# Empowering 21st Century Learners to Engage the World Using Google Earth

**Lin Kui Fong, Hedzlyn Helyaty Mohamed M.**
Pioneer Junior College (Singapore)
lin_kui_fong@moe.edu.sg, hedzlyn_helyaty_mohamed_m@moe.edu.sg

## 1. Introduction and Background

The world we live in has changed; it has become more interconnected and 'what we do as a nation and in our everyday lives is inextricably intertwined with what governments, businesses, and individuals do beyond our borders' [1]. This means whatever the individual does or does not do, has repercussions on the world. Hence, global competence, a term that Mansilla & Jackson (2011), regard as 'the capacity and disposition to understand and act on issues of global significance' is of paramount importance in the 21st century.

The profile of our students has changed; they are now what we consider to be the Net generation or Millennials, students who have grown up in an environment where the use of computers is prevalent, especially in developed countries. Such a generation believes that they should be able to access information online for free and that likewise, they should be able to publish their work for the world to access. [2]

The learning experiences that are designed for students should, according to McWilliam (2010), in the spirit of appreciating how dynamic and integrated the world has become, 'hold young people in the grey of not knowing and build their stick-ability as well as their curiosity.'[3] This view is underpinned by the belief that to challenge is to care (McWilliam, 2010). Preparing students by giving them the guided challenge of learning beyond the confines of the textbook and participating in a domain beyond the classroom is part of that care.

As students, this generation also learns differently and wants to learn in a way that best fits them. The term, digital natives, used to describe the present generation of learners, only serves to highlight the role education has to play to fit these students to this changed world, to give them what they need and the best way is to see it from their eyes. [4]

So what do digital natives want in their classroom? Marc Prensky [5] gives us an idea:
- They do not want to be lectured to
- They want to be respected, to be trusted, and to have their opinions valued and count
- They want to follow their own interests and passions
- They want to create, using tools of their time
- They want to work with their peers on group work and projects
- They want to make decisions and share control.
- They want to connect with their peers and share their opinions, in class and around the world
- They want to cooperate and compete with each other
- They want an education that is not just relevant, but real

(Prensky, 2010)

### 1.1 The 1st Challenge

The challenge was finding an ICT platform that can accommodate these criteria. We also placed our faith on an ICT tool, as apart from the fact that 21st century students are adept at ICT, it is able to meet educational objectives in 3 domains: cognitive, affective and psychomotor, as outlined in Bloom's Taxonomy [6].

In so doing, we as teachers took on 'the role of an innovator' so that, as Deng and Gopinathan (1999) put across, students could 'creatively use IT as a cognitive tool, an information tool, and a communication tool in achieving curricular objectives'.[7]

Using Prensky's (2010) student requirements as rubrics, the team was able to match, one-on-one, with what Google Earth can achieve:

| What Students Want | Google Earth Lesson |
|---|---|
| They do not want to be lectured to | The teacher merely facilitates the Google Earth lesson |
| They want to be respected, to be trusted, and to have their opinions valued and count | Students voice their opinions and publish them by telling their story in Google Earth itself through the placemark feature |
| They want to follow their own interests and passions | Students identify the area of interest, e.g. a country they want to investigate or an issue/cause they want to pursue |
| They want to create, using tools of their time | Students create their 'story' using the Google Earth placemark feature |
| They want to work with their peers on group work and projects | Students collaborate on a particular area of interest |
| They want to make decisions and share control. | They make decisions on how and what they want to share in Google Earth |
| They want to connect with their peers and share their opinions, in class and around the world | They publish their story to share with their peers and the world in Google Earth |

| They want to cooperate and compete with each other | They collaborate and yet different groups put up different placemarks to be showcased in Google Earth; hence, ensuring a level of competitiveness |
| --- | --- |
| They want an education that is not just relevant, but real | Google Earth comes equipped with real-world data and real world issues through Google Outreach |

### 1.2 The 2nd Challenge

The next challenge was whether the Google Earth lesson can deliver learning outcomes that are compatible with the 21st century world. In designing the lesson, the team took into consideration that the student will become not just an adult in his own country, but also an adult in the world. To be this global citizen, he would need what Mansilla & Jackson (2011) termed 'global competence' which consists of 4 core capacities:

1. Investigate the world beyond their immediate environment
2. Recognise perspectives, others' and their own
3. Communicate ideas effectively with diverse audiences
4. Take action to improve conditions, viewing themselves as players in the world and participating reflectively.

Beyond this, the team also had to balance these enduring aims with the need for students to meet the aims of formal assessment. Thus, the team needed to build in 'ways of helping pupils to integrate the use of their improved skills into other writing activities'. (Reynolds, Treharne and Tripp, 2003) [8]

Bearing all these in mind, we examined how the Google Earth features and lesson can accommodate these parameters:

| | Global Competence | Google Earth Features and Lesson |
| --- | --- | --- |
| 1 | Investigating the world | • Google Earth provides information about real-world issues that range from elder rights to genocide in Darfur. |
| 2 | Recognising Perspectives | • Diverse perspectives are offered in the content in Google Earth.<br>• Students discuss them with each other and then formulate their own perspective, which they publish in Google Earth |
| 3 | Communicating with diverse audiences | • Google Earth provides an avenue for self-expression – the placemark feature helps them to connect with the world<br>• Students have to decide how to communicate their opinions in the best way possible to make an impact or to persuade<br>• There are tools (from text to videos) in the placemark feature to accommodate the range and quality of communication students want to put across. |
| 4 | Taking Action | • Students have to reflect and take a stand when formulating their opinion<br>• Students have to articulate this stand through proposing measures or solutions to solve problems, in the hopes that they can make a difference |

Having done this, the team then identified the aims of our project:

1. Provide a multimedia-rich and authentic platform for teachers and students to develop knowledge and skills for a variety of world issues
2. Allow students to publish their contributions so that students can see tangible outcomes of their discussions
3. Give every student a voice, to show that his opinion matters
4. Give students the emotional connection to these issues and therefore the intellectual engagement; hence, gaining a deeper understanding of the issues
5. Provide a platform for collaborative and self-directed learning as students explore the various features of Google Earth
6. Stimulate reflective and evaluative thinking as students discuss issues and solve real problems
7. Attempt to use Google Earth to facilitate the acquisition of the 4 core capabilities of global competence.
8. Most importantly, use Google Earth to provide a visual reference that brings a valuable geographic context to issues for students; so that they learn to navigate their place in the world, literally and metaphorically, as global citizens, by being socially aware and responsible

In doing all the above, it is hoped that students, being 21st century learners, acquire the 21st century competencies.

## 2. Methodology

The team adopted a 2-pronged approach for our students; first, by harnessing the content in Google Earth itself and secondly, by creating new content in Google Earth.

**2.1 Harnessing the content in Google Earth**
First, content in Google Earth can be retrieved either by clicking on the existing placemarks in Google Earth or by going to the Google Outreach Gallery, where non-profit and public benefit organisations use Google Earth and Maps to visualise their cause, which range from climate change, global awareness, humanitarian issues to legal and justice issues. (http://www.google.com/earth/outreach/showcase.html).

**2.2 Creating new content in Google Earth**
Once students understood the task at hand, they discussed what issue they want to pursue and drew implications and conclusions from their assessment of the issue. Students uploaded their 'story' in the form of placemark pop-ups, which are saved in Google Earth. They then presented their story to the class.
A blog was created to aggregate all the placemarks created by students so that they can share their story, not just with their peers but also the world (http://googleearthatpjc.blogspot.com/).

**3. Results**
A qualitative-cum-quantitative online survey was carried after the Google Earth lesson:

| The Google Earth (GE) lesson: | | | | | |
|---|---|---|---|---|---|
| was interesting | | | | | |
| Strongly agree | 21 | 43.80% | | | |
| Agree | 25 | 52.10% | | | |
| Disagree | 2 | 4.20% | | | |
| Strongly disagree | 0 | 0.00% | | | |
| helped engage students in their learning | | | | | |
| Strongly agree | 14 | 29.20% | | | |
| Agree | 32 | 66.70% | | | |
| Disagree | 2 | 4.20% | | | |
| Strongly disagree | 0 | 0.00% | | | |
| helped students to enhance their knowledge of the world | | | | | |
| Strongly agree | 16 | 33.30% | | | |
| Agree | 29 | 60.40% | | | |
| Disagree | 3 | 6.30% | | | |
| Strongly disagree | 0 | 0.00% | | | |
| allowed students to think more deeply about the issue | | | | | |
| Strongly agree | 12 | 25.00% | | | |
| Agree | 31 | 64.60% | | | |
| Disagree | 5 | 10.40% | | | |
| Strongly disagree | 0 | 0.00% | | | |
| helped students better understand how GE can be applied to real-world causes | | | | | |
| Strongly agree | 13 | 27.10% | | | |
| Agree | 31 | 64.60% | | | |
| Disagree | 3 | 6.30% | | | |
| Strongly disagree | 0 | 0.00% | | | |
| | | | | | |

A qualitative feedback based on 2 survey questions was also conducted:
Q1) What I have learnt from the Google Earth lesson.
Q2) What I like about the Google Earth lesson.
Some of the students' responses for Question 1:
"This lesson has deepened my understanding of poverty on the global scale as it provides real-life and real time examples. I've been able to empathise with those living in poverty as there is a visual element instead of just words. The lesson has taught me to think deeply and analyse the situation more critically by allowing me to see first-hand what is happening." Nicholas De Silva
"This is an engaging and interesting lesson. It is a very good lesson that allows us to look further into the issue. I realised that as a Singaporean, I am very fortunate and tend to take things for granted. I have learnt that there are

actually many factors that cause poverty in a certain country. I can also help these countries via NGOs". Koh Yao Zu

"It broadened my perspectives on the different social, economic and political backgrounds of different countries." Anisah Bte Muhammad Hussain A.

<u>Some of the students' responses for Question 2:</u>

"Able to view and understand what is happening in other parts of the world." Dion Lee

"It is much more interesting than reading information from (a piece of) black and white paper." Chua Yu Zheng

"It is interactive and innovative. Boost my interest in current affairs.' Ang Jing Ling

"It's a new, interactive platform that allows us to learn more effectively." Michelle Goh

## 4. Conclusion

Students' survey results revealed that:

- Students prefer interactivity in their learning

- Students believe that they can learn better if they are engaged

ICT, in this case Google Earth, can be an effective tool to get students to be engaged at the cognitive, social and affective level

- Google Earth lends itself very well to accommodating the learning behaviour of digital natives and also the acquisition of 21st century skills.

- In particular, the team noted that in the GE lesson, students were able to demonstrate the 4 essential capabilities of global competence.

## References

[1] Boix Mansilla, V. and Jackson, A. (2011). Educating for Global Competence: Preparing Our Youth to Engage the World. Asia Society

[2] Oblinger & Oblinger (2005). Educating the Net Generation, Educause

[3] McWilliam, E. (2010. Learning culture, teaching economy, Pedagogies: An International Journal 5(4), in press

[4] Prensky, M. (2012) From Digital Natives to Digital Wisdom: Hopeful Essays for 21st Century Learning, Corwin

[5] Prensky, M. (2010). Teaching Digital Natives, Partnering for Real Learning, Corwin

[6] González-Sanmamed, M. and Sangràa, A. (2010). The role of information and communication technologies in improving teaching and learning processes in primary and secondary schools, *ALT-J Research in Learning Technology 18(3)*

[7] Deng, Z. and Gopinathan, S. (1999). Integration of information technology into teaching: The complexity and challenges of implementation of curricular changes in Singapore, *Asia Pacific Journal of Teacher Education and Development 2(1)*

[8] Reynolds, D., Treharne, D. and Tripp, H. (2003). ICT – the hopes and the reality, *British Journal of Education Technology 34(2)*