The Impact of S-STEM Faculty Mentoring on the Mentors

Donna C. Llewellyn (Executive Director)

Emily Knaphus-soran

Emily Knaphus-Soran is a Senior Research Scientist at the University of Washington Center for Evaluation & Research for STEM Equity (UW CERSE). Emily has served as the evaluator for several NSF-funded programs aimed at improving diversity, equity, and inclusion in STEM education. Emily earned a PhD and MA in Sociology from the University of Washington, and a BA in Sociology from Smith College. Emily approaches her work with the intention to use her positions of privilege to challenge white supremacy and contribute to building a more just world. In doing so, she acknowledges the risk that her own blind spots and persistent biases could surface in her research, and invites continued discussion of research findings and implications with this in mind.

The Impact of S-STEM Faculty Mentoring on the Mentors

While there is a fair amount of literature around the impact of mentoring on those being mentored, there is much less known about the impact on those who are doing the mentoring. Two questions that our team was interested in investigating included how does mentoring students change a faculty mentor's perception of what success looks like and do the faculty adjust their student expectations and perceptions based on their mentoring experiences? In addition, what motivates faculty to mentor students outside of their usual assigned duties?

The Redshirt in Engineering project is a collaboration of Engineering programs across six universities of differing sizes, entrance requirements, and student demographics. The engineering student scholarship recipients were assigned engineering faculty mentors for their first year in their programs. It should be noted that the faculty mentors do this work as volunteers and do not receive any extra funding for this work. We set out to investigate if and how the act of mentoring these students changed the faculty perceptions of what it takes to succeed in an engineering academic program and beyond. We also set out to investigate the motivation for faculty to sign up to mentor our S-STEM students and to learn from that to inform other mentoring programs.

The Redshirt consortium project targets low income, under-represented, and academically talented engineering students who are not ready for college calculus classes upon admission to the university. Traditionally, many engineering faculty would not expect students who start their academic programs with less high school math preparation to succeed. However, this S-STEM and its predecessor programs have shown that these students can thrive given the right environment and support. Therefore, our hypothesis was that the faculty would have the opportunity to change their initial perceptions of what it takes to succeed, and perhaps extend these new insights to their other mentoring experiences.

We reached out to the faculty mentors at each university across our consortium near the end of the spring semester of the second year of our program for a focus group discussion around their experiences and perceptions. For the third and fourth year, we conducted surveys; and then took a break during the fifth year since many of the mentoring programs had suffered due to COVID issues. During this final year, we have again reached out to all faculty who mentored at any time during the project with a survey. Those results are still coming in and will be discussed in our poster presentation. What follows are some of the very preliminary patterns that are emerging from the early surveys (which might be biased by being from early responders).

One early result include that the most effective means of recruiting mentors was through personal appeals from colleagues who the faculty respected and knew through other means (research, department committees, etc.). One of the impacts of this result is that it is harder to diversify the pool of faculty mentors in a program.

The primary motivation for agreeing to be a mentor appears to be a desire to help students, with some reporting a more targeted desire to help students who the faculty know are under-represented and have a harder time fitting into their programs and universities. These reports primarily came from faculty from similar backgrounds, such as those who were themselves first in their family to attend university, or from women faculty, both groups reporting that they benefited in their educational journeys from having invested mentors.

One of the most common reactions from the mentors has been an increased understanding of what the students are facing outside of the classroom. In all likelihood, this has been further emphasized due to COVID-19 realities. Some of the respondents to the survey report that they have altered their own classroom teaching due to what they have learned by getting to know a few S-STEM students' stories and lived experiences.

Our initial surveys did not ask the faculty mentors about their specific interactions with the students and what kinds of discussions they undertook. Based on suggestions we have received, we will reach out and gather some of this information in time for the poster preparation.

Once the data has all been received and analyzed, we expect to conclude with some recommendations for other programs which serve students who have been under-represented in Engineering degree programs about how faculty mentors can help those students thrive and how those departments and other structures can be made more inclusive.

Acknowledgements