Geoscience and geohazards education research at the University of Canterbury

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Primary research group goal: Improving tertiary geoscience education practices

- Develop measures to assess teaching best practices and student performance
- Develop interactive and cutting edge curricula
- Improve science communication in graduates
- Improve science communication best practices for professionals and to the public

Multi-faceted Research Group

Simulation & Role-play
Hazard Curricula
Science & Risk Communication
Note-taking Skills

Place-based Learning

New research initiatives seek to understand how people engage with geologic significance in informal and formal learning environments, using the broader notion of landscape heritage.

Landscape heritage holistically asks what features, natural and cultural, may be found at a site and how these interact with one another.

Note-taking Skills

Research Objective:
To characterize the context and perceptions of students' note-taking to deduce strategies students use in the field.

- The data consisted of observations of the 1 hour geothermal field lessons, hard copy notebooks (n=44), and interview data (n=18)

Results:
Analysis of the notebooks revealed note-taking strategies: students preferred to write in their own words (uniqueness; 1) and some had really complete notes (comprehensiveness; 1).

Several factors influenced the students' notes:

- Previous field experience, lecturer differences, and gender.

Natural Hazards Curricula

Goal:
Teach students how to manage a natural hazard crisis in a resource and time-constrained environment with conflicting needs and priorities, and justify their decisions.

Sample activities:
- Microscope image analysis of a Mauna Kea volcanic ash sample for industry students (2010)
- Develop mapping field exercises to inform the City Council with options for land use (2011 students)
- Field assessment exercises to inform evacuation planning for an Auckland volcanic eruption (2011 students)

Preliminary results:
- Classroom observations show high levels of engagement in the activities.
- Students indicated that the activities enhanced their learning and reinforced field skills.
- Students reported that the activities were effective in preparing them for real-world scenarios.

Role-play & Simulation

Simulations of disaster require students to synthesize complex data sets and provide real-time advice in order to minimize impacts from major geologic events.

Sample situations:
- Scenario: A major earthquake affecting an area with high population density and infrastructure.
  - Students must develop strategies to evacuate residents, protect critical infrastructure, and minimize damage.
- Scenario: A volcanic eruption affecting a region with significant economic and cultural importance.
  - Students must develop plans for emergency response, evacuation, and recovery.

Background
Scientist
So what?
Supporting details

Place Attachment
Place Dependence
Place Meanings

Students at the volcanic landscape of the Tongariro Complex, in the North Island of New Zealand

Sense of Place

Earthquake preparedness
Impacts to infrastructure,
Earthquake recurrence
Earthquake magnitude,