Understanding the Impact of SUNY Poly's S-STEM Scholar Initiative

"Supporting Degree Completion in Engineering and Engineering Technology Programs through Experiential Learning and Self-Directed Professional Development."

~Year 1 Evaluation Activities~

A Report To:

SUNY POLY

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Introduction

In Fall 2022 SUNY Polytechnic Institute (SUNY Poly) contracted with Dr. Megan Mullins and her team of evaluators to conduct evaluation activities for SUNY Poly's newly awarded National Science Foundation funded S-STEM Scholarship program titled, *"Supporting Degree Completion in Engineering and Engineering Technology Programs through Experiential Learning and Self-Directed Professional Development."* The long-term goal of this program is to break down the barriers to degree completion within the programs of Civil Engineering, Civil Engineering Technology, Mechanical Engineering, and Mechanical Engineering Technology (CME&ET). In pursuit of this goal, SUNY Poly will provide a total of 65 one- year scholarships to 20 unique students in CME&ET. Students selected as Scholars will include those who enter as first year students as well as transfer students. Over the program's duration, this project will provide:

This report presents key findings from evaluation work supporting Year 1 activities conducted for SUNY Poly. As this is the first year of program implementation, and Scholars are yet to be recruited into the program (anticipated for Spring 2024) results focus on the formative outcomes that best fit anticipated achievements within the first year: (1) the extent to which the project is implemented as intended (timeline, participants, activities, cost) and (2) the extent to which key partners (students, faculty, administration) are satisfied with program components.

To create the formative (progress) evaluation report this year, program evaluator Dr. Megan Mullins, in partnership with the Principal Investigator, reviewed Y1 activities and the evaluator conducted key partner interviews as planned to collect feedback on the program from eight key individuals at SUNY Poly responsible for decision-making on implementation and sustaining program components. Their summary feedback informs a majority of the information presented in this report.

Year 1 Progress Toward Outcomes

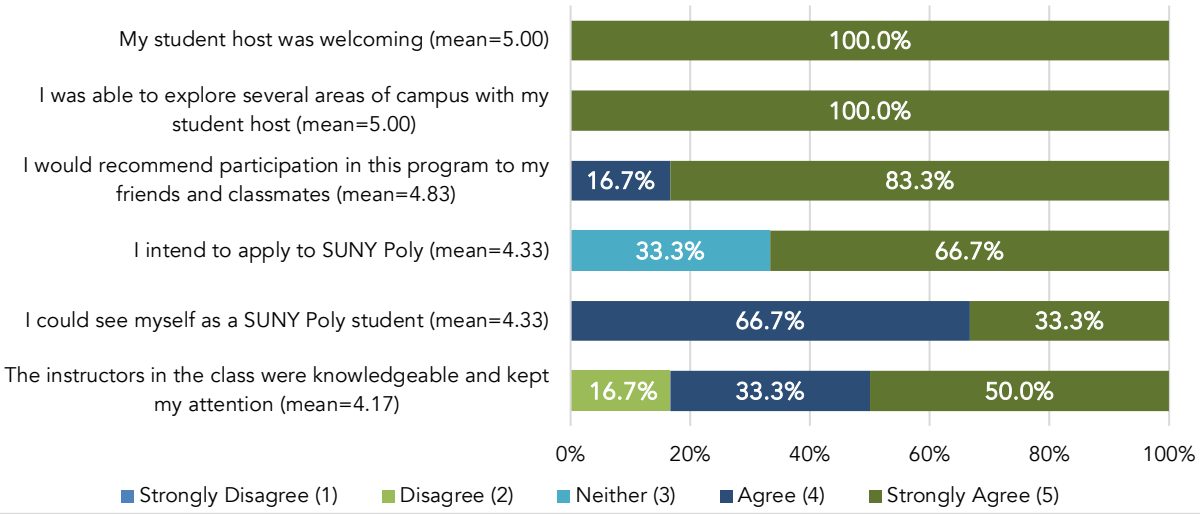
Extent to Which Program is Being Implemented as Planned

The program is being implemented as planned for its first year. Specifically, the program has completed the following Y1 goals:

- Recruitment and marketing materials (including program website) developed;
- Eligibility and admissions protocols established;
- Know One Be One (KOBO) event held and evaluation feedback collected from event;
- First Year Seminar curriculum developed;
- Receipt of seven scholarship applications.

Additionally, feedback from the 2023 KOBO event indicates participants at this recruitment event help students understand what the campus has to offer its students and can see themselves as potential students at the Institute. All respondents "Strongly Agree" (5) that their student host was welcoming and that they were able to explore several areas of campus, and all agree to some extent that can see themselves as a SUNY Poly student and that they would recommend the program to others. However, several students express neutrality when asked whether they plan to apply to the university, and one disagrees that they found course instructors to be knowledgeable and engaging.

Figure 1: Participant Comfort & Event Outcomes (n=6)



Participants were also asked a series of open-ended questions regarding interactions with their student host, program highlights, and recommendations for improvement. When asked to relay any comments regarding their student host, respondents describe their hosts as knowledgeable, informative, and friendly.

<u>Select Quotes</u>

- *"Arianna was excellent, very knowledgeable and listened to my questions."*
- *"Gabriel was a great host, very informative and friendly."*
- *"Sara and the other students were fantastic."*
- *"They were amazing to talk to."*

Respondents were also asked to describe what they consider to be highlights of the event. In response, two participants explain that they enjoyed discussing and asking questions about the college experience, two others underscore the campus tour and student shadowing, and one describes the staff they encountered as friendly.

Select Quotes

- *"Getting to ask students at the college questions about the school."*
- *"Getting to chat about and observe classes was really cool."*
- *"The campus tour was excellent."*
- *"Walking around the campus, attending classes and checking out dining hall."*
- *"The friendly staff."*

When asked whether they have any recommendations for improving the KOBO program for future participants, one respondent suggests more hands-on courses for the student shadowing activity, and another recommends providing opportunities to tour the freshman dorms.

Select Quotes

- *"Maybe a more hands on class to attend."*
- *"Would have liked to check out a freshman dorm room."*

Satisfaction with Program by Key Partners

SUNY Poly partners are excited for this program and most report that this program brings together many university strengths into an articulated, cohesive approach to recruiting and retaining students into engineering pathways, whether it be the traditional engineering degree or a degree in engineering technology. Most expect the ability to offer both programs to promising students in engineering combined with the strengthened grant-provided support of scholarships and mentoring opportunities to increase retention in both programs. When asked what, for them, will be some of the highlights of this initiative being a part of their institution, prominent responses focus on the emphasis that will be placed on providing students with options along the engineering pathways and emphasis on first year experiences to boost retention.

Select Quotes

- *"While they're both engineering, the engineering tech students are a little more hands-on.* ***Having those pathways for students to slide back and forth in year one, which we currently have, but with the S-STEM proposal, helping to provide more opportunities for enabling the students to realize really what it is that they're doing in engineering and engineering tech from a broader perspective****. Because they don't always know what an engineer does, and then they walk in the door and, 'Gosh, that's hard and I'm not sure I can do this.' But having that support to enable them to see what they could be in four years. I think that's exciting about the whole proposal."*
- *"I do see it as a large benefit to the campus community if it really will help to create a unique scholarship for students who would necessarily not be in a higher education standpoint without this scholarship."*

- *"I mentioned to you earlier that everything at SUNY Poly is individualized and personalized. So a student* ***being able to participate in the S-STEM scholarship and received the one-on-one, mentorship, the financial support, all of the components that are encapsulated through the grant, I can just see it being an incredible opportunity to relaunch our retention of first year students****. It [retention] is abysmal right now."*
- *"I think this program is really critical for us to overcome some of those barriers probably down the long road haul. Another is I think this* ***program put a lot of emphasis on both the year science and math courses****. That's how important those first year is, especially in the engineering program for retention purposes. … The third part I want to mention is the effort they put on low income or, in general, underrepresented group of students that can increase our diversity background diversity population in the engineering program."*

Identification of Supports and Challenges Influencing Implementation Plans, Processes, and Outcomes

Results for this report section are reported from the preliminary Key Partner interview results.

When asked what institutional strengths participants see SUNY Poly providing the initiative, participants highlight newly hired positions that will strengthen the engineering programs, the opportunity the grant provides to pilot interventions and gather feedback from students on programming effectiveness, and the commitment faculty have to mentoring students to successful completion of their programs.

Select Quotes

- *"Here at SUNY Poly, we are a small campus community. We have 2,200 undergraduates, which means that each one of our students, regardless of what year you're coming from, regardless of starting with us as a first year or transitioning into our programs, you're taken care of as a real person. And that's something that I felt firsthand as a student during my time as a SUNY Poly student. But our institution really has that infrastructure already in place to support students. And this would only benefit students further to give them a little bit more support."*
- *"We're one of probably five or six campuses in the nation with this slate of engineering and engineering tech. That just really makes us unique. And we're a public institution, so that also makes us more affordable. And, again, having those multiple pathways for students to get that training and be either an engineer or engineering tech in a way that enhances their retention, that's just exciting for us at SUNY Poly. And I think we've got a really strong backbone of industry support and that's just been continuing to build and build and build. And with our most recent announcement from the governor of a 44 million investment into our campus, 18 of which is going to be going to College of Engineering and highly impacting engineering and engineering tech students - it's exciting times for SUNY Poly. So this S-STEM grant's going to really serve us well and I think we're providing that framework to help it succeed as well."*

- *"It's a good fit for us because we need those programs to help bolster our retention. That, first and foremost, for me is a huge piece for us. Secondly, I think the people here who are taking the lead on implementing have a proven track record of students engagements. Again, because we're small, when our faculty are hired here, they know that they're going to be doing academic advising. … that one-on-one personalized attention that we already give to students, I think just makes us a great fit for the grant as well."*
- *"We are finally getting permanent leadership in place. We should have a permanent dean of the College of Engineering here fairly soon - no longer an interim. After four years, we have people who are wanting to see programs like this be successful."*
- *"I think are our upper administration are very supportive of the program because we are really trying to identify how we can improve the retention rate for our students and how we can improve our students' science and math scale in their first one two years. … The grant here is really a great opportunity for us to collect a lot of data on those aspects to help us identify what works, what doesn't, and we can dedicate future resource and develop some strategy that, after the grant is gone, we can still sustain."*

Key partners were also asked to consider and then identify concerns that the PI will need to pay attention to when planning for program sustainability. The feasibility of maintaining personnel required for this type of muti-faceted programming is the number one challenge identified by respondents. Clear communication of program functioning is also identified as a critical element to sustainability planning.

<u>Select Quotes</u>

- *"I think one of the major challenges would probably be recruitment. I have seen a lot of students that do come from an academically or financially disadvantaged environment, they don't feel that they can achieve these more difficult-type programs. … So one of the biggest hurdles in my experience with this would be providing students with the knowledge that they know they'll succeed in this program because of the support that we'll be able to provide for them. And that's not to say that they wouldn't be able to succeed without the support, but providing that will just better them off in the time in higher education."*
- *"Sometimes with these five-year programs, and probably it's not going to happen in this case because it's got clear year 1, 2, 3, 4 goals, don't lose sight of your deadlines. And so program management and people management. She's [PI] got a good team, but they've all got to be corralled to make sure that they're all meeting their goals, whether it's the summer program or the folks in the admissions office or the faculty programs that she's got. They've all got to be invested and stay invested. So that's always a challenge with program management. … And then long-term sustainability, what's our next funding source to help grow this program? If we find out what the magic sauce that works and try to be actively looking for that, even starting to look at that even in year two or three, because you can't start that development side of the sustainability equation early enough."*

- *"I do think one of the challenges would just be the human capital to run the program and knowing that we have systems already put in place that could automate some of the experience in terms of the administration, I just know how deeply involved Joyce is in multiple facets of campus. We just adore her. … There's no better way to say it. And I love how much she cares for our students. So without a doubt, I know that she is the best person to be the PI on this grant in place of Carolyn, but I also know how much she has on her plate and I just don't want her to feel overwhelmed or overworked when we can automate some of those pieces because it does seem right now that a lot of it's a manual process."*
- *"I find that keeping momentum for things going just as a general rule, not necessarily with this program, but in general, I know it's sometimes challenging because we get comfortable and we do get distracted with other things. So keeping those metrics graduation rates or retention rates or whatever it is across your spectrum, just sending out reports perhaps to faculty quarterly, semi-annually, whatever seems to make sense, I think is a good way to hold yourself accountable. … It'll help everybody understand that the program is on track or maybe isn't on track."*

When asked to identify the impact they would like to see the program have, respondents stress the importance of seeing Scholars succeed in completing the program and moving into successful graduate school opportunities or post-graduation employment. Additionally, respondents would like to see best practices in increasing retention and diversifying a student body developed and sustained after the grant has ended in order to benefit all students.

<u>Select Quotes</u>

- *"The programs, I think have the broader impact because we'll have these types of events that a lot of the majority of the students will partake in. So I guess a bump in retention would be great. And also, can we find any correlation with respect to our demographics? Because I think they had some details in there with how the S stem might impact demographics, whether it's underrepresented minorities and or I guess lumped into that nowadays first in their family to go to college.*
- *"Seeing that longevity of, I started working with this program before I was even a student at SUNY Poly. I benefited from this program and now I want to be an ambassador for all of the really great things that it does. So to bring them on the road with us or to have them facilitate a webinar or something like that. So I think identifying a strategic funnel for students to remain involved and then creating sustainable pathways for that to continue to happen after people have left their roles."*

- *"The first one is our retention rate in the engineering program. Although I know the grant is more on mechanical and engineer technology, it still gives us the data we want to look at in the future about how we can improve the retention rate, especially in the first two years. And another one is [that] I want to see what strategy, based on the strategy that granted using, I want to see the improved student skills in math and science in their first two years. That's somehow tied to the retention already. If they are successful in those, we probably automatically have a higher retention rate. And also the graduation rate, the four year graduation rate down the road. That's bringing in the transfer student as well to see they have a successful graduation and a successful career down the road. I think the final one I want to see as successful is whether we can increase or diversify the student population in our engineer program."*
- *"To get them obviously in the door of Poly. But for the program itself, not only for them to succeed in higher education, but then come out with a career that they love, come out with internship opportunities that they've already explored, into connection that they've already made, the ability to interview and the ability to have those skills that you don't necessarily learn in a classroom, but that they will have access to here at Poly."*

Toward the Future

In this first year of STEM Scholar programming, the team began developing evaluative tools, tracking program implementation strategies, gathering feedback on the annual KOBO event, and collecting data on key partner perception of the program. The program is on track to achieve its short-term goals, as the first cohort will be selected and welcomed in Spring 2024. Conversation around key partner and KOBO participant feedback will inform program adjustments and communication strategies moving forward. As the program is still in its early implementation phase, the evaluation team has no recommendations for program improvement at this time.