984 in USA is one of the largest chocolate manufactures in North America. Hershey products are sold in over 60 countries. Hershey's announced, *'it will source 100% certified cocoa for its global chocolate product lines by 2020 and accelerate its programs to help eliminate child labour in the cocoa regions of West Africa."*



Image http://www.stopthetraffik.org



Poster: http://www.slideshare.net/LexisNexisBIS/risks-in-the-chocolat-supplychain

Activities

- Explain why the cocoa industry is unfair to small farmers in West Africa
- Imagine you are a child labourer working on a cocoa farm in West Africa. Describe your life.
- In groups research organisations working to stop child labour and child trafficking in the cocoa industry. Present as an e-poster
- The \$100 billion dollar-a-year chocolate industry is steadily growing but its consumption comes at a heavy price. Explain this statement.
- Discuss the six steps towards ending child trafficking in the cocoa industry. Present as a short report.
- Useful website –Slave free chocolate http://www.slavefreechocolate.org/



Photo: http://www.businessinfocus.com.au/index.php/2013/07/fairtrade-chocolate/

WHAT IS A SUSTAINABLE COCOA INDUSTRY?

Three sustainable strands – environmental, social and economic



Photo background: https://pbs.twimg.com/media/CuLBKZMXgAlgrDLjpg



Photo: http://www.conorashleigh.com/blog/wp-content/uploads/2015/03/ Conor_Ashleigh_%C2%A92014_Vanuatu_chocolate-7.jpg

Sustainable cocoa tree



Diagram: http://unctad.org/en/PublicationsLibrary/suc2015d4_en.pdf

The World Cocoa Foundation (WCF)

This organisation supports cocoa farmers and their families worldwide. The WCF programs raise farmer incomes, encourage sustainable cocoa farming, and strengthen communities.

Table: World Cocoa Foundation Programs

WORLD COCOA FOUNDATION PROGRAMS

VIETNAM

Aim: Promote cocoa among smallholder farmers in 12 provinces

Progress:

- Cocoa breeding program
- Maintains demonstration plots in eight provinces to teach farmers about cocoa and conduct experiments
- 5,252 farmers and local officials trained
- Post-harvest and pest control research

LIBERIA

Aim: Work with 5,600 smallholder cocoa farmers

Progress:

- 4,365 farmers trained through farmer field schools: 2,500 farmers trained in crop diversification. Farmer Field School participants developed 39 nurseries and provided 481,843 improved cocoa seedlings
- 17 farmer associations supported
- 2,082 farmers trained in Farming Business

World Cocoa Foundation and CocoaAction

Implementation of framework aims to rejuvenate an economically viable cocoa sector starting with Côte d'Ivoire and Ghana

CocoaAction: Results Framework



Oxfam Report

Image http://images.slideplayer.com/22/6427421/slides/slide_4.jpg

This report noted that 8 of the 10 largest multinational food companies have improved their sustainability policies since 2015. Unilever passed Nestle at the top spot in the 7 categories –treatment of workers, farmers, women, land, water, climate and transparency.

Oxfam Report – sustainability progress Table: http://www.foodnavigator.com/var/plain_site/storage/images/media/images/behind-the-brands-2015/9793759-1-eng-GB/Behind-the-Brands-2015.jpg





Cocoa sustainability projects by Bloomer Chocolate Company



Activities

- In groups research Sustainable Cocoa Initiative http:// cocoasustainability.com/. Select one article at this website and discuss how it has improved the Cocoa Industry. Articles can include the Cocoa Genome, empowerment of women or the Mars Certification Goal
- Summarise the Bloomer Chocolate Companys sustainable projects. Discuss how these projects can improve farmers wellbeing.
- Compare Nestle with Mars sustainability progress in the Oxfam Report. What aspects need improving?

HOW CAN WE WORK TOWARDS A SUSTAINABLE COCOA CHAIN?

The 2001 Sixth International Cocoa Organisation (ICCO) Agreement promotes a sustainable cocoa economy where each person in the supply chain should be able to earn a decent income for themselves and their family, work in fair and healthy conditions, and in a manner which does not harm the environment.

The cocoa industry works with West African governments, non-governmental organisations (NGOs) and other stakeholders to ensure cocoa is grown responsibly, without the worst forms of child labour and slavery Map: http://www.blommer.com/images/Blommer_Sustainable_Origins_Map.jpg

Active local-global citizenship

UTZ Certified

In Ghana and Cote d'Ivoire the Certification process is underway. Nearly all children surveyed both helped on the family farm and attended school. Whether it involves hazardous tasks or takes place at the expense of education, is more difficult to determine accurately.

International Cocoa Initiative (ICI)

www.cocoainitiative.org

Combats worst forms of child labour and forced adult labour on cocoa farms. In Ghana, the ICI is working with 119 farming communities, to implement community based programs to change labour practices

World Cocoa Foundation (WCF)

www.worldcocoa.org

Supports and manages multiple programs to help farmers: earn more for their cocoa crop; practice sustainable cocoa farming; have access to education; and use safe, responsible labour practices.

World Vision Australia

World Vision's Don't Trade Lives campaign asked Australian chocolate manufacturers to stop child exploitation in West Africa's cocoa farming industry. 'This is a fantastic milestone on the road to ending child labour and trafficking' said Tim Costello.

Responsible chocolate manufacturers

Major chocolate manufacturers have the power to stop child exploitation and trafficking by: paying farmers a fair price for their cocoa; investing in community infrastructure to support social and economic development; and participating in independently audited ethical certification schemes.

Informed, responsible chocolate consumer

One way you can improve the global cocoa situation is to become an ethical consumer. It is difficult to determine which products we purchase are made through the use of exploited labour but here are some suggestions:

- Educate yourself further: Global Exchange (www.globalexchange.org); Child Labour Coalition (www.stopchildlabor.org); Anti-Slavery (www.antislavery.org); Unfair Trade (www.unfairtrade. co.uk); Fair Trade (www.fairtrade.org/html/english. html)
- Write a letter to your local newspaper on child labour in the chocolate industry
- Buy Fair Trade chocolate as a fundraiser for your school
- Contact the big chocolate companies, and ask them to buy Fair Trade cocoa
- Support Fair Trade campaigns by joining organisations such as World Vision Australia

WILL ORGANIC CHOCOLATE BE THE FUTURE PRODUCT?

The organic cocoa market represents a small share of the cocoa market, estimated at less than 0.5% of total production. The International Office of Cocoa, Chocolate and Confectionary (ICCO) estimates production of certified organic cocoa at 15,500 tonnes, sourced from: Madagascar, Tanzania, Uganda, Belize, Bolivia, Brazil, Costa Rica, Dominican Republic, El Salvador, Mexico, Nicaragua, Panama, Peru, Venezuela, Fiji, India, Sri Lanka and Vanuatu. However, the demand for organic cocoa products is growing as consumers are increasingly concerned about the safety of their food supply along with other environmental issues, such as food miles.

More than a decade ago, cocoa producers in Sao Tome and Principe were suffering from the falling global price of cocoa. Many abandoned their cocoa plantations, while others cut trees to clear land for maize or other crops. Thanks to the International Fund for Agricultural Development (IFAD), 2,200 farmers now grow cocoa certified as organic or fair trade for the chocolate industry. As a result smallholder families participating in the programme saw their income increase from 25% below the poverty line to 8% above it. Many farmers invested in home improvements and purchased items such as bicycles, generators, radios, refrigerators and televisions.

WHAT ABOUT THE 'OZ' COCOA INDUSTRY?

Around the 1900s cocoa seeds were introduced into North Queensland but with limited commercial success. In 2008 Australia harvested its first commercial cocoa crop at Mossman, located in Far North Queensland. This 'super chocolate' is low in GI sugar and high in antioxidants.

Cocoa farming using innovative horticultural practices to improve yields made cocoa growing and processing a viable new industry in Australia by:

- using the cocoa pod packed with bioactive compounds (previously discarded)
- identifying lower temperature tolerant cocoa plants aimed to push the productive growing range further south to Mackay and west to the Atherton Tablelands
- using reduced water
- working on the microbiology of cocoa fermentation, using Australias and New Zealands dairy and brewing expertise.

While the crop improves, Horizons Science's, 100% owned subsidiary, Cocoa Australia, aims to integrate the cocoa industry from plantation to consumer.

Also Cocoa Farm's Wine Chocolate is hailed as a world first. The chocolates contain Australian vintage wine, high in cocoa antioxidants and polyphenols. The Wine Chocolate has won many awards.

Activities

- In pairs research cocoa production in Far North Queensland. Explain how innovative farming and processing have resulted in a small thriving cocoa industry. Present as an oral report. For example Daintree Estates grows expensive beans, rich in polyphenols and antioxidants, for its high-end brand. Daintree- taste of the future http://www. daintreeestates.com/news/taste-of-the-future.pdf
- In groups research one organic cocoa producing farm or plantation. Include in your answer: map locating farm with latitude and longitude, climate, growing process and the advantages of this type of production. Present as an e-poster.

CONCLUSION

The harvesting of cocoa beans is in decline warning chocoholics the afternoon chocolate fix could become a costly indulgence and as rare as caviar by 2030. In fact within 10 years an expected 2% increase in consumption will require an area corresponding to another Cote d'Ivoire to satisfy demand. In 2010 the decoding of the cocoa **genome** aims to produce greater quantities of cocoa from fewer trees using less land, as well as improving nutritive properties. Higher yields will free up land for other under-utilised crops in West Africa such as yams, sorghum and plantains.

Chocolate may be sweet but child trafficking, financing of conflicts, poverty and unsustainable farming practices are the bitter truth. The next time you savour a bite of chocolate - remember the sweet treat is the product of a global supply chain including shippers, processors, marketers, natural habitats and about 6 million farmers. In fact 284,000 children who toil in abusive labour conditions in West African cocoa fields have never tasted chocolate as it is both too expensive and most is exported. In other words your minor indulgence comes with major consequences.

Children Love Easter eggs. Except the ones who are forced to make them.

Image: http://gigabiting.com/wp-content/uploads/fairtradeeaster.jpg

The BBC found most of chocolate sold in the UK, involved human trafficking and child slave labour. It also established that there was no guarantee Fairtrade chocolate, did not involve child labour as by the time chocolate hits the shop it is difficult to trace. The controversial issue is complex, but if you are consuming chocolate you have a responsibility to find out what and who is involved in its production.

Did you know?

- 1624 Johan Rauch of Vienna condemned chocolate as it inflamed passion
- 400 beans required to make half a kilogram of chocolate
- Cadbury packs 345,000 bars in 12 hours.
- Chocolate manufacturers use 40% of the world's almonds and 20% of the world's peanuts
- Chocolate was the centre of several books and film adaptations such as *Charlie and the Chocolate Factory* and *Chocolat*



GEOGRAPHICAL INQUIRY AND SKILLS

Geographical inquiry refers to the method geographers use to understand and explain the world around them. Students learn to design and apply the inquiry process, reflect on their findings and are open to multiple explanations. How much cocoa is in chocolate? How much of what we pay for our chocolate fix, makes its way back to cocoa farmers? Is chocolate sustainable? What can we do as active informed citizens to eradicate poverty, unfair trade and child labour in the chocolate industry?

Geographical skills are the techniques and tools used by geographers. These skills are employed both in fieldwork and in classroom investigations.

Developing geographical skills

- 1. Where is cocoa grown?
- ₽
- 2. What type of biome is required to grow cocoa?
- ₽
- 3. Where is most cocoa produced? What countries are the largest producers?
- ₽
- 4. How does the cocoa bean become chocolate? What are the processes?
- traffikfreechocolate http://acrath.org.au/wp-content/uploads/2014/09/chocolate.jpg

5. What countries are the largest consumers of chocolate?

₽

6. Where are emerging chocolate producing and consuming countries located?

◀

7. What are the largest chocolate companies? Why are they wealthy?

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8. Where and why is child labour in the chocolate industry? What should we do about it?

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9. Why are the producers of cocoa in Ghana still poor?

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10. What is fair trade?

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11. What organisations are working for social and environmental sustainability?

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12. How can cocoa production be sustainable?

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13. What are the recent changes to the industry?

Activities

- Answer the geographical inquiry questions
- Collect information from a variety of primary and secondary sources evaluated for reliability and bias
- Gather and process information into maps, tables, graphs, diagrams and photographs
- Decide whether action is required in order to respond to the results of the investigation based on environmental sustainability, economic costs and benefits, and social justice
- Communicate findings using a combination of verbal, audio, visual, texts and ICT
- Reflect on the investigation (strengths and weaknesses)
- Develop an action plan to address issues identified through the investigation
- Implement appropriate and responsible action



Source: https://upload.wikimedia.org/wikipedia/commons/d/d0/HK_KIn_ Bay_Telford_Plaza_GODIVA_Chocolatier_a.jp

FIELDWORK

Create a chocolate tour of your capital city. You might choose to visit places such as Haighs, Max Brenner and chocolate boutiques where chocolates are handcrafted.

- Interconnections: Use primary and secondary sources to research the connections these shops have the region and the world (this may include as an importer, an exporter, an employee or tourist provider, ethical trade signatory).
- Primary sources could include an interview of the owner or manager of the shop photographs of the products and stores, the creation of a map to illustrate the sources of chocolate used by the manufacturer.
- Secondary sources could include any internet material available about the business, newspaper or journal articles about chocolate manufacturing, pamphlets or marketing material provided by the company, a business prospectus.
- Use your information to develop a webpage, video or written report.





Photograph: https://s-media-cache-ak0.pinimg.com/originals/7a/ab/f1/7aabf 1e51f77344a71c3031c112acaae.jpg

ROLE PLAY

Take a chocolate bar (complete with wrapper) and divide students into seven groups relating to the cocoa supply chain such as:

Producer

e.g. farmers, miners (wrappers, machines)

Raw materials

e.g. cocoa beans, sugar, milk, wood for paper wrappers, aluminium for foil wrappers

Manufacturer

e.g. chocolate factories, sugar mills and refineries, milk processors

Distributor

e.g. warehouses, transport companies (delivery trucks)

Retailer

e.g. supermarkets, service stations, vending machines, hotels

Service provider

e.g. designers, advertisers, market researchers

Consumer

e.g. almost everyone!

Role play adapted from http://www.tdtvictoria.org.au/ rightmove/activity5.htm

Each group provides a short oral presentation detailing their key stage in the cocoa supply chain. Their presentation should include the problems of each stakeholder e.g. harvesting times, perishable nature of the product, type of transport used (refrigerated tankers) and price.

CARTOON ANALYSIS

Refer to the two cartoons and explain the message.



Cartoon: http://community.corpwatch.org/adm/resources/images/adm_car2.jpg



Raphael's famous portrait "Death by Chocolate Cake" oil on canvas, circa 1508

Cartoon: http://www. cartoonstock.com/ directory/c/chocoholic.asp

ACTIVE CITIZENSHIP: CHOCOLATE FUNDRAISING

Most students raise money for their school or sporting club by selling chocolates. But did they investigate whether the chocolate had a 'bitter' history? Research chocolate fundraising activities and decide which chocolates you should sell to raise funds. Provide reasons for your selection. Some examples include:

- Cadbury fundraiser http://www.fundraising.com.au/ Successful-Fundraising-Stories;
- Nestle fundraiser http://www.fundtastic.ca/ Nestle_s/64.htm;
- Australian fundraiser http://www.australianfundraising.com.au/;

- Equal Exchange fundraiser http://www.equalexchange.coop/fundraiser;
- Trade Aid http://www.tradeaid.org.nz/index.php/ pi_pageid/83.
- Suggest other fundraising activities

Other activities

- There is a sinister twist in the chocolate industry as it is not always a symbol of sweetness and innocence. Discuss the sweet and bitter truth providing global examples.
- Design an information leaflet explaining how the chocolate you are eating is connected to people producing cocoa in West Africa or Asia.
- Design a class or family survey on chocolate. What kinds of chocolate flavoured items do they eat? Where do they buy chocolate items (large supermarket, small business)? Have they eaten fair trade chocolate? Would they buy fair trade chocolate if it was more expensive than other types of chocolate?
- Discuss how political awareness of slavery in cocoa production has moved individuals, organisations, governments and the chocolate industry into action
- Explain how small poor farmers manage an increase of 107% for cocoa prices but at the same time experience an increase of 657% for insecticides, 250% for fungicides and 400% for spraying machines. Discuss a future scenario if this trend continues. Suggest sustainable strategies.
- Cocoa plantations have higher yields than small farms as they use more agrochemicals and slave labour.
 Explain how the promotion of organic chocolate only improves 59part of the environment
- Most children in Africa are unwilling to take over farms from their ageing parents. Discuss the future problems for the cocoa producing industry
- When cocoa prices go up the quality of small cocoa farmers' life goes down. Explain the irony in this statement. Who gets the extra profits?

ICT activities

- Read the article on Chocolate History and Cocoa at http://www.cadbury.co.uk/ and answer the following questions:
 - What are the origins of chocolate?
 - Who brought the first cocoa beans back to Europe around 1503?
 - What is the name of the explorer who first realised

the commercial value of cocoa beans?

- What new information about chocolate surprised or interested you the most?
- Describe the ICI initiative http://www.cocoainitiative. org/images/stories/pdf/Press_kit/Press_Kit_ April_2011_Eng/ICI_-_Presentation_April_2011.pdf
- Explain the ICI projects around the globe
 http://www.cocoainitiative.org/en/projects
- Describe the functions of the World Cocoa
 Foundation http://www.worldcocoafoundation.org/
- Discuss how the farmer is connected to the consumer by a flow diagram http://www. worldcocoafoundation.org/learn-about-cocoa/
- Explain what is meant by 59Sustainability in Action http://www.worldcocoafoundation.org/ sustainability-principles-and-goals/sustainability-inaction.html
- The Australian Fair Trade Association and organisations such as Oxfam and World Vision want chocolate lovers to think about the injustice behind the indulgent chocolate treat. Explain this statement. http://www.theage.com.au/ articles/2007/11/03/1193619205911.html.

TV program

 The Darker Side of Chocolate: Channel 9's Sunday Program 9 March 2008 http://www.fairtrade.com.au/ node/1987

You tube

- Chocolate The Bitter Truth Child Trafficking BBC Panorama Investigation - 5 videos – http://www. youtube.com/watch?v=LD85fPzLUjo
- Child labour and child trafficking in cocoa industry and citizenship – http://www.cocoainitiative.org/ 7.52 min
- UTZ Certified 12 videos http://www.utzcertified. org/mediacenter/utzvideo?option=com_contushdvi deoshare&view=player&id=32&catid=20
- Children of Fairtrade: cocoa farmers in Ghana – http://www.papapaalive.org/
- Sustainable Cocoa http://www.nestle.com/CSV/ CreatingSharedValueCaseStudies/AllCaseStudies/ Pages/Sustainable-Cocoa-Cote-d-Ivoire.aspx 2.23min
- Sustainable Cocoa Farming Cargill– http://www. cargill.com/corporate-responsibility/pov/cocoasourcing/cote-divoire-wafrica/index.jsp

Sustainable coffee farming, Vietnam

 Nestle http://www.nestle.com/CSV/
 CreatingSharedValueCaseStudies/AllCaseStudies/
 Pages/Coffee-growing-sustainable-farming-Vietnam.
 aspx2.21min

PowerPoint

 Sustainable Cocoa: Côte d'Ivoire – http://www. certified-cocoa.com/download/PPDC_Project-Presentation_en.pdf

Websites

- Bitter Chocolate: Politics and economics of cocoa and chocolate by Michael Niemann – http://michael-niemann. com/blog/cocoa-chocolate-graphs/
- Chocolate challenges emerging markets and opportunities for manufacturers – http://www. reportbuyer.com/food_drink/confectionery/chocolate/ chocolate_challenges.html
- Chocolate tree http://www.anu.edu.au/Forestry/wood/ nwfp/chocolatetree/chocolatetree.html
- Developments and challenges http://www.csae.ox.ac.uk/
 resprogs/cocoa/pdfs/CAA-Development-Challenges.pdf
- Divine education http://www.divinechocolate.com/edu. htm. Secondary Resources http://www.divinechocolate. com/edu.htm
- Dubble: Cacao trail Follow the cacao trail games (e. g. cacao chaos) and movies http://www.dubble.co.uk/e
- Ending slavery http://www.freetheslaves.net/
- Fair trade and chocolate http://www.globalexchange. org/campaigns/fairtrade/cocoa/-student activities
- Fair trade into classroom http://www.globalexchange.org/ campaigns/fairtrade/cocoa/fairtradeintheclassroom.html
- Global justice http://globaljusticeideas.blogspot. com/2008/07/chocolate-crisis.html (individual action for global justice)

- Growing cocoa http://www.icco.org/about/growing.aspx
- History of chocolate http://www.bendicks.co.uk/history/ chocolate.html
- ICCO agreements http://www.icco.org/about/agreement. aspx
- Main traders http://image.slidesharecdn.com/ riskchocolatsupplychain-131230064026-phpapp02/95/ risks-in-the-chocolat-supply-chain-14-638. jpg?cb=1388394179
- Nestle http://en.wikipedia.org/wiki/Nestl%C3%A9
- Oxfam cool planet http://www.oxfam.org.uk/coolplanet/ ontheline/explore/journey/ghana/choclat.htm
- Oxfam: Towards a sustainable cocoa chain http://www.oxfam.org/sites/www.oxfam.org/files/towardsa-sustainable-cocoa-chain-0901.pdf
- Quarterly Bulletin on Cocoa http://www.icco.org/ statistics/qbcs.aspx
- Reality tour http://www.globalexchange.org/tours/index.
 html
- School of chocolate http://library.thinkquest.org/4317/
- Slave free chocolate http://www.slavefreechocolate.org/
- Sustainable and responsible cocoa activities in West Africa

 http://www.cargill.com/wcm/groups/public/@ccom/ documents/document/fs-cocoa-west-africa.pdf
- Teach about fair trade and cocoa http://www.papapaa.org/
- Trade map http://www.trademap.org/Country_ SelProductCountry_TS_Map.aspx
- Working towards Responsible Labour Standards for Cocoa Growing – http://www.cocoainitiative.org/
- World Cocoa Directory http://www.icco.org/documents/ wcd.aspx
- World Cocoa Foundation –
 http://www.worldcocoafoundation.org/
- World Vision and chocolate http://www.worldvision.com. au/wvconnect/content.asp?topicID=97

GTANSW webinars series in Term 1 2017

Tuesday, 21 February 4.00 – 5.00pm. Presenter Clare Kinnane Information Technologies for the NSW Geography Curriculum

Tuesday, 28 February 4.00 – 5.00pm. Presenter Sharon McLean Developing a Summative Assessment Task

There is no charge for the webinars, register at https://goo.gl/forms/K0JcnyEQqL7u1ggG2 Once registered you will be sent information to access the webinar.

IT'S ON – THE 2017 AUSTRALIAN GEOGRAPHY COMPETITION ENTRIES ARE NOW OPEN, CLOSING 1 MARCH

Established in 1995, the Australian Geography Competition encourages young Australians to pursue excellence in geographical fields. More than 66,000 students from over 670 schools entered the Competition last year. The Competition is organized by the Australian Geography Teachers' Association and the Royal Geographical Society of Queensland.



This year, the Competition will be held in schools between 26 April and 9 May. Students from Year 7 or younger to Year 12 can take part in this national geographical challenge.

Outstanding Year 11 students are in the running for a place in Australia's team to the International Geography Olympiad (iGeo) to be held in Quebec City, Canada, in 2018.

Two Year 11 students, female and male, from each state and the combined territories will be selected to take part in Geography's Big Week Out (GBWO) – an intensive six-day residential program with challenging geographical activities. "Geography's Big Week Out was an amazing experience! If you have the opportunity to participate in the Australian Geography Competition and you receive a place in the Big Week Out, I assure you that the opportunity is one not to be missed!", said one

of the students at the 2016 Geography's Big Week Out.

The 2017 GBWO will be hosted by the Geography Teachers' Association of SA on Kangaroo Island, later this year.

From that event, Australia's team for the 2018 International Geography Olympiad will be chosen. This year, four students from the 2016 GBWO will represent Australia in Belgrade, Serbia. At the 2016 event, in Beijing, China, the four Australian students took out the top spot ahead of teams from 44 nations in this highly contested international challenge.

Margaret McIvor, Australian Team Leader at the 2016 iGeo, said that "this result reinforces the value of our geography curriculum in teaching students to understand, analyze and evaluate information".

"The Australian and international competitions help enthuse students about geography, and we need young people to want to study geography. The structured way of understanding the world that geography gives us is vital if we are to develop innovative responses to issues such as climate change, food security, land degradation or population shifts," said Bernard Fitzpatrick, the Competition Coordinator.

"Aligned with the Australian Curriculum: Geography, the Competition questions address both local and global geographical challenges. Plus, according to their teachers, students actually enjoy it", added Mr Fitzpatrick.

The top 10 schools in Australia will be announced and the top school in each state and combined territories will receive a prize.

All costs of participation in the GBWO and iGeo are covered by the organizers and Competition supporters – the Australian Department of Education and Training and the University of Queensland School of Earth and Environmental Sciences.

Look out for the Information brochures which have been posted to all secondary schools around the country.

To find out more and to enter, visit <u>http://www.geographycompetition.org.au/</u>.

Bernard Fitzpatrick, competition@rgsq.org.au.



AGTA ANNOUNCES AN ESSENTIAL NEW GEOGRAPHY RESOURCE

Geography Skills Unlocked is an exciting new skills book for Australian secondary schools



Geography Skills Unlocked is published by the Australian Geography Teachers Association and written by a team of experienced Geography teachers.

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Contents

KEY FEATURES:

- Contents aligned to the inquiry and skills-based requirements of Australian Curriculum: Geography
- An engaging, easy to navigate design
- A student friendly approach with step-by-step explanations, descriptions and worked examples
- A focus on emerging technologies used to gather, analyse and present geographical data
- GeoSkills and GeoInquiry activities that scaffold student learning
- A wealth of stimulus material including a diverse range of maps, graphs, aerial photographs, satellite images, diagrams and photographs
- Examples drawn from each Australian state and territory with additional international material
- Key terms explained in embedded glossary boxes

Geography Skills Unlocked will be published mid 2016 and will be available for purchase via the AGTA website: www.agta.asn.au/Products

MEMBERSHIP RENEWAL/APPLICATION FORM 2017 ABN 59 246 850 128 – This form will become a tax invoice when completed, GST included.

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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.

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Advertising bookings should be directed to:

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- 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.





