# Teaching and engaging students with Google Earth



**Nicholas Wise**

*Faculty of Education, Health and Community, Liverpool John Moores University, IM Marsh, Barkhill Road, Aigburth, Liverpool L17 6BD, UK*

Contact: n.a.wise@ljmu.ac.uk

Google Earth is an online 3D representation of our planet, coordinating a huge amount of data using satellite imagery, as well as images taken on the ground, thus enabling users to navigate easily in and around different parts of the world. In this review I hope to provide you with: examples of its potential educational uses, a reflection on my own use, and links to further research in this area. Since beginning teaching in 2009, I have been keen to disseminate on the application and possibilities of Google Earth to support learning and research (Wise, 2015a; Wise, 2015b; Wise, 2017b). Owing to the importance of spatial awareness, Google Earth is particularly useful when teaching about both the natural and built environments, and I regularly use the tool when explaining regeneration and urban transformation.

For those who want to understand better urban transformation, students need to be aware of impacts of change. Engaging students with visual technologies in lectures and seminars helps increase their understanding of the subject content, which I reinforce through interactive tasks, as displayed in the conceptual model in *Figure 1*. In this regard, active learning entails engaging students to interpret change by labelling points using Google Earth features. Visual engagement using the tool also helps facilitate critical thinking by looking at different cases around the world, thus promoting both spatial and international awareness.

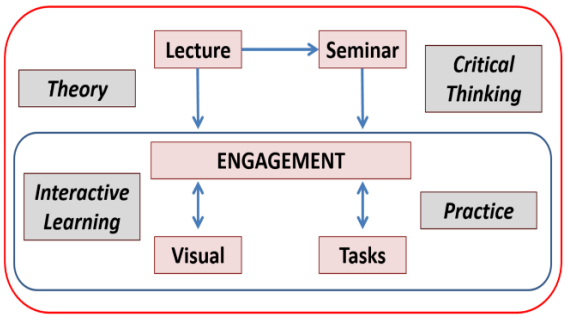


***Figure 1:*** *Conceptual model of engagement*

Seminar tasks using Google Earth can be completed in groups to encourage discussion among students to critically examine particular areas of cities. This encourages students to identify and 'georeference' interpretations. Google

Earth allows students to learn basic navigation skills to view images effectively; learn ways to determine distance measurements, elevations and coordinate locations; locate and analyse images based on personal research choices; and share findings from their research with the class. These last two points acknowledge how Google Earth encourages students to think critically about locations, pertinent to space, place, interrelationships and physical and built environments, each offering insight into how planning practices differ around the world. By zooming into particular areas, entering 3D mode or moving to Google Street view, students can add their own 'Placemarks' (as points of reference) as well as lines and polygons to simulate paths and input their observations and critical reflections, as seen in the example of Liverpool in *Figure 2*. By consolidating interpretations, students can co-create knowledge and add quantitative and qualitative data directly in Google Earth.

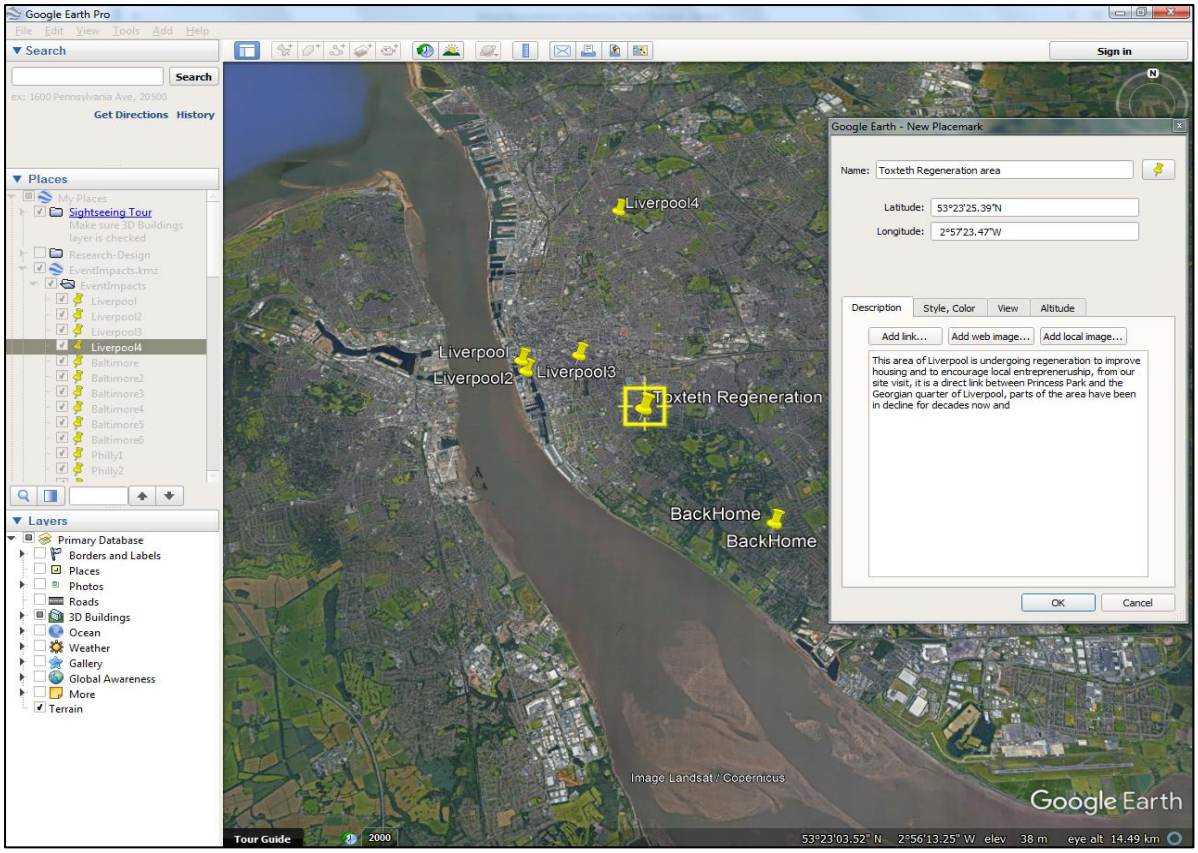


***Figure 2:*** *Using 'placemarks' in Google Earth (Liverpool) and adding content from site observations*

| Feature | Purpose | Teaching and Engagement | Evaluation and Practice |
|---|---|---|---|
| .kmz files | Simulation | Lectures | Visual interactive learning, global perspective |
| Placemarks | Location | Lectures and Seminars | Georeferencing and inputting interpretations |
| 3D Mode | Location | Lectures and Seminars | Tours and site-based learning and research |
| Street View | Interactive | Lectures and Seminars | Tours and site-based learning and research |
| Paths/ Polygons | Simulation | Locating: points, lines, polygons | Add interpretations, formative assessment |
| Timeline | Then → Now | Showing past imagery in lectures | Display spatial change over time (right image) |
| Fusion Tables | Data Input | Fieldwork and site research | Summative assessment, data management |

***Table 1:*** *Google Earth features useful for learning and teaching*

I use Google Earth in my teaching to analyse areas going through transition. This allows my students to assess and manage the distribution of geospatial data linked to a particular location. Students can use and engage with the features outlined in *Table 1*. What is especially unique is that students can use Google Earth Fusion Tables to reference data collected during fieldwork. This allows them to collect original data in or about particular locations and then share online, adding meaning and interpretation, which is useful for assessment and locating critical spatial knowledge.

As noted in the related literature, embedding geospatial technologies into teaching delivery is useful to improve spatial awareness in assessment (e.g. Jo et al., 2016) and overall spatial orientation (e.g. Carrera and Asensio, 2016). Google Earth challenges students to think spatially and enhance the learning experience by bringing different places and examples from around the world closer to us to observe and interpret (Hsu et al., 2017; Wise 2015b); all this from technology that is readily accessible and free to use.

- ***Nicholas Wise*** *is Senior Lecturer in Tourism and Events Management.*

## References

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