Increased student engagement and retention in chemistry through peer-mentors

Project summary:

Peer mentors were used in the general chemistry program to retain chemistry majors and to increase student engagement. Mentor/mentee pairs were assigned early into the semester to offer support and were expected to meet roughly every month as pairs and stay connected every two weeks via email. The group of mentors/mentees/faculty advisor also met via Zoom every 3-4 weeks to check-in and offer topics for discussion throughout the semester.

Department Challenge:

The Chemistry department at the University of Colorado Boulder has been struggling to retain chemistry majors. A major obstacle is within the general chemistry 1 & 2 courses (CHEM 1113/CHEM 1133), where there is a high D/F/W rate. The courses often suffer from a lack of student engagement with the subject and students fail to see the applications of chemistry in the real world. This failure to allow the students to find the connection between topics covered within the class or to connect the material to their other science courses hinders efforts to inspire curiosity or motivate the students to continue to stay declared as a chemistry major. This project aimed to remedy that by assigning junior and senior chemistry majors as peer mentors to declared chemistry majors in the general chemistry 1 & 2 courses.

Desired Results:

The goal of this project was to help novice chemistry majors see the topics covered in the general chemistry courses being applied in upper division courses through their peer mentors and gain a better sense of the wide range of opportunities available as a chemistry major, such as working in research labs and etc. The interaction with peer mentors also helped to create a sense of belonging and community for students who were new in the field, and thus, could help retain more students in the department.

Project Description:

With the help of advisors in chemistry (notably Laura Gonzalez and Tabitha Lannom), I was able to recruit 5 upper-class chemistry and biochemistry majors. We reached out to students enrolled in introductory chemistry, general chemistry I and II, and chemistry for majors (see attached flyer) and invited all to attend, regardless of their declared major. For our first meeting, we had 6 students who attended, so we were able to pair up one mentor per mentee. We continued to meet approximately every 4 weeks as a group and each time, invited new students to attend, though we didn't get any more than 1 or 2 additional mentees. The topics we discussed included: tips for time management, how to prepare for exams, seeking help from instructors/TAs/tutors, finding research opportunities on campus, and job options/further schooling beyond the undergraduate experience.

The mentors met with the mentees on their own approximately every 2-3 weeks for anywhere between 15-30 minutes, or kept in contact through email. They helped students navigate course selection for the future semester, study techniques for upcoming exams and finals, offered tips for time management, discussed their research interests and provided a foundation for how to find a research group, shared their career goals and/or graduate school opportunities and the challenges of remote learning due to the pandemic.

Outcomes:

The overall feedback from the majority of the mentors and mentees is that they truly appreciated the opportunity to connect with others during a semester that felt very disconnected due to Covid. They enjoyed the flexibility of topics discussed between mentors/mentees and that it was tailored to the interests of the mentees. However, they all believed that meeting in person would have received a better turnout and helped the mentor/mentee pairs stay more consistent in connecting, especially because of Zoom fatigue that most encountered through the semester. We also could have benefited from a set schedule instead of a more fluid approach to meeting as a group.

I am planning to continue this mentoring program into the next academic year. Moving forward, I will have a more concrete list of expectations and deliverables. I also plan on connecting with advisors in chemistry early on in the summer to recruit mentors and advertise the program to incoming students. If allowed, I would like to host a kick-off meeting early in the semester in-person. I will also use an application form to gauge student's interest in topics to better pair mentor/mentees and have a set schedule with meeting topics that will be available from day one of the semester. For some of our meetings, I may also have a prepared worksheet to help students recognize and articulate their goals and work on them in groups, and then offer the opportunity for discussions together.

Reflection on Faculty Fellows Program:

I truly enjoyed being a Faculty Fellow. I loved the topics that were discussed and really liked the way the program was structured, where each meeting had specific goals. This program helped me connect with peers in different departments and approach my teaching in a more mindful and inclusive way. I appreciated learning about all of the different tools and resources that are available to help support us in our teaching. I particularly liked that it helped me stay motivated in my career by piloting a program and feel more engaged in my teaching.