



The reason I became a geology instructor is that I want to instill the passion I have for the earth in my students. I want to be able to give to my students some of the understanding of how the earth works, because they are to become the stewards of this planet long after I am gone. I feel that I am not able to bring this passion and understanding to many of my students, and I continually try to engage all of my students, just as the geosciences engage all of them in their everyday lives. Most all effective instructors have a 'bag of tricks' through which they engage their students that evolves, as it should, as we get different populations of students in our classrooms. As most of my General Education, *Survey of Earth Science* students are millennials, engaging them is one of my biggest challenges as a geoscience educator. I have developed several ways that I think, bring to my students the nature of science, scientific inquiry, and along the way, make the content relevant to their lives. They fall into two groups: place-based-integration and mentoring.

Most 2YC students are place-bound to the county or region of that institution, and Waubonsee Community College is no exception. For that reason, I try to incorporate as much place-based information into the classroom as I can. I emphasize glacial landforms in terms of the landscape they have grown up on, and drive over every day; I discuss earthquakes and Earth History in terms of the nearby New Madrid Seismic Zone, tornadoes in terms of the monthly tornado siren test, etc. I would also suggest that bringing in current geological events that made the morning news, and relating them to content in class, brings relevance to the students. Recent examples include the nuclear bomb test in North Korea (seismology), the asteroid impact in Russia (astronomy & atmosphere), sinkhole collapse in Florida (groundwater & weathering), and major earthquakes in the Solomon Islands and Iran. In spite of the hard-core texters who are likely unengageable, I feel these discussions do bring relevance to the students, given the frequent follow-up questions from students.

Another method I bring place-based experiences to my students is with a series of exercises I call GeoScience Investigations (GSI) that I have added to my *Survey of Earth Science* class, and is worth 15% of the class grade. Students have to select 3 of 5 GSI exercises; 3 are on-campus simulated research experiences (place-based) in groups, and 2 are completed at home where the student works alone. They are designed and selected to provide as much opportunity for the student to become exposed to the nature of science; where data are collected, analyzed and interpreted. Anecdotally, the students generally do well on these exercises, and their class grades are favorably affected. Post-assignment survey's of the on-campus GSI's are generally favorable, but can be variable depending upon the particular aspects of a GSI (i.e., level of critical thinking, research conditions and protocols). Some are excited about their first exposure to scientific inquiry and the process of science, and some are not.

As many of my students enter my classroom unprepared for the rigors of a college education, part of my job is to mentor them. After the first class, I have all my students take a 15 question, multiple choice test on Blackboard, called the 'Syllabus Quiz'. Part of this is to make sure that all my students are aware of their responsibilities as college students, and my expectations of them. I also ask about their career goals and majors. I started this to identify geoscience 'majors', but I have discovered that it does begin to form bonds with non-geoscientists that have been helpful later in the semester, sometimes with Hispanic students. Waubonsee Community College is a Hispanic Serving Institution, and I am constantly challenged to learn new ways to reach my Hispanic students.

I have also added to my *Survey of Earth Science* classes 'Reading Quizzes', which are 15 multiple choice questions randomly selected from pools of up to 90 in *Mastering Geology*. These Reading Quizzes are to

be taken by the student before lecture, and are on content covered in the lecture. Although I get several student comments about how they should be taken after class, I feel that they force students to develop appropriate study habits that will benefit them in their college careers.