Introduction

NSF Facilities support research and education efforts of the scientific community. Facilities are uniquely positioned to both serve a broad, national audience and provide unique workforce experience to students and recent graduates. Intentional efforts dedicated to broadening participation in the future geoscience workforce at the NSF GOALI (Go-On Advancing Geosciences and EarthScope) Facility, operated by UNAVCO, are designed to meet the needs of the next generation of students and professionals. An important part of supporting students is ensuring they have the necessary skills and tools to mentor and support them.

The Geoscience Workforce Development Initiative at UNAVCO supports attracting, training, and professionally developing students, educators, and professionals in the geosciences. For the past 12 years, UNAVCO has managed the highly successful Research Experiences for Undergraduates (REU) program, with the goal of increasing the diversity of students entering the geosciences. Beginning in 2015, UNAVCO added Geo-Launchpad (GLP), a summer research preparation internship for Colorado community college students to prepare them for independent research opportunities, facilitate career exploration in the geosciences, and provide community college faculty with professional development to facilitate effective mentoring of students.

Geo-Launchpad Internship Program (GLP)

Geo-Launchpad is an eight-week paid summer internship program dedicated to increasing the diversity of students entering the geosciences by engaging students attending two-year colleges in Colorado.

- Each intern has a faculty mentor at their home institution
- Interns work in pairs, each pair mentored by a UNAVCO Project Manager and/or engineers
- Weekly communications seminar (with RESESS), research skills workshop, and alternating Career Circle / professional development discussions
- Faculty mentors connect with interns at least once during the summer experience
- Interns participate in overnight field trip with RESESS interns and University of Colorado Boulder faculty and graduate students
- Interns present their work at end of summer poster session with other internship programs from the local area
- Faculty mentors visit UNAVCO for two days at the end of the summer and participate in a faculty mentor training workshop
- After interns return to fall classes, faculty stay in contact to provide support and advice

Mentoring vs Advising

- Two-day end-of-summer mentoring workshop for faculty
- Faculty recognized quickly they could not distinguish between advising vs. mentoring
- Discussions and activities focused on identifying assumptions
- Provided faculty with literature references supporting mentoring community college students and students from underrepresented minorities
- Provided suggestions for activities to employ to facilitate effective mentoring relationship
- Activities focused on exploring variety of interactions faculty have with students
- Faculty identified six interactions they have with students
- Faculty categorized the activities: Advising, Mentoring, or Instruction
- Group sharing and discussion of where notes were placed
- Faculty often re-categorized activities after discussion

Intentional Mentoring

During the two-day workshop, community college faculty mentors are introduced to the concept of intentional mentoring.

Intentional mentoring
- Typically traced to a seminal study by Levinson et al. (1978)
- Levinson et al. observed mentoring in higher education as “... limited and poor in quality”
- Widely defined
- Mentoring is provided by more than one single relationship
- Formal and informal
- Duration varies greatly

Mentoring impacts

Huntoon and Lane (2007) note that the role of mentoring can not be underestimated and that students with a close mentoring relationship have:
- Academic achievement such as higher GPAs and completing more credit hours
- Higher likelihood of graduation
- Enhanced professional skill development
- Better networking
- Increased likelihood to secure initial employment
- Higher income levels and promotion rates (Johnson 2007)

Although not an indicator of persistence, mentoring plays a critical role in student development (Crisp 2010).

Outcomes and Evaluation

Toward the end of the faculty mentoring workshops, faculty mentors were individually interviewed by the external evaluator. Faculty mentors provided feedback on their impressions of the impact of the summer experience on the students, as well as their perceptions of possible impacts of the faculty mentor training on future student interactions. Example statements are included below.

I think for me personally, I’ve been teaching a very, very long time. This will start my 32nd year. You get kind of cranky and old. This is just like, oh this is so cool. We talked a minute ago about her coming to my class. I have a geology majors class and her coming and talking about this program and opportunities that she’s had. That gets me all excited and energetic, ready to go. So I got a lot out of it. I’m getting a lot out of it still...2015 Faculty Mentor

I think professionally it’s been great to learn a lot more about mentoring and be able to be more intentional with these relationships that crop up with students. Now, having more resources on the mentoring side, I think will benefit me greatly in my career as a teacher, to be more intentional with how I give advice or how I talk with students or build a rapport. Giving more than just, “Oh, take this class, take this class,” but more to “What’s your ultimate goal?” Then figuring out the best way to reach that goal...2016 Faculty Mentor

Lessons Learned

- Community college faculty participants valued learning about the difference between mentoring and advising so that they can better mentor students, not simply advise
- Structured, interactive activities are effective strategies for facilitating discussions regarding mentoring vs advising
- Faculty discussions were identified as beneficial opportunities for sharing thoughts and experiences on a topic (mentoring) not often discussed among faculty

References


