

Mobile computing in support of an integrated fieldwork experience

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CONTEXT

The SPLINT (Spatial literacy) CETL project Spatial literacy provides the backdrop for this work, in which the principal aim of the mobile computing equipment purchased concerns its use for the enhancement of **spatial literacy** skills in teaching in a wide range of contexts and across disciplines. In pursuit of this main aim, we have acquired class sets of mobile devices that potentially also afford other pedagogic advantages related both to **transferable skill development** and **discipline-related learning**. These devices include group sets of rugged GPS enabled tablet PCs, PDAs with Bluetooth GPS, digital cameras and iPods plus data loggers for a variety of environmental variables. Logistically, the mobile devices are managed using a group rucksack system; any one student group in the field has access to a consistent set of equipment that can be taken onto a hillside or left at base for use in the evening for which they have short-term responsibility.

Materials to enhance reflective learning

Enhance student understanding through:

- Location-aware visualisations of detailed landscape characteristics, and their evolution, at specific sites
- Use of PDA/tablet and GPS to enhance navigational awareness in a subject-teaching context
- Engage today's students with GIS

Approaches range from the simple and easily implemented to those pushing current research boundaries in GIS.

Geo-referenced photographs in GIS/Google Earth

Geo-referenced panoramas

Interactive 3d landscape model on tablet PC

Immersive 3d landscape model viewed via headset

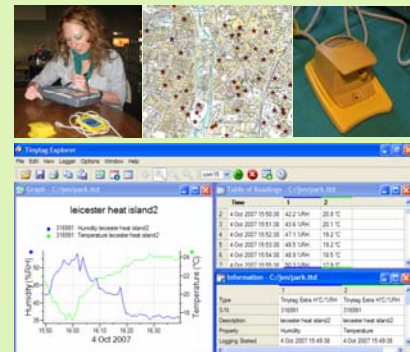
Complexity



Tools to improve efficient study and research

Enhance student effectiveness through:

- GPS enabled PDAs and tablets, with Excel mobile, to support data collection
- Video iPods, holding 'how to' clips on equipment/methods
- Use of cameras with GPS location software, with sketch editing tools, to enhance field recording
- Digital data logging sensor equipment for space-time analyses



The mobile computing resources have been equipped with software to afford potential applications in a variety of contexts, divided above into two categories: **Materials to enhance reflective learning** & **tools to improve the efficiency of field research**. In reflecting on progress so far, it is clear that designing individual practicals for specific contexts to facilitate reflective learning requires less institutional embedding than an updating of general field practices with a view to greater efficiency and effectiveness in the field. The software and hardware 'hooks' to the broader curriculum have been enabled; we are currently undergoing a curriculum design process that will see a series of small practical exercises rolled out across a variety of modules and levels. Others elsewhere have reflected in a GPS teaching context that it is not the quality of teaching tool per se that may matter most, but rather the resources to facilitate its use (e.g. Durham & Arrel 2006). In our context, such resource blocks could be the overhead of managing extra equipment, the stress-cost of carrying equipment on a fieldtrip with which one is not familiar amongst other things or a perceived loss or diversion of quality geomorphological observation time to GIS or statistical matters. Through a steady stream of learning, logistical & technical familiarisation and expectation setting throughout the curriculum with the co-operation of departmental "champions" our approach is therefore to encourage a less burdensome student-led bottom-up change where a top-down approach may be less successful.