

Learning from Outside

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What have you found to be the most successful in broadening participation in the geosciences at your institution and what made it successful? Consider what aspects of this success are translatable to other two-year colleges.

Teaching geoscience in a tribal college has its own challenges and mazes that must be circumvented. These difficulties often relate to the meshing of two different unique forms of teaching and learning. The predominant native student body has a different “way of knowing” than the non-native professor who has been steeped in the objective, predictable knowledge system of western science. These differences are best characterized by the difference between indigenous knowledge and the scientific method. I am not one to say that one is better than the other, only that they are two distinct perspectives. An integration of the two is required in order for students to appreciate and understand the geosciences. The symbiosis between these two ways of thinking is called “integrative science.” The challenge for the instructor is to design and teach their class in such a manner that is receptive and interesting based upon the students’ way of learning.

My experience is that native students are very much in tune with the complexities, patterns and inter-relationships within the natural world. Hunting, fishing, logging and gathering are integral parts of their lives. However, many have great difficulty with the standard geoscience courses and try to avoid taking science courses unless they absolutely have to. During my eight year tenure at the college I have explored techniques that engage the students in geosciences activities. I have found that learning becomes more meaningful when they are able to utilize all of their senses. Lecturing and reading about the geosciences is one way of learning, but engaging your senses outside of the classroom opens up many more ways of knowing, which frankly is more akin to how native students have learned about the world prior to entering your classroom. I would like to cite a few examples how I have done this.

The concepts involved in global positioning systems and geographic information systems are tough for students to understand who have limited computer skills. I try to bring some fun to the learning of these systems by sending the students out into the forest on a scavenger hunt equipped only with a simple GPS device and few instructions. They get excited about the experience and the potential that this equipment can have as a tool for learning the geosciences. In a short time, they learn the power of this instrumentation in learning about the natural world.

On another exercise I team students up with local foresters and natural resource specialists. They go into the forest for two hours. They are required to identify and document all the trees, plants, insects and animals that they find. They see, touch, listen and smell each species that they come across. They are also required to note the geographic association of each species to its’ surrounding environs. The

foresters attached the scientific name to each species and the students explain their understanding of the organism.

In the physical geography class the students are given sling psychrometers. I ask them to go outside, go in the school basement and then to the top floor to take readings to determine relative humidity. Before they take the readings they are asked to smell the air and get a sense of humidity levels on their skin. Then they are told to use the psychrometers and see if the readings verify their senses.

Finally, in another class I have the students conduct a waste stream analysis of all the trash that our college generates in a week. They empty everything out of the dumpster and then sort all of the contents into piles of compostable materials, recyclable materials and landfill materials. The exercise is designed to raise the awareness of the students on issues regarding solid waste management and landfill issues. The research is shared with college officials and has been helpful in setting waste policies. It is an activity that no student soon forgets and is much more powerful than sitting in the classroom discussing solid waste issues.

These activities resonate with the students and they remember what they experienced years later. It also meets their need of learning by doing, observing and being physically involved. I have come to realize the importance of these types of activities in my own college. I believe that experiential learning has great potential in other 2 year colleges. Community colleges are noted for their wide diversity of students from various cultures. As instructors, we must be very aware that all students learn in different ways and we cannot resort to one particular method of teaching.