Integration of Problem-Based Learning & Web-Based Multimedia to Enhance Soil Management Course

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Background

Declining enrollment in post-secondary soil science programs in North America and other parts of the world are due to:

- Increasing urbanization,
- Lack of visibility of soil science in high school education,
- Traditional and often dated soil science curriculum.

To address this trend, universities are re-organizing soil science curriculum and implementing innovative educational approaches and web-based teaching resources.

The **objective** of this project was to develop a dynamic, web-based teaching tool to illustrate impacts of 3 land-uses on soil quality.

Soil profiles on 3 study sites:
Second growth site: one-time logging
Alder site: multiple logging
Cultivated site: forest clearing + ongoing cultivation

Land-Use Impacts (LUI) Tool

The **LUI Tool** (http://soilweb.landfood.ubc.ca/luitool/) was designed for an upper-level undergraduate and graduate level Sustainable Soil Management course at UBC.

The **LUI Tool** combines:

- A face-to-face problem-based learning (PBL) case study with
- Web-based multimedia

During the course, each student works on three, 4-week-long PBL case studies. Each case is focused on either soil chemistry, physics, or biology. The LUI tool is part of the soil chemistry section.

How Is It Used?

Week 1: Students are introduced to the case and relevant soil science principles through a lecture
Week 2-3: Students work in groups to meet specific learning outcomes, review soil data, and prepare for a group presentation
Week 4: Each group gives a 20-minute oral presentation to the class outlining the key concepts
Week 5: Each student prepares a written report demonstrating individual learning

- The media-rich LUI tool provides students with multiple approaches to achieve learning outcomes, when it is combined with face-to-face teaching.
- Student feedback showed that the LUI tool appealed to students and met their learning outcomes.

Reference:
Strivelli, R.A., **M. Krzic**, C. Crowley, S. Dyanatkar, A. Bomke, S.W. Simard, and A. Jakoy. 2011. Integration of problem-based learning and web-based multimedia to enhance soil management course. J. Natural Resources & Life Sci. Education 40: 215-223.