Attracting Students into Science: Insights from a Two Week Virtual Summer Student Research Program for Community College Students in Colorado
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What is RECCS?
The Research Experience for Community College Students (RECCS) is typically a 9-week paid internship that pairs community college students with research mentors and authentic research experiences in the environmental and geosciences. The RECCS program aims to increase students’ persistence in STEM disciplines (Science, Technology, Engineering, and Math), and develop a more diverse geoscience workforce. Students learn basic research, writing, and communication skills, and they present their research at a local student science symposium. RECCS has been running for 6 years utilizing this model, but due to the COVID-19 epidemic, the program converted to a two-week virtual experience in June of 2020, called RECCS-Lite.

How did the summer 2020 RECCS-Lite program compare to previous years?
The main focus of RECCS-Lite still included research projects guided by individual mentors, though project scopes were substantially paired back to focus on basic analysis of a pre-existing data set. Students still developed a scientific poster, which was used as a tool to help them synthesize their understandings of their research project, and to develop a deeper understanding of how science works. In variance from previous years, RECCS-Lite utilized a highly scaffolded and intentional design based on the SE learning model, encouraging mentors to meet with their mentees daily using provided discussion prompts. Daily group Zoom meetings allowed students to reflect on their learning, create shared understandings about scientific research and communication, further develop their science identities, and explore topics on networking, education, and careers (see Table 1).

Demonstrated Outcomes and Lessons-Learned
Students reported good to great gains in four areas: thinking like a scientist, research skills, attitudes and behaviors, and personal gains related to research—measured on the Undergraduate Student Research Self-Report (URSSA, 2009). As would be expected in a shortened program, RECCS-Lite students did not show as much gain in these areas as students in the full 9-week RECCS program, but they did score higher on these four constructs than a large group of undergraduate students whose education included a research experience, as reported in Weston & Laursen’s (2015) validating URSSA.

Based on mentor, student, and RECCS program staff survey feedback, effective program components included the intentional learning model and platform, the structured mentor guidance, and peer reflective discussions. Ensuring access to and providing basic instruction in Excel and programming software before program execution would be important in future iterations. Additionally, extension of the program by a week and/or clarifying expectations around the quantity and quality of student work expected during a short program should be considered. This format, and lessons learned, offers new avenues for making undergraduate research more accessible while developing research skills and persistence in STEM.

References:

Table 1: Program design and agenda for two-week RECCS-Lite virtual research experience. Column headings describe the time allotted and format, daily entries describe the prompts for each day.

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“RECCS program not only improved my research experience, but it also gave me an opportunity to learn how to communicate with my peers and mentors. I gained communication skills, independent research skills, creating scatter plots, which were very difficult for me in the beginning of my project, and making a professional poster as well”