

Mentoring Undergraduate Students in Summer Programs to Increase Diversity and Inclusion in STEM: Experiences and Suggested Practices from INSTAAR Mentors

Notes from a Town Hall meeting held on 4 March 2021

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Panelists: Suzanne Anderson, Holly Barnard, Michael Gooseff, Nicole Lovenduski, Diane McKnight, Chris Ray, Julio Sepúlveda, and Sarah Spaulding

Mentor experiences with the programs and developing student projects

- Participating students are not at the end of their undergraduate degree, they are often midway through (e.g., sophomores); they need to be guided in the program
- The students that participate in these programs are part of a broader network. They talk to each other and share experiences. Know that your participation and approach affect the pipeline of students.
- Students seem to do best if they are excited about the project they are working on and it fits into a broader context of a project that the group is working on; interest levels can vary
- INSTAAR mentors also reported experiences of giving students projects that were more tangential to their group's work and that not working as well for student mentees
- INSTAAR mentors advised carving out projects that are realistic for a couple of weeks, and build in additional time (and have a backup project B and C, too)—make the projects something over which student mentees have ownership. Projects that have clear and complete goals and expectations generally work best
- Start with bite-sized, less-ambitious projects which can be expanded as needed, rather than the reverse.
- Many INSTAARs reported including their whole research groups (e.g., grad students, postdocs, lab managers) in conversation about taking on student mentees and how to mentor; get everyone on board and create a cohort of mentors

Student support needs

- Many students have additional family responsibilities that they must fulfill
- Many students have transportation needs (e.g., car to get to field sites) or need a bike to get around town
- Many students have inadequate/old computers (Note: INSTAAR IT has some spare ones that could be loaned)
- Some students need support setting up payment methods, doing banking
- Students may have very different levels of preparation and academic background compared to CU undergraduates

Suggested practices for successful mentor-mentee relationships

- Set clear expectations for behavior and communication (e.g., in the lab, field, with group, at conferences)
- Meet often with students. Some INSTAARs meet daily, both to discuss research and talk about the experience of doing research, how life is going

- Set up meetings for students to meet other professionals; help build their network.
- Let students know that everyone makes mistakes; normalize that it's okay
- Talk with students about common feelings, issues in research science (e.g., the Imposter Syndrome)
- Write a research plan for the student mentee after an initial conversation about interests and goals
- Define clear tasks and milestones that students can complete on their way to completing the project. Create tasks whose completion creates a sense of accomplishment.
- For students doing a lot of fieldwork (e.g., up at Niwot Ridge LTER)—have a process for training in safety, checking in about safety
- If multiple students (even from different programs) are admitted to a group, have them sit together (e.g., at SEEC). Build a cohort.
- As student mentees for feedback regularly – during the program and after

Outcomes

- INSTAARs report feeling reinvigorated in their science, inspired by the students they get; one INSTAAR said “this is the best part of my career.”
- Mentors have highlighted that this is an opportunity to grow as a mentor
- Mentors report that their whole research groups benefit from this experience (experience mentoring, working together to support a student, satisfaction in helping a student grow)
- Students have gone on to graduate school, some with mentorship from INSTAAR faculty
- Students make great strides in a very short period of time
- Some former mentees have gone on to get NSF GRFP awards
- Students go on to present their research at AGU and other conferences