Finding a Home for Technology in a Traditional Geology Field Camp

LESSONS FROM IDAHO’S LOST RIVER FIELD STATION

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Our History

- Digital mapping exercises are constrained to the second week of our 5 week field course.
- In 2004, used field measurements of bedding and well data to inform GIS modeling of aquifer form.
- In 2006 we used PDA-based ‘digital field books’ using Quickforms in ArcPad to collect structural data.
- In 2010, largely using tablet computers running full a Windows OS and either ArcPad or ArcGIS.
  - Quickforms for collecting point data.
  - Sketching contacts and structures over base maps.
  - Field data are carefully re-digitized each night.

- Students typically elect not to continue digital field data collection but elect to construct final maps using GIS.
Pros and Cons

Pros
- Most students build upon existing GIS skills
- Learning troubleshooting skills
- Produce more professional looking maps.
- Use of aerial photo base maps
- GPS assisted positioning

Cons
- Interface issues: weight, battery, read-ability, slow, no set scale, crashes, GPS.
- Distraction from geology-focused course content
Our Future Options

- Option 1: Continue to Integrate Technology into our Field Course
  - Do scanning in prior year to assure quality: work with legacy data
  - Take advantage of data ‘hot spots’ with preexisting data/curriculum
  - If technicians help, what percentage of the work can students do and claim to have mastered (5% or 80%?)
  - Demonstrate how data complements traditional methods
  - Will map making remain a relevant skill or is it simply a good, well vetted pedagogical tool?
Our Future Options

- Option 2: Keep Traditional and Technological Courses Distinct
  - More time spent learning fundamentals and techniques (pre and post field work)
  - Better equipment access during shoulder-seasons
  - Most time is spent doing data manipulation/analysis, not fieldwork.
  - Still doing field work, but just not the bulk of the time.
  - Students may not have sufficient disciplinary knowledge to apply the acquired data to a problem.
Other Thoughts

- Geodesy relies on change (often slow change) thus requiring legacy data for comparison to class acquisitions.
- Instrument-supported, high throughput digital data collection and analysis is the future for most earth science jobs. Students need these skills.
- And a few lingering questions…
Is education enhanced by or encumbered by technology?
Given the choice, do students prefer digital geologic tools to traditional tools?
How can technological skill building be a group activity if there is only one device?

If processing geodetic data is time consuming or high latency, how can it fit into a short field module?