

2003 Seattle Annual Meeting (November 2-5, 2003)

Paper No. 192-14

Presentation Time: 1:30 PM-5:30 PM

### **MAKING A MESS OF LECTURE: USING FUN, INTERACTIVE PHYSICAL DEMONSTRATIONS IN A LARGE LECTURE SETTING**

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Although large lecture classes pose many challenges for faculty interested in grabbing and holding students' attention and interest, such classes also provide an opportunity to make use of many fun and engaging physical demonstrations that work well with large groups of students. At the University of Vermont, we use a variety of such activities to help "spice up" a large introductory course, Earth Hazards. For example, we illustrate the relative dangers of building on uncompacted alluvial fill versus building on solid rock by setting up a tray of brownies next to a tray of jello, with plastic dinosaurs standing on top. Using a document camera, we project an overhead image of this setup onto a 20 foot large screen at the front of the lecture hall. The entire class (up to 240 students) has a great view of the different behaviors of the two materials when student volunteers generate an earthquake by bumping the table, sometimes not so lightly. The seismic shaking in the brownies dampens quickly, but continues strongly for seconds in the jello. The highlight of the semester comes when we use a large water-balloon slingshot to shoot various projectiles (including golf and softballs) into a large sheet cake (quite messy) as part of our bolide impact unit. Students and faculty use different angles of impact and note the size, orientation, and strata revealed in the resulting cake craters. The class ends with a feast. We involve students as much as possible in these demonstrations, which has the double benefit of making the lesson "real" while increasing their peers' interest as the volunteers are cheered on. Whether hauling each other around the hall on wooden boards (a demonstration of normal force and stick-slip behavior), playing with slinkies (p and s wave motion), or burning note paper with candles (J. Tuzo Wilson's hot spot demo), such fun, "messy" demonstrations increase student interest while helping them visualize difficult concepts. These demonstrations are especially effective in a large-lecture setting, where we can turn the "mob mentality" of hundreds of students to our advantage by getting the entire class involved in the fun.

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Session No. 192--Booth# 128

Large Intro Courses That Work: Sharing Exciting and Effective Teaching Strategies (Posters)

Washington State Convention and Trade Center: Hall 4-F

1:30 PM-5:30 PM, Tuesday, November 4, 2003

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