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USING TECHNOLOGY TO ASSIST IN THE TEACHING AND LEARNING OF GEOGRAPHY

**Marco Cimino - HSIE Teacher,
Magdalene Catholic High School, Narellan**

Introduction

Geography may be one of the oldest disciplines in the world, however, that does not mean that the way it is taught in schools today should be equally as dated. Today, we have a wide variety of tools at our disposal to engage young people with their world. 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. It 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 due to the growth of the Internet and the increase in Internet access. This means that students have the ability to learn at any time of the 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. This has allowed students to learn anywhere and everywhere.
- **Path:** There are a range of new technological learning tools that has meant that students are now able to learn in their own style, thus leading to a more engaging approach. The benefits of these 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. This easily provides for differentiation within lessons.
- **Pace:** Much like above, learning is now no longer restricted to the pace of the teacher or the rest of the class. New technologies now mean that students can learn at their own pace.

This paper will look at a variety of technological tools that could be easily integrated and used within the classroom in order to provide students with essential 21st Century skills and to give them a relevant and authentic geographical learning experience.

Social media

Social media often gets a bad rap, however, when used correctly, it can truly unleash a powerful learning experience. Twitter is one such example of a powerful social media tool. It provides teachers with the ability to connect with other educators from around the world. This allows a number of things:

- You can access real-time data and information from reliable sources
- You can engage in professional conversations with other 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.

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 direct 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. 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.
- **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. These resources can

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be useful for the New South Wales Geography K-10 syllabus units of 'Place and Liveability' when looking at communities and for investigating variations across Australia for the topic 'Human wellbeing'.

- **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.

FAOknowledge, UN Development, UN Environment and Asia Education Foundation are other organisations that post geographically relevant tweets.

Tablet apps

A lot of individuals and entire classes also tweet about geography, giving you a host of tested lesson ideas. It is also possible to participate in Twitter chats or to simply read a hashtag's stream. A great hashtag is [#geographyteacher](#), which is constantly being used by educators worldwide to offer lesson ideas or links to useful websites. This offers up a world of professional learning to yourself, and easily searchable resources for your students. Meanwhile, Twitter chats are more structured and can generally take place at a certain time and follow a certain theme or set of questions. A great Twitter chat you can participate in is [#GeoChat](#). According to the chat moderators, this event happens at least once a month.

It is relatively easy to set-up a Twitter account (Twitter even have a [step-by-step guide](#)). Twitter is an excellent social media tool for teachers and students to acquire geographical information.



Figure 1: Run that Town app – <http://runthattown.abs.gov.au>



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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. One such app is a game developed by the Australian Bureau of Statistics, and one that I have been using to great success. *Run that Town* is a 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. An example of this would be a community proposal to build a skate park. You will then be given demographic data such as the age structure of the suburb and the thoughts of residents towards the idea. This app fits well with the new New South Wales Geography syllabus unit of 'Place and Liveability' when looking at communities.

The new New South Wales Geography syllabus unit of 'Sustainable Biomes' could be well served by the use of National Geographic's *Food app*. This app provides students with engaging infographics and other information that highlights the current issues surrounding food security around the world.

There is also a wide variety of graphic organiser apps that allow students to process and communicate geographical information in an engaging way. These can be used in conjunction with media apps such as movie or comic book making apps.



Figure 2: National Geographic Food app – <http://theplate.nationalgeographic.com/2014/10/14/download-the-future-of-food-mobile-app/>

Google Apps for Education (GAFE) Products

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. Google

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. GAFE products also 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.

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. Students can also download research add-ons, allowing them to investigate geographical information without having to leave their document, reducing the distractions involved in trawling through the Internet. Bibliography add-ons can also be integrated, providing students with a simple way of referencing their work and giving them a greater idea of academic honesty.



Figure 3: Google Expeditions – <https://www.google.com.au/edu/expeditions/#explore>

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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. They are essentially small cardboard boxes ranging in price from about \$10 (cardboard version) to over \$50 (durable plastic version) that work with a smartphone or tablet. It allows students to view content both in 3 dimensions and 360 degrees. 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.”

Other technologies

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 the New South Wales Geography K–10 syllabus unit of ‘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.”

The ‘Landscapes and Landforms’ can also be served by websites such as a [Global Elevation](#) service. Figure 4 below shows how a global elevation website could provide students with an engaging and accessible way to acquire geographical information.

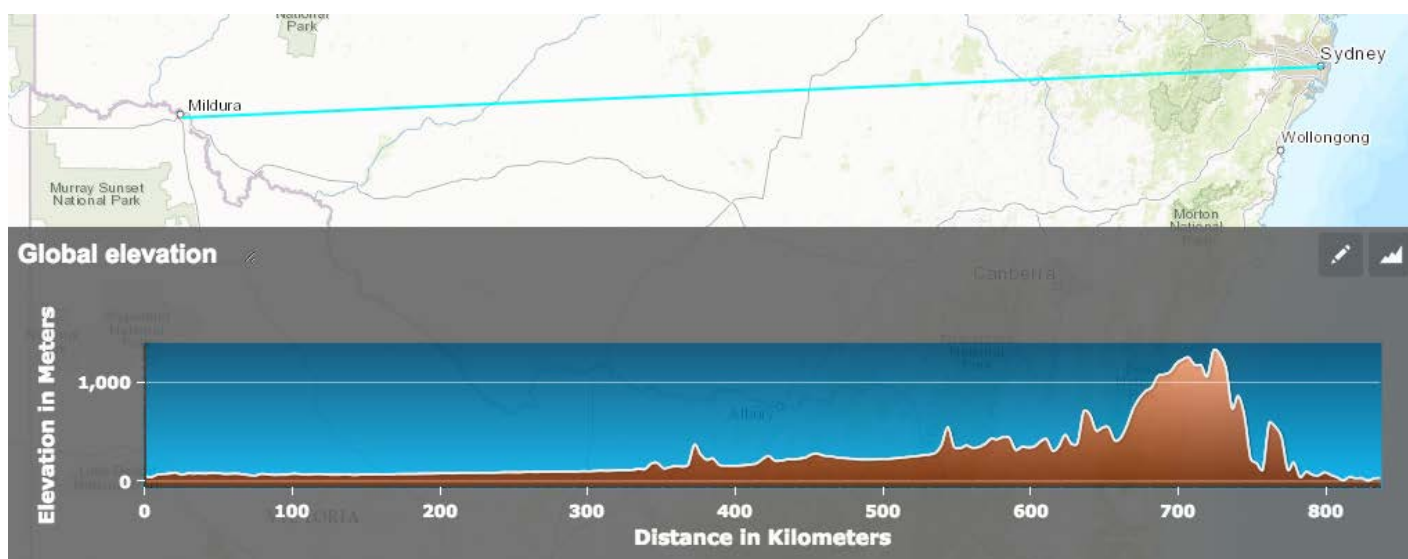


Figure 4: Global Elevation (Esri UK n.d.) – <http://esriukeducation.maps.arcgis.com/apps/Profile/index.html?appid=f0a2a2a3e1964129b22c715e31282f6c>

Conclusion

Whilst this paper in no way offers an exhaustive list of ways that digital resources could be used to make geography education more engaging and authentic, it is hoped that it provides you with a gateway to opening up your classroom to new and exciting possibilities.

Below: Northern Territory landform from 30,000ft. Source: J Sillar

