Bringing Geography to Life With Technology

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Authentic Backwards Pedagogy

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Introduction

This presentation is an extended and updated version of an article I wrote for the Geography Teachers' Association of New South Wales journal entitled *Using Technology to Assist in the Teaching and Learning of Geography*.

I am a 7-12 Geography, Commerce/Business Studies, and Religious Education/Studies of Religion teacher from Sydney. I have a passion for student leadership, environmental stewardship, and geographical literacy.

Introduction

From personal experience, geography may be one of the toughest subjects to attract students if given the choice: many of them see geography as simply all about rocks and maps, however, it is so much more.

Thus, geography needs to address two issues in order to enter the 21st Century: it needs to provide students with authentic learning, giving them a real-world context; and it needs to utilise the technology at its disposal.

Introduction

Any form of technological integration in geography should ultimately keep in mind the following four elements of "digital learning" (State of Georgia's Governor's Office of Student Achievement, n.d.):

Time: Learning is no longer restricted to the physical hours of the school day.

Place: Much like above, learning is now no longer restricted to within the physical walls of the classroom due to the Internet and an increase in Internet access.

Path: The benefits of new learning technologies is that real-time data is made available to the teacher allowing them to modify and adapt a student's learning needs (differentiation).

Pace: New technologies now mean that

Technology Integration in Geography

1. Social Media

   a. Twitter

2. Tablet Apps

3. Google Apps for Education (GAFE) Products

4. Other Learning Technologies

Social Media

Social media often gets a bad rap, however, when used correctly, it can truly unleash a powerful learning experience.

You must also keep in mind any systemic or departmental policies regarding the use of social media in the workplace whether it be for use only by educators, only by students, or by a mixture of both.

Twitter

Twitter is a very powerful social media tool, and it allows for a number of things:

you can access real-time data and information from reliable sources such as governmental, non-governmental, and not-for-profit organisations,

you can engage in professional conversations with others around the world, allowing you to access new lesson ideas,

you are able to grow your Personal Learning Network (PLN), giving you new professional development opportunities.

Twitter

Twitter Accounts

There are some organisational Twitter accounts that are particularly valuable in geography education, including:

The Australian Bureau of Statistics: This provides you with valid and reliable data directly from the Australian Bureau of Statistics (ABS), and the links take you straight to the relevant page, meaning you do not have to navigate the ABS site (which can be troublesome at times). This account is worth following simply because of the many uses the data provided has: it can be integrated within geography lessons or simply used as a reference source.

Twitter

Census Australia: This gives you facts directly from the latest Australian Census. This account would be good for students in particular to follow as it gives them data with trivia about it as well, making it a bit more engaging.

World Map of birth places

TOP 20 BIRTH PLACES

ENGLAND 911,593
GERMANY 108,002
SCOTLAND 133,432
ITALY 185,402
IRELAND 67,315
UNITED STATES OF AMERICA 77,009
NETHERLANDS 76,046
GREECE 99,938
LEBANON 76,450
VIETNAM 185,039
CHINA 318,969
KOREA REPUBLIC OF (SOUTH) 74,538
INDIA 295,362
HONG KONG 74,955
PHILIPPINES 171,233
SRI LANKA 86,412
MALAYSIA 116,196
AUSTRALIA 15,021,553
SOUTH AFRICA 145,683
NEW ZEALAND 483,398

*(Excludes SARs and Taiwan)
#(SAR of China)

Based on the number of people counted in Australia in the 2011 Census

Census Australia @ABSCensus · Sep 21
Understanding the origins of those who call Australia home plays an important role in developing policies & services for our diverse society

⤺   ⇄ 22   ♥ 25   •••

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Twitter

The Australian Bureau of Meteorology: This account provides you with both up-to-the-minute weather information and warnings, and also explanations of how weather and climate work. For example, videos and animations on how the El Niño-Southern Oscillation functions give students a clearer understanding of geographic processes.

National Geographic Education: Whilst this is North American, it still provides you with great resources that can be easily adapted to suit any classroom.The only caveat here is to make sure that you convert any measurements from US Imperial to Metric to ensure that students are not confused.

Twitter

UN Development is one of the many official accounts of the United Nations. This one provides information on sustainable development around the world: initiatives, statistics, and campaigns.

If #sea levels rise 4 ft by 2100, 2/3 of ports on #US #GulfCoast, which ships 20% of the world's maize & soy, would be affected. #COP22

RETWEETS	LIKES
10	16

2:59 AM - 5 Oct 2016

10   16

Twitter

Twitter Hashtags and Chats

A great hashtag is #geographyteacher, which is constantly being used by educators worldwide to offer lesson ideas or links to useful websites.

It is also possible to participate in Twitter chats which is an organised chat between educators. A great Twitter chat you can participate in is #GeoChat. According to the chat moderators, this event happens at least once a month.

Twitter

Another Twitter chat to participate in is #HASSchat. #HASSchat was founded by myself after noticing a distinct lack of professional conversation specifically surrounding the Humanities and Social Sciences. It is held on the last Thursday of every month at 7pm Sydney, Australia time. More information about #HASSchat can be found by visiting my website.

It is relatively easy to set-up a Twitter account (Twitter even have a step-by-step guide).

Tablet Apps

Depending on the types of devices your students have, you should be able to find a number of tablet apps that will help both you and your students acquire, process, and communicate geographical information.

Tablet Apps

Run that Town is a free game that utilises the latest Australian Census data, and places students into the shoes of the Mayor of whichever suburb they choose. During the game, they will be faced with different scenarios based on community needs. They will be given real data in order to help them make their decisions.

Tablet Apps

Earth Primer is a paid app that is interactive and allows people to change elements of the world in order to see its effects. It follows stages of the earth's core, waterways, and the lithosphere. Finally, there is a sandbox element which lets users do anything they want.
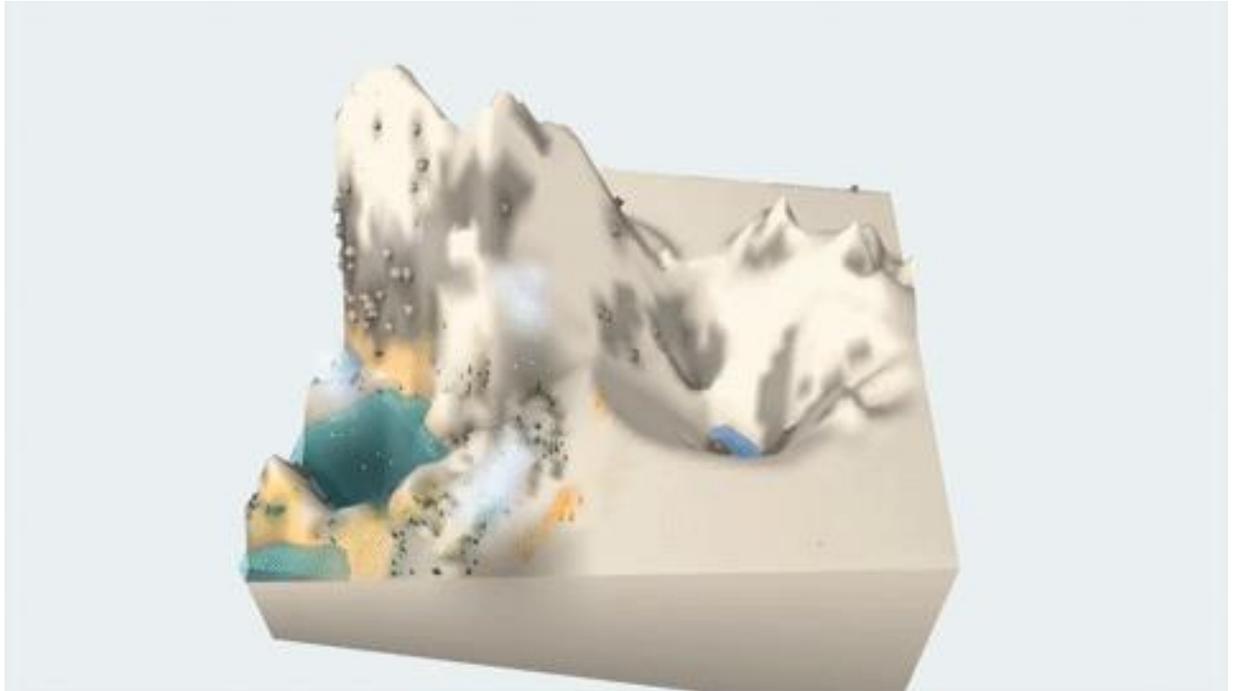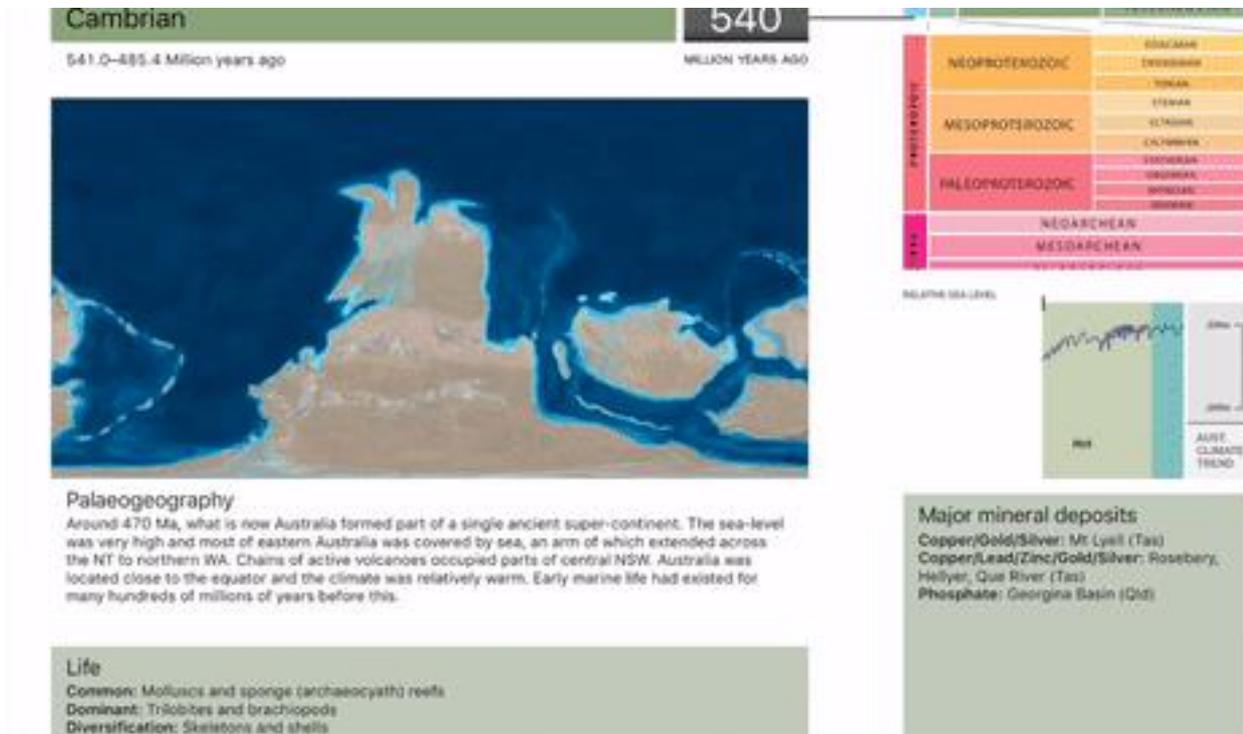
Tablet Apps

Climate Earth 3D is similar to Null School, however, it is a paid app. It allows users to see live weather patterns around the world, and also overlay different elements such as temperature and humidity.
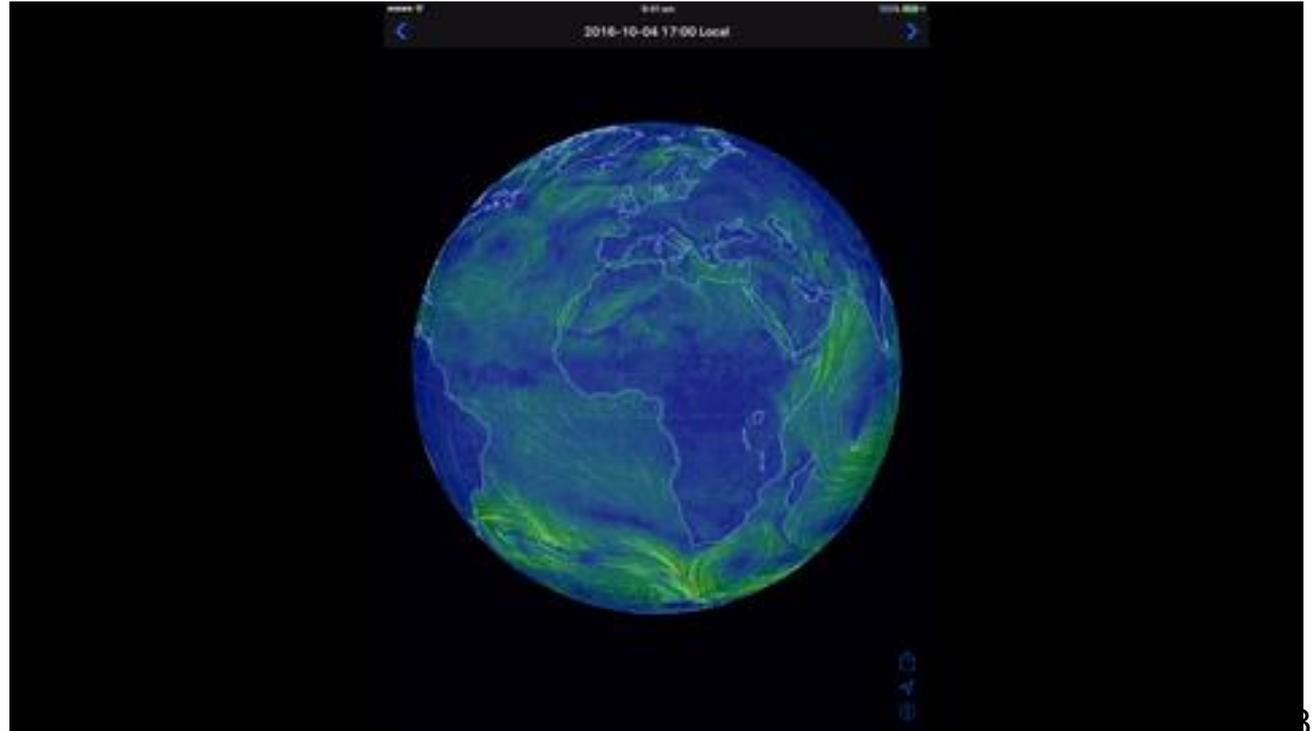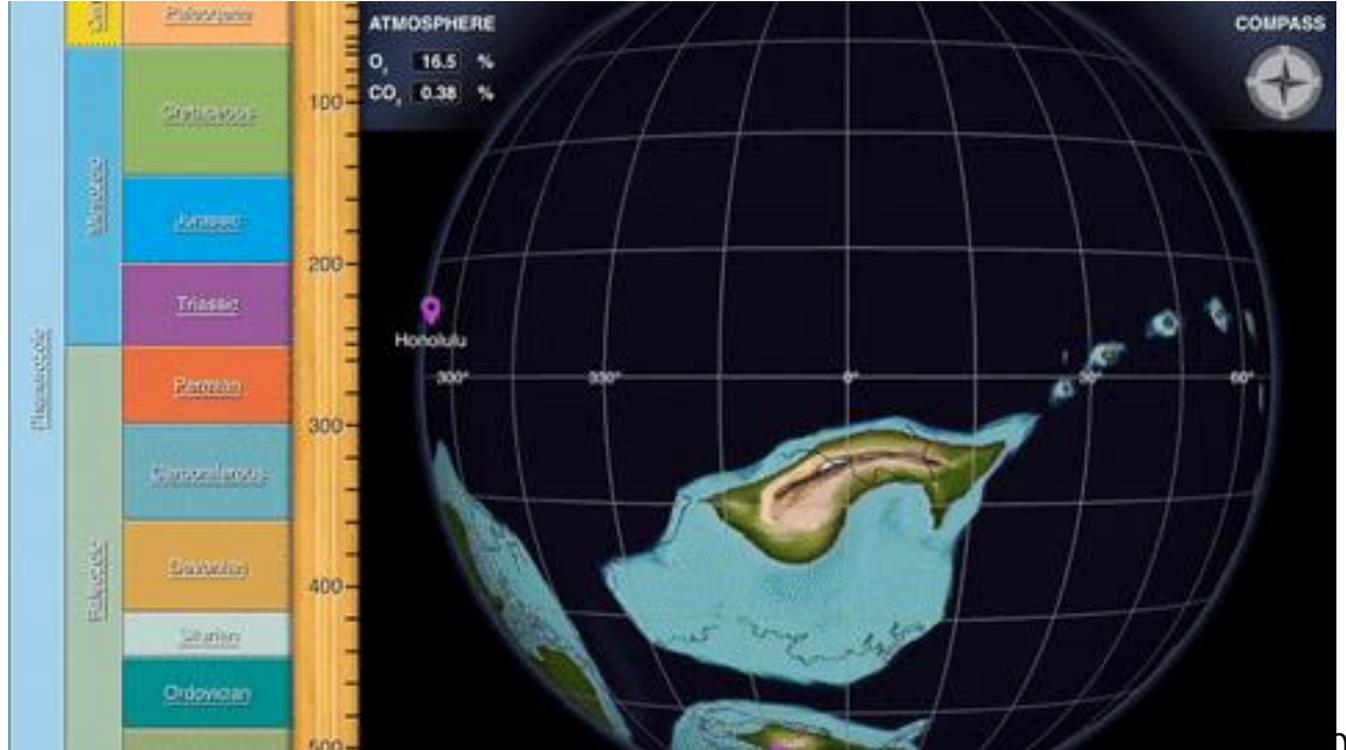
Tablet Apps

[Geological Timescale](#) is a free app from Geoscience Australia and allows users to travel back in time to see how the earth looked millions of years ago, however, it also adds in the elements of what life and mineral deposits would've been found at that time as well.

Cambrian

541.0–485.4 Million years ago

540

MILLION YEARS AGO

Palaeogeography

Around 470 Ma, what is now Australia formed part of a single ancient super-continent. The sea-level was very high and most of eastern Australia was covered by sea, an arm of which extended across the NT to northern WA. Chains of active volcanoes occupied parts of central NSW. Australia was located close to the equator and the climate was relatively warm. Early marine life had existed for many hundreds of millions of years before this.

Major mineral deposits

Copper/Gold/Silver: Mt Lyell (Tas)
Copper/Lead/Zinc/Gold/Silver: Rosebery, Hellyer, Que River (Tas)
Phosphate: Georgina Basin (Qld)

Life

Common: Molluscs and sponge (archaeocyath) reefs
Dominant: Trilobites and brachiopods
Diversification: Skeletons and shells

Tablet Apps

EarthViewer is a free app that is similar to the Geological Timescale, however, the main difference is that it allows an overlay of different data such as oxygen levels, temperature, and carbon dioxide levels at a

Tablet Apps

Dynamic Plates is a paid app that looks at tectonic plates and also includes animations of what happens when certain plates collide or slip apart. It also contains information on plate theory and a quiz.

Tablet Apps

Floodlines is an app developed by the State Library of Queensland that uses Augmented Reality (think Pokémon GO) to illustrate the 2011 Brisbane Floods. It uses *markers* that users point their device camera at to activate the display. The markers can be accessed by visiting this Drive folder.

Google Apps for Education (GAFE)

An essential skill that students will need for the future is the ability to work collaboratively with others. This can be achieved through the use of the Google Apps for Education (GAFE) suite of products. GAFE products allow students to work from anywhere and at anytime, as long as they have their Google login details. This means that these tools are particularly effective for use out in the field: during field trips, students can easily gather, process, and communicate geographical data either individually or in groups.

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GAFE

Docs and Google Slides allow students to process and communicate geographical information in a collaborative manner, and the benefit for teachers is that virtually every keystroke is recorded, allowing you to keep an eye on contributions. You also have the ability to write comments directly on the document that the students are working on, providing them with valuable, real-time feedback.

Google Forms gives people the ability to acquire geographical information from a range of sources in a variety of manners. This could be in the form of Census-style surveys, which the data could then be analysed and presented in engaging ways.

A number of add-ons can also be integrated that will make your workflow more efficient: for example, Flubaroo is a great assessment tool that auto-grades quizzes made on Google Forms.

Total Points	Percent	Times Submitted	Emailed Grade?	What is the age of criminal responsibili ...	How much money is a penalty unit equal t ...	If you cannot afford legal representatio ...	Australia has a Bill of Rights?	A method of resolving disputes whereby a ...
7	70.00%	1		1	1	0	0	0
5	50.00%	1		0	1	1	1	0
6	60.00%	1		1	1	1	0	0
7	70.00%	1		0	1	1	0	1
8	80.00%	1		0	0	1	1	1
4	40.00%	1		0	1	1	0	1
3	30.00%	1		1	0	1	0	0
7	70.00%	1		1	0	1	1	0
6	60.00%	1		0	1	1	1	0
5	50.00%	1		1	0	1	1	0
6	60.00%	1		0	0	1	1	0
5	50.00%	1		0	1	1	1	0
2	20.00%	1		0	0	0	0	0
				40.91%	72.73%	77.27%	50.00%	40.91%

GAFE

A growing area of technology is Virtual Reality, and the Google Cardboard offers a relatively inexpensive way of delivering engaging content without having to leave the comfort of the classroom.

Students can explore parts of the world otherwise inaccessible due to location or cost. Google Expeditions is an emerging platform that allows teachers to "take students on a field trip" to anywhere in the world, and includes teacher notes, points of interest, and also questions that could be asked of the students during their "excursion."

GAFE

Mount Everest

Other Learning Technologies

OLTs

Minecraft is a very popular game used by both young and old, as it provides you the ability to be as creative as you can be. This tool fits well with learning about landscapes and landforms, providing students with a platform to create their own 'world.' This can then be used as a lead into a written exercise that prompts students to think about their 'world.'

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OLTs

Landscapes and landforms are able to be investigated using a website such as a [Global Elevation](#) service.

OLTs

Canva is a free service that allows you to create infographics, and other design projects using already created design elements.

OLTs

Skype (in the classroom) is a free tool that can be used for a variety of things:

1. Take virtual field trips

2. Collaborate on lessons with others

3. Talk to guest speakers

4. Play Mystery Skype

Tinker Time

You now have time to explore the technologies mentioned in this presentation and begin preparing resources.

Feel free to ask any question you want.

Add your Twitter handle to this Google Sheet.

Add your technology tools to this Google Doc.

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