

Turning challenges into opportunities: Teaching geoscience at a two-year college

Karen Kortz, Community College of Rhode Island

There are many challenges with teaching geoscience at a two-year college, including, among others, lack of funding, lack of time, few (if any) courses beyond the introductory level, and the diverse student body. Although I could write about all of these challenges, I will focus on the diverse student body and how I use that challenge and turn it into an opportunity to better teach geoscience.

Two-year college students are a very diverse group, in many senses of the term, since they have a wide range of backgrounds, experiences, goals, and achievements. Two-year colleges are themselves very diverse, so keep in mind that my generalities do not apply to all two-year colleges. Nationwide, two-year college students are approximately one-third minorities and over one-half women. There are also a significant number of students with disabilities. Many two-year college students have families with children and/or full-time jobs, in addition to attending school (either full or part time). There is a large range of ages, and many students are returning to school after time away since high school graduation or an initial enrollment in college. Many students are attending school with the practical purpose of immediately getting a job upon graduation, others have the goal of transferring to a four-year school, and others are taking a few courses here and there for personal reasons. Some students attend two-year colleges because they have no where else to go or nothing better to do, others are attending to save money compared to a four-year school, and others already have degrees but are pursuing other interests. Two-year college students are predominantly local, and many have no plans to leave the area in which they grew up and are attending school.

It is our job, as instructors at two-year schools, not only to teach our diverse students, but also to engage them so they finish the class with more knowledge and interest in earth science than what they began with. It is my opinion that these challenges of diversity can work to our advantage in teaching two-year college students, and I expand upon this below.

The diversity of backgrounds and experiences allows for richer classroom discussions and deeper learning experiences, since students can bring their own familiarity into discussions or learn from a classmate when talking about many different aspects of the geosciences. This diversity also creates a greater impetus for the instructor to use a wide range of teaching strategies, since the students have varying learning strengths. Because two-year college instructors are focused on teaching, we can devote more time and effort to include the results of

geo-education research by making classrooms student-centered, active learning environments. Examples of techniques I successfully use during lecture include think-pair-share, ConcepTests, Lecture Tutorials, jigsaws, gallery walks, and small group discussions, and these are all described on various SERC websites.

The diversity in goals of two year college students results in a need to teach knowledge and skills that are useful to people who will not necessarily be geologists. Many students take a geoscience course to fulfill a general education requirement, so one of my top priorities is to create geoscience-literate students with skills they can use outside of the classroom, such as critical thinking and oral communication. For example, I emphasize concepts instead of vocabulary (as done by ConcepTests and Lecture Tutorials), and I include student presentations as important parts of the course. Since students tend to be job-oriented, I take advantage of this goal by emphasizing the many jobs in the geosciences to encourage students to see geology as a career rather than just a general education requirement.

The diversity of achievement in college courses also requires creative and innovative teaching. Using a variety of teaching techniques (such as those listed previously) takes advantage of the variety of learning strengths of the students. Students can teach and learn from each other when discussions are included as part of the class. In addition, multiple, non-threatening assessments help students understand what they know and do not know, and what they need to do to reach the desired level of achievement. For those students that are high-achievers and want extra challenges, I work with them to do small-scale research projects (based on my own geoscience education research or collaborations with four-year schools) or advise them when they participate in unique programs (such as participating in NASA's Reduced Gravity Student Flight Opportunities Program). It is extremely rewarding as an instructor (justifying all the effort) when initially low-achieving students succeed in the course.

Finally, two-year college students frequently have a lack of diversity in the area in which they live and have traveled. Because most students will continue to live locally, emphasizing local geology increases their interest in the subject, and field trips to neighboring locations will give them a sense of familiarity. In my courses, I discuss not only the rocks and geologic history of the area, but also local environmental and hazard issues, so students will be able to make better informed decisions in their communities.

In summary, although the diversity of students in two-year colleges can add challenges to teaching them, these same challenges can result in the improved education and experience of all students.