

Developing meaningful and manageable research opportunities for community college students: lessons learned from semester #1

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Each semester, there are a handful of students in the science building every day working at the tables outside of the classrooms, dropping by office hours with hand samples, and asking questions after class related to, but beyond the scope of, the topic covered that day. They are the “repeat offenders” who have taken several courses in the department and are hungry for more. But when I say “more”, I don’t mean yet another rock identification lab or plate tectonics lecture. I mean an opportunity that is challenging, self-directed, and above all, allows community college students to experience what it really means to be a practicing geoscientist and reflect on their career goals. To provide students with this opportunity, colleague Mark Boryta and I created a section of GEOL 99—special topics in geology—for 8 interested students this spring.

A 2-unit independent study course, students began an assessment of the San Juan Creek watershed, including stream and beach profiling, bedrock geology, and sediment sampling and analysis. The goals related to geoscience career preparation included exposing students to some of the techniques, tools, and ways of thinking used by professional geoscientists; giving students the responsibility of defining their own procedures and project scope and justifying these decisions; and introducing students to collaborative research. I also hoped that this project would help maintain students’ excitement about geoscience in preparation for transfer to 4-year institutions, hence the importance of designing a level-appropriate, rigorous project.

As expected, the course’s first iteration was fraught with challenges. From an implementation perspective, the main challenge is that a special projects course is not recognized as part of our teaching load. This meant that carving out dedicated time to spend with students in the field, in the lab, and working with the data was extremely difficult. Second, Mark and I lacked a clear vision about how much latitude to give students concerning the study design. Our original idea was to divide students into teams with specific field and/or lab tasks. However, most participants wanted to try a bit of everything, which resulted in ineffective scenarios like 8 people trying to sieve a sediment sample at the same time. There was also the “unrealistic expectations” challenge—as they had never participated in scientific research, students assumed that they would complete the entire watershed assessment in one semester and were disappointed when this didn’t happen. Despite these barriers, I believe that engaging community college students in early undergraduate research experiences has tremendous potential with respect to career reflection and preparation. I observed students during fieldwork and team meetings and saw increases in the frequency and duration of collaboration, establishment of a division of labor based on individual strengths, and acquisition of field, lab, and communication skills. Finally, I’ve included a few representative quotes from students’ reflective writing indicating that their experiences aligned with our overarching goals. We are excited to use what we learned this spring and continue offering research experiences in future semesters for community college students.

“It wasn’t like a normal field trip where we had specified guidelines and papers that we had to fill out. We had to determine what we wanted to do and how in depth we wanted to do it.”

“This is really the first chance I’ve had to use knowledge from the classroom to solve problems in the field... There were mistakes made, but this was all part of the process of learning... I gained a lot of experience working with procedures similar to those used by professional geologists.”

“For me it was more than a lab class. I got to perceive geology in the real world... I could see mountains, the dry stream bed, vegetation, human activities, all interacting... I was ‘getting what geology is all about’.”