

Supporting Student Success in Geoscience at 2YCs through Field Based Learning  
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The overwhelming majority of students at my institution take geoscience courses (e.g. physical geology or physical geography) to fulfill part of the general education requirements of the Associates in Arts degree or General Education certificate for transfer to a 4-year school. I face many challenges teaching introductory geoscience education which include few students with geoscience-related interests or majors, difficulty in finding effective, exciting, and engaging ways to teach basic scientific principles, as well as teaching to students who often have negative pre-conceived notions of science and low motivation in engagement with science related content. To support and increase student interest, success, and retention in geosciences courses, I have developed and maintained a very active field-based learning program at MCC - Kansas City designed specifically for non-science majors. These field-based learning activities varying from laboratory exercises, out-of-class student projects, local day trips, to an 11-day extended interdisciplinary field study course.

I have found incorporating field based learning, such as field trips (a local road cut, stream clean-up, or waste-water treatment plant visit), field-oriented class activities (geocaching, outdoor relative humidity lab, or even tree coring on campus – note, always talk to your grounds keepers first!), and longer field-based courses in an introductory science curriculum is a key component to making geoscience concepts stimulating and engaging to students. I have designed field based learning curriculum to link earth sciences and life sciences concepts and provide opportunities for students to apply such concepts to “real life” situations. Curriculum for field based learning also focuses on improving critical and higher-order thinking skills which enables students to put into practice the scientific inquiry method. To promote an active and engaging learning atmosphere, field based activities are designed to give students the opportunity to practice science in a hands-on environment where students actually “do” science. This facilitates learning science and refines observation skills beyond a set of laboratory exercises and classroom lectures. Field based activities are inquiry based and students are encouraged to ask questions, develop hypotheses, and to make observations to find the answers to their questions. Field studies also have the added benefit of exposing students to environmental and conservation issues that may stimulate student interest and significance for their own lives.

To measure the effectiveness of field-based learning I have administered student experience surveys at the conclusion of the courses or field studies, as well as interviewed selected trip participants to capture student perceptions of effective learning aspects of field based learning. I have also compared student experience survey results with the same student experience survey administered in sections of an introductory physical geology course. Survey results show statistically significant higher student value placed on field-based learning than in a traditional lecture/lab course. Interview results show student perceptions value hands-on learning and place-based education that field-based learning provides.

There are many challenges faced in attempting to develop a field based learning program. Of course, close relationships with and building buy-in from administrators, deans, and risk-management personnel is critical. The largest hurdle I have had to overcome is the reams of paper required for release forms and travel requests and more importantly, the costs inquired with field study courses. Unfortunately, most of the cost must be passed onto the students, which in turn has impacted the number of students enrolled. Additionally, students find it difficult to commit to an 11-day trip, especially those employed while attending school. I continue to search and struggle to find ways to make such trips as inexpensive to students as possible.