**Non-science majors in a disasters course -Baylor University (Sharon Browning)**

**Virtual Workshop February 2014-SERC**

[Baylor University](http://www.baylor.edu) is a private 4 year institution in central Texas with a total enrollment of 14,900 with 12,575 undergraduates, 3,033 of which are freshmen. Our student population is diverse and accomplished, originating from every state and 71 countries around the world. Baylor's median SAT score range is 1120-1300 (math and reading) and 74% of our freshmen are in the top 25% of their graduating class. Despite their achievements, they often still struggle with quantitative skills in our freshmen introductory courses. Students in the College of Arts and Sciences are required to take 8 hours of lab science courses (2 classes) as part of their general education requirements; the majority of them will not take another math or science class beyond the 1000 level. Approximately 200 students per semester enroll in Earthquakes and Natural Disasters (Geology 1401). The course consists of two faculty-taught lecture sections and 10-12 lab sections taught by multiple graduate teaching assistants. The lab and lecture are combined for credit and grade purposes. Although geology majors are occasionally recruited from this course, it is primarily a service course.

 The lab portion of geology 1401 consists of a number of interactive physical models built by Baylor faculty that illustrate a variety of geologic processes. Weekly experiments are designed to guide the students through collecting and interpreting data or observations on the chosen geologic topic. While some experiments are primarily qualitative, most are not, requiring basic quantitative skills including graphing and interpreting graphs, unit conversion, order of operations, and basic arithmetic. Reinforcement is accomplished by students encountering the same skills during multiple lab weeks. The lack of quantitative skills has proven to be the biggest challenge for students and teaching assistants alike.

 We have addressed this shortcoming by utilizing a series of online tutorials and quizzes through The Math You Need, an NSF-funded project supported by SERC (P.I’s Dr. Jennifer M. Wenner, UW Oshkosh Geology Department and Dr. Eric M. Baer, Highline Community College Geology Program). Currently, students complete a pre assessment quiz before the beginning of lab to gauge their initial skills. Three specific tutorials are assigned to correlate with material in the lab (e.g. density calculations, graphing, and rates), and post-tutorial quizzes are assigned to asses students’ mastery. A post- assessment quiz identical to the pre assessment quiz is completed at the end of the semester to gauge improvement. This system serves to assist students who may need timely reminders of the math skills without detracting from time in the lab. Student feedback includes questions on each tutorial as well as the opportunity for written comments. Since the initiation in fall 2012 has been positive, and we plan to continue this in future semesters.