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Teaching and learning with geospatial technologies is a key area that is published in *International Research on Geographical and Environmental Education (IRGEE)* (McInerney, 2006; Chatterjea et al., 2008; Papadimitriou, 2010; Höhnle, Michel, Glasze, & Uphues, 2013). These include Geographic Information Systems (GIS) and the use of Internet Mapping Technology (IMT) such as Google Earth and Google Maps. The editors are reflecting on the range of works published in *IRGEE* and we have also seen works published on the use of paper maps (Hemmer et al., 2013). The editors see the value in exploring the issue of teaching map skills with paper maps in an age where IMTs are almost ubiquitous and easily accessed. To position this reflection, we have used a personal narrative approach based on the experiences of one of the editors, Gillian Kidman, when visiting the other editor, Chew-Hung Chang, in Singapore.

As I (Gillian) navigate my way between meetings across this beautiful sovereign city-state and island, I wonder at the number of people, who, like me, appear to be tourists. They have a cell phone in one hand, and a swiping finger extended on the other hand, ready to swipe. A glance at their screen informs me they may well be tourists, also attempting to find their way, but using a virtual map. They use an Internet mapping technology (IMT) (a program like Google Earth or a program with web features like Microsoft Virtual Earth). On the occasions I catch a taxi, the driver uses a GPS or cell phone to plot a route for our journey.

This is not my first visit to Singapore, and I still get lost, but not as often. I choose not to use IMT as I choose not to have continuous wireless fidelity (Wi-Fi) connection – I do not need it. I have a system map for the public train system (this I do need!), and before leaving my hotel, I consult online timetables for bus information where necessary. When I first visit a new city, I like to use a paper map to gain an understanding of the city layout. On subsequent visits, I like to navigate the city using local reference points. I walk until I find a certain street or a particular landmark, at which point I recognize my location as a form of a grid in my mind. I think to myself, *Oh yes, I know where I am, I need to take the next left and go on a little further, then take a right when I see the mall.* I find visiting a new city wildly fulfilling. Exposed to new cultures, different perspectives, every day, morning/afternoon, hour and minute is a unique experience. I learn about the world around me, *from* the world around me. I wonder if those who navigate a new city, experience this new city as I do – one based on seeing and observing landmarks in their actual locations as a three-dimensional reality; or do they experience a different city within their mobile device, based on a two-dimensional representation of reality via their IMT.

My internal cartographer allows me to develop a spatial memory that helps me navigate my way. This cartographer is informed by the initial consultation of maps, and then I navigate my way based on experience. For other 'tourists', it seems the more time they spend finding directions using IMTs, the more their minds may grow familiar with the officially documented outline of a city, rather than the one created through their own lived experiences. My preference of using questioning as a pedagogic tool led me to ask how we are educating our young in terms of navigation of new places. Is navigation in our curriculum? If so, how are such navigation skills developed? Are our curriculum documents fluid to allow the inclusion of IMTs as they develop and become more widely accessible? Do teachers have the professional learning opportunities and facilities to develop such skills? Education is not just about teaching children knowledge and skills but also ways of helping the children experience their lives. While we consider the balance between these imperatives, we may be often caught up with the demands of curricular outcomes that we may overlook the more altruistic goals of educating a child to experience the world. We do not have the answers to such questions, and this reflection serves as a call for more research that explores such issues.

Serendipitously, I visited an exhibition on the history of Ancient Greece while I was in Singapore. However, this exhibition (at the Science Centre, Singapore) displayed the lesser-known contributions of the Ancient Greeks – the inventions of *Ancient Greece: Origins of our modern technology*. Hidden in a bottom corner of an exhibit was reference to the Globe of Crates of Mallus. The exhibit claims that in 150 BCE, Crates made one of the earliest globes bearing a map of the Earth. I further read that it was the Greek civilization that developed the earliest forms of cartography (although I hear this is disputed by some saying it was the early scholars of the Middle-East who were the first Geographers). Students of western earth sciences and mathematics will all be familiar with Ptolemy, Herodotus, Anaximander, and Eratosthenes. Their works all led to what we now call cartography in the geography discipline. All studied the size and shape of the Earth and its habitable areas, climatic zones and country positions. Pythagoras is best known for his geometry theorem, in which the square of the hypotenuse is equal to the sum of the squares of the other two sides ($a^2 + b^2 = c^2$). He is less known for his work on spherical objects where he speculated about the notion of a spherical earth with a central fire at its core (Evans, 1998, p. 47). Pythagoras's geometric work was instrumental in the development of cartography and geography. When the geographers of the Greek era started estimating scientifically the circumference of the earth, a huge impulse was given to the cartographic science. From the early beginnings of maps and map making to the use of IMT, the geography teacher is concerned with how using these resources could help develop a student's geographical understanding of the world.

During an earlier visit to Singapore, a group of geography educators organized a forum for local school teachers on "Why would I need good geographical education when I can google for everything? – A conversation with international geography and environmental educators." Along with my coeditor and me, the panel consisted of Ivy Tan, Daniela Schmeinck and Tricia Seow, all passionate geography and environmental educators, representing perspectives from various backgrounds. The panel discussed the challenges geography teachers face when making their lessons relevant in case

students can find facts like the length of the longest river on earth or the current population of China faster than the teacher could teach them. In particular, we explored the importance of fieldwork and environmental education that advanced GeoSkills are not a commodity and not available for sale on eBay, the type of geography knowledge a citizen of this earth needs and the importance of being a prosumer (a producer–consumer hybrid) of knowledge. These topics are relevant to this editorial.

I was informed that IMTs could offer me advantages over my preferred paper maps and self-navigation. For example, I may opt for an egocentric view of my map, I can also quickly calculate the scale and distances in terms of walking times, I can even walk virtually through an environment (but what is the fun of that? I seek the real environment experience). Through a notion called "being a prosumer", I could add or delete information to my map which I can update either in real time or analyze later on my computer. I recall arguing that I do not need to worry about screen brightness, battery life or reception among the Singaporean skyscrapers when using paper maps, but I digress.

Irrespective of whether I use my inner cartographer and paper-based maps, or IMTs, I still need to have an understanding of the signs and symbols used on maps, I need to know how to read a map – I need to be map literate! There is a body of research in *IRGEE*, and indeed other journals, reporting on functional map literacy (map reading, map analysis and map interpretation) and associated map-reading skills: navigation, measurement and visualization (Hemmer et al., 2013; van Dijk, van der Schee, Trimp, & van der Zijpp, 1994; Bar, 1998). Joseph Kerski (pers. comm.) from ESRI recently pointed out to me that because we now have data sets (like the ESRI Living Atlas of the World) and platforms and tools (like ArcGIS Online), it is actually more important now, than before, that we teach mapping skills, and also to critically analyze data through maps.

Maps are about effectively communicating spatial and geographical information so we can navigate and understand the world around us. With the 'prosumer' movement becoming more popular, I wonder if our curriculum includes cartography for both the virtual mapmakers and the map users. I further wonder if digital maps that allow heavy customization are accurate. Do the public understand the semantics of map-making sufficiently well enough to create an acceptable level of accuracy in their maps? So many wonderings, so many questions. Again, *IRGEE* calls for research that explores such curiosities. As we consider the range of questions raised in this editorial, we should not lose sight on the existing body of work reported in *IRGEE* over the years. There has been good foundational work published on spatial thinking, map skills, use of GIS and, more recently, use of other Geospatial technologies such as IMTs. We encourage authors to peruse this treasure trove of scholarly work and advance the research in this area, especially in providing new insights to this discussion of learning to read a paper map in an age of Internet mapping technologies.

References

Bar, S. (1998). Starting abilities required to learn mapping skills related to physical maps. *International Research in Geographical and Environmental Education*, *7*(1), 50–66.

Chatterjea, K., Chang, C.-H., Lim, E., Zhang, J., Theng, Y.-L., & Goh, D.-L. (2008). Supporting holistic understanding of geographical problems: Fieldwork and G-Portal. *International Research in Geographical and Environmental Education*, *17*(4), 330–343.

Evans, J. (1998). *The history and practice of ancient astronomy*. Oxford: Oxford University Press.

Hemmer, I., Hemmer, M., Kruschel, K., Neidhardt, E., Obermaier, G., & Uphues, R. (2013). Which children can find a way through a strange town using a streetmap? – Results of an empirical study on children's orientation competence. *Journal International Research in Geographical and Environmental Education*, *22*(1), 23–40.

Höhnle, S., Michel, B., Glasze, G., & Uphues, R. (2013). Digital geodata traces – New challenges for geographic education. *International Research in Geographical and Environmental Education*, *22*(2), 97–108.

McInerney, M. (2006). The implementation of spatial technologies in Australian Schools: 1996–2005. *International Research in Geographical and Environmental Education*, *15*(3), 259–264.

Papadimitriou, F. (2010). A "neogeographical education"? The Geospatial Web, GIS and Digital Art in Adult Education. *International Research in Geographical and Environmental Education*, *19*(1), 71–74.

van Dijk, H., van der Schee, J., Trimp, H., & van der Zijpp, T. (1994). Maps skills and geographical knowledge. *International Research in Geographical and Environmental Education*, *3*(1), 68–80.

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