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Using Smartphones and Tablets to introduce Geospatial Data to students

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Higher Education Network of the Geological Society:
Geospatial Technologies in Higher Education: Saviour or Sideshow
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Overview

Using smartphones and tablets to introduce geospatial data to students

1. Rationale.
2. Basic-level tools to use to introduce geospatial data.
3. Case Study: Geotagging photographs in student fieldwork.
4. Limitations of Geotagging
5. Geotagging: Sideshow or Saviour?



1. Rationale

- Geospatial data & analysis – present and ubiquitous in everyday life.
- Forer & Unwin (1999) asked:

“Education vs. training? What is the purpose of the teaching? Is it the underlying science or the ability to drive a GIS that matters?”
- Boyes (2011) argues that GIS classes can simply become a training exercise of knowing which button to push rather than understanding the concepts of spatial analysis and geographical information data.

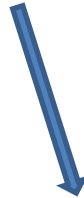


1. Rationale

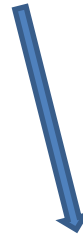
Spatial
Data &
GIS theories
(Education)



Practical: Handouts, guidance
(Training)

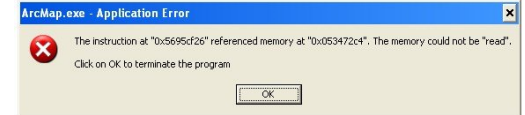


Support Classes

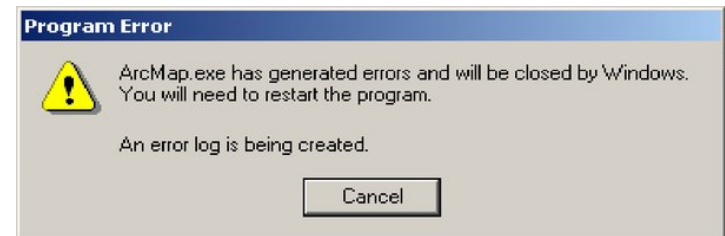


Quirks of the Software
(vital part of the experience)

= Frustrated Students:
Focus is on technical
problems rather than
the problem-solving
exercise

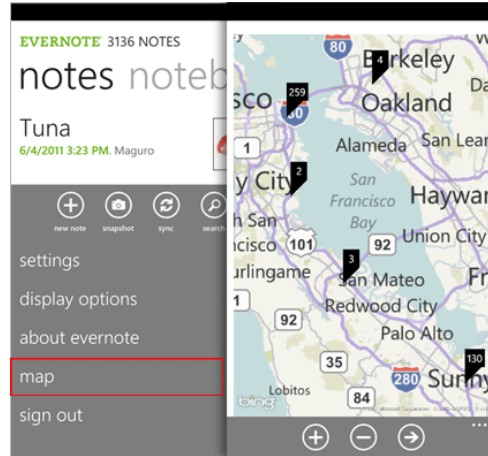


**Message
Lost?**

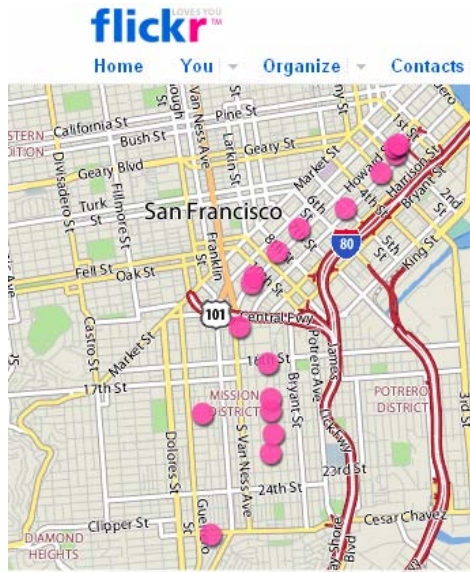




2. Introducing geospatial data



flickr

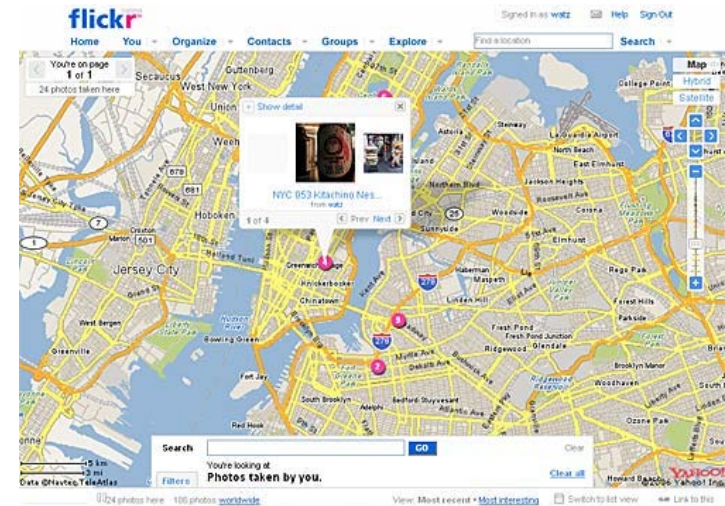
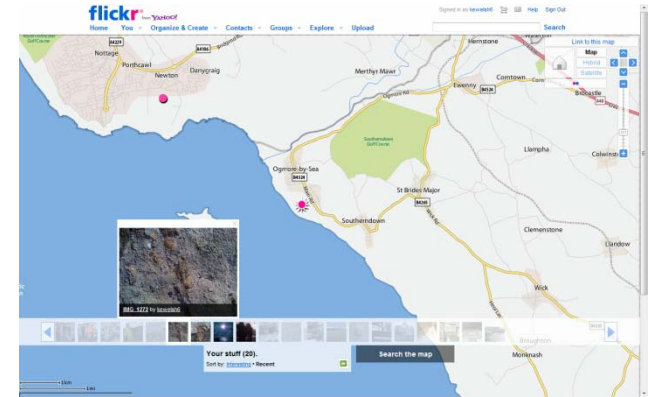


Google Panor^oramio

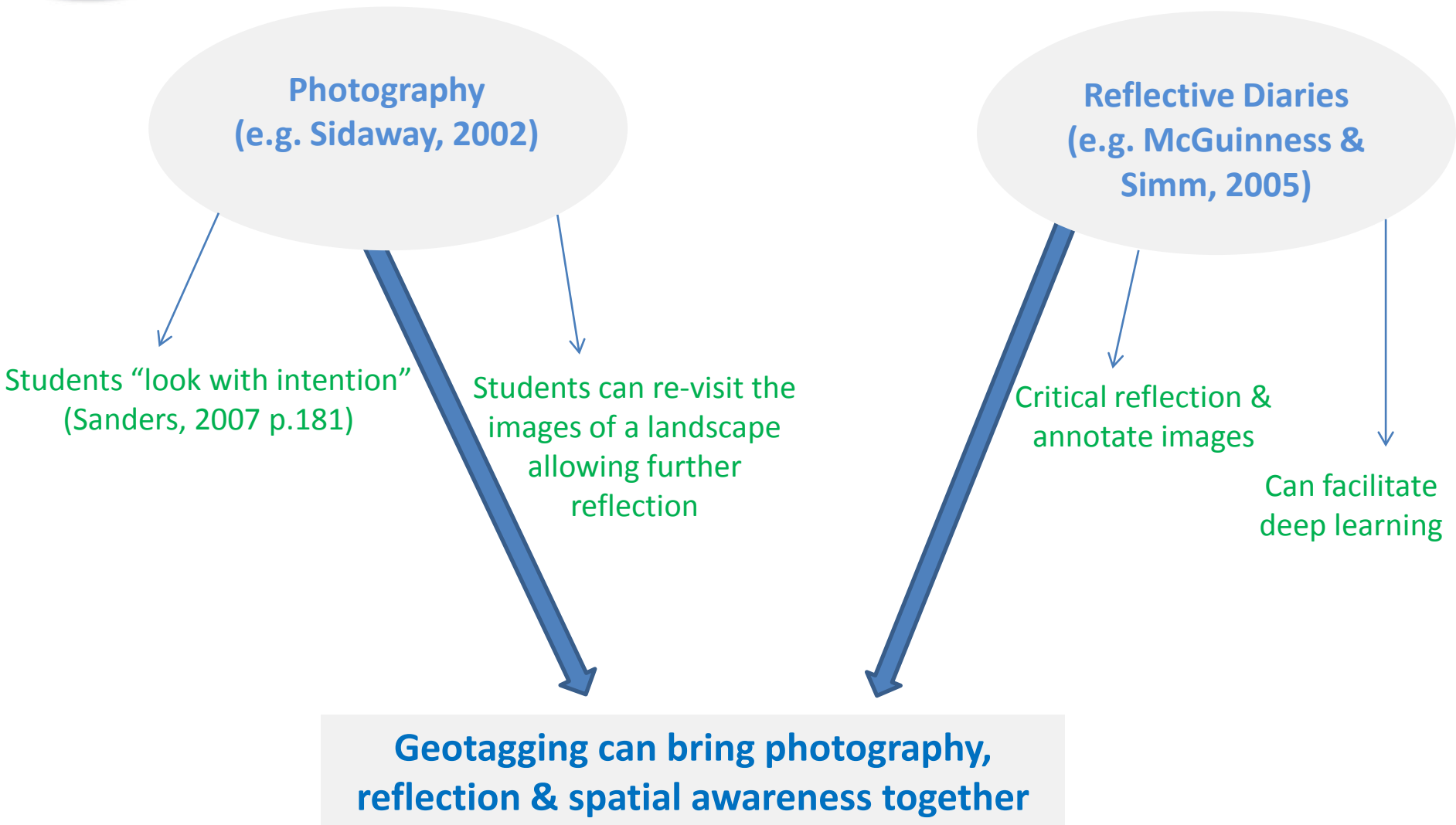
3. Case Study: Geotagging Photographs

Geotagging is essentially adding spatial metadata to any digital media e.g. a photograph, video or micro-blog update.

- Previously geotagging required a GPS and camera plus another piece of software to sync the two pieces of equipment, generally using the date/time information.
- Since 2007 → massive explosion in smartphones e.g. iPhone, Samsung Galaxy etc. which have in-built GPS and automatically geotag images.
- Smartphone ownership is becoming ubiquitous and students are becoming more aware of geospatial data.
- US News and World Report listed “geotagging your photos” as one of the “50 Ways to Improve Your Life in 2009” (LaGessee, 2008)



3. Case Study: Geotagging Photographs



3. Case Study: Geotagging Photographs

- A group of first-year undergraduate geography students used geotagging photographs as one method of data collection as part of an assessed field course in Slapton, Devon.
- The students wanted to show evidence of increasing house prices along an 8 km transect from an inland location (Kingsbridge, Devon) to a coastal location (Slapton Sands, Devon).
- Geotagging was an ideal method to collect data for this project and provided students with visual and spatial data to use in their assessed report.





3. Case Study: Geotagging Photographs

Students had:

- a basic introduction to spatial data & data visualisation.
- grounding in rudimentary concepts of Geographical Information Systems (GIS) (despite no previous experience).
- a “key skill” (Student B) which they “felt sure they would use again” (Student B).
- a skill to could “demonstrate to employers”. The students stated that although the technology was basic, the “same ideas could be applied with more sophisticated industry standard technology” (Student A).
- saved time using the technology and therefore had more time to analyse the data and use higher-level skills.



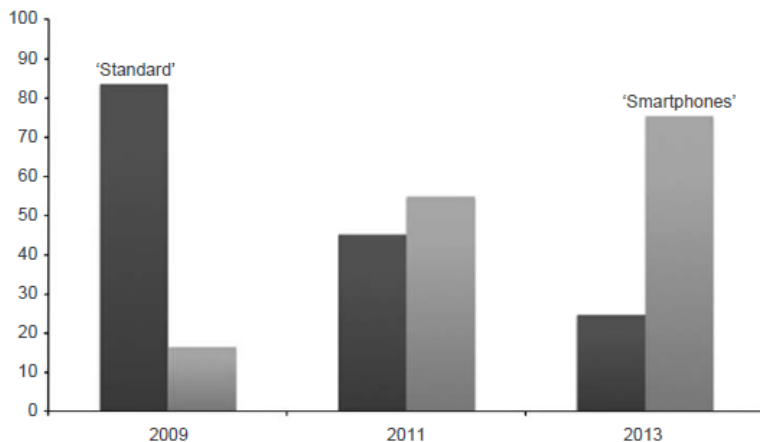
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4. Limitations

- Geotagging – positioning system on smartphone not as accurate as GPS receiver. Accurate to several metres.
- Not every student has a smartphone or tablet.
Not every institution has funds for smartphones or tablets (particularly for large groups).
- Basic introduction with basic software – need to build on student's understanding with more technical details later on in the degree course.





5. Geotagging: Saviour or Sideshow?

Saviour

- **TRAINING VS. EDUCATION** – both are important, tools out there now which can introduce important concepts and familiarise students with basics before moving on to the technical aspects of spatial analysis.
- Hardware (i.e. smartphone or tablet) is user-friendly and potentially seamlessly integrated into every day life.
- Students are familiar with smartphones and locating themselves on maps using in-built GPS.
- **The student focus moves away from the technological difficulties and a “push-button” training exercise and remains on the education of how to use and analyse geospatial data.**



References

Boyes, D. (2011) GIS Training vs. education at university. *GIS, teaching, technology, higher education*, [blog] 21st April 2011, Available at: <http://donboyes.com/2011/04/21/gis-training-vs-education-at-university/> [Accessed: 3rd November 2011].

Forer, P. & Unwin, D. J. (1999) Enabling progress in GIS and education, in: P. Longley, M. F. Goodchild, D. J. Maguire & D. W. Rhind (Eds) *Geographical Information Systems, Volume 2: Management Issues and Applications*, pp. 747–756 (New York: Wiley).

LaGesse, D. (2008) 50 ways to improve your life: 'Geotag' your digital pictures. Available at <http://www.usnews.com/articles/news/50-ways-improve-your-life/2008/12/18/geotag-your-digital-pictures.html> (accessed January 2011)

Welsh, K.E., France, D., Whalley, W.B., Park, J.R (in press) Geotagging Photographs in Student Fieldwork, *Journal of Geography in Higher Education*.

Showcase Event 2012

The 2nd Enhancing Fieldwork Learning Showcase Event
will be held on:



14th-16th September 2012

at

FSC Preston Montford, Shropshire

**Free residential fieldwork event showcasing use of
technology in student fieldwork.
(limited places available)**

**Please contact Katharine Welsh (k.welsh@chester.ac.uk)
to express an interest in attending.**