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 3 Evaluation Activities~

A Report To:

SUNY POLY

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December 2025

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Executive Summary

Introduction

This report presents key findings from evaluation work supporting Year 3 activities conducted for SUNY Poly. As this is the third year of program implementation, results focus on the formative outcomes that best fit anticipated achievements within the third year: (1) the extent to which the project is implemented as intended (timeline, participants, activities, cost), (2) the extent to which key partners (students, faculty, administration) are satisfied with program components, and (3) the extent to which investigators gain an increased understanding of faculty and student needs and challenges as the program is implemented.

Summary Findings

In this third year of programming at SUNY Poly, the team collected important data on Cohort 1 Scholars' first-year program highlights, outcomes, and recommendations for improvement; Cohort 2 Scholars' baseline perceptions of engineering, self-confidence, and expectations for the program; and visitors' and hosts' KOBO experience, with results broadly demonstrating consistent progress toward program goals and general satisfaction among stakeholder groups.

Findings show that Cohort 1 Scholars have:

- Begun to form supportive relationships with faculty and peers;
- Engaged with a wide range of high impact activities and resources during their first year in the program;
- Consider personalized guidance from program-affiliated faculty and SUNY Poly staff as the top benefit of their S-STEM involvement; and
- Reflect positively on both required and elective program components, such as the First Year Seminar, professional seminars, and study sessions.
    - Some Cohort 1 Scholars have been met with unengaged faculty mentors, with many relying on the program PI (Dr. Shen) and outside staff members for academic and professional guidance.
    - Few Scholars have yet to engage in STEM- and engineering-focused activities, such as participation in student organizations, research projects, and workplace tours.
- Scholars hope to see more opportunities for professional development and networking, more engaging and relevant seminar topics, and events and activities that promote intra- and inter-cohort cohesion moving forward.

Pre-program survey responses demonstrate that incoming Cohort 2 Scholars:

- Are excited to begin engaging with engineering at the university level and hold favorable views of the field as a major and career choice. These Scholars are confident in their ability to approach faculty members, produce high quality work, and succeed at SUNY Poly, though many express uncertainty regarding their ability to access research resources, become involved in student study groups, and perform well in certain subject areas. Further, these Scholars hold moderate to high expectations of faculty and peer support and expect to be met with sufficient opportunity for professional development and networking during their time in the program. Notably, however, Cohort 2 Scholars place less importance on receiving faculty and program support during their first year at SUNY Poly, provide lower pre-program confidence ratings, and hold less favorable views toward engineering compared to Cohort 1 upon entering the program. Given these findings, it is important that the program provides Cohort 2 Scholars with early opportunities for professional development, career exploration, and community-building

both within and between cohorts, and that organizers continue to monitor differences in perceptions and skills across cohorts.

Lastly, survey responses demonstrate that participants of the 2025 KOBO event were generally satisfied with their experience and considered the event a valuable opportunity for visiting students to gain insight into student life at SUNY Poly, with all participant groups providing moderate to high average ratings of the event registration and materials, communication with organizers, and their classroom visits and interactions with fellow participants. Most student and parent visitors found the experience informative, were able to familiarize themselves with the SUNY Poly campus, and would recommend the program to others, with both visitor groups underscoring the campus tour and their community interactions as highlights of the experience. While the student hosts provide similarly positive feedback, this group rates their student pairings and interactions lower compared to visiting high schoolers. Across participant groups, respondents recommend incorporating additional and more engaging program activities and providing additional information/materials prior to the event, while both student groups further suggest facilitating communication between paired students prior to and during the campus visit.

As Year 3 evaluation activities come to a close, evaluators will continue to share feedback from Scholars and key partners with program organizers in order to inform adjustments to program components and improve the experience for current and incoming cohorts. Recommendations for program improvement have been made throughout this year's programming and will only be summarized here.

- **Ensure that faculty mentors are engaged with their assigned mentees**, as many Scholars rely heavily on Dr. Shen and/or have turned to other SUNY faculty and staff for support due to a perceived lack of accessibility, engagement, and/or interest from the assigned mentors.
- **Encourage timely academic feedback from affiliated faculty**, as most participants feel that their instructors are late to assign and grade work which in turn prevents students from seeking needed intervention and guidance. Several Scholars recommend the implementation of a system that tracks Scholars' (or SUNY Poly students') academic progress in real-time, alerts them to changes in their academic standing, and provides next steps for improvement.
- **Explore events and activities that promote Scholar cohesion**, such as field trips and team building activities, informal social events, or more frequent cohort meetings, as some participants explain that they have yet to form close bonds within the cohort despite a desire to do so and their recommendation that future Scholars do the same.
- **Explore or facilitate additional tutoring resources for S-STEM Scholars**, as several participants would like to see specialized support for various subdisciplines and non-STEM areas, with at least one Scholar recommending an online tutoring option.
- **Encourage Scholars to utilize campus services and resources**, particularly Career Services, as several participants desire additional professional networking and development opportunities through the program that may be available via outside student services.

Consideration of any of the above findings can strengthen the S-STEM Scholar experience and support the attainment of long-term program outcomes.

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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 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 both first year and transfer students. Over the grant period, this program will provide the following:

- "Shadow Day" (formally KOBO) recruitment experience for interested high school students,
- S-STEM scholarships to 20 unique students through degree completion,
- An S-STEM First Year Experience Course,
- One-on-one academic advisement and mentoring for S-STEM scholars,
- Mobius subscriptions for 1st year S-STEM scholars for Math skills support,
- S-STEM Seminar and Workshop series,
  S-STEM Scholars professional development fund,
- Experiential learning opportunities for Scholars, and
- FE Review course, purchase of FE review materials for independent study, and supports to increase student completion and passing of the FE exam.

This report presents key findings from evaluation work supporting Year 3 activities conducted for SUNY Poly. As this is the third year of program implementation, results focus on the formative outcomes that best fit anticipated achievements within the third year: (1) the extent to which the project is implemented as intended (timeline, participants, activities, cost), (2) the extent to which key partners (students, faculty, administration) are satisfied with program components, and (3) the extent to which investigators gain an increased understanding of faculty and student needs and challenges as the program is implemented.

To create the formative (progress) evaluation report this year, program evaluator Dr. Megan Mullins, in partnership with the Principal Investigator, conducted the following evaluation activities:

- Analysis of Institutional Data: Year 3 (2024-2025) enrollment data.
- Cohort 1 First Year Seminar Survey (n=9): Fall 2024 survey that collected information regarding Scholars' First Year Seminar experience and outcomes.
- Cohort 1 Professional Seminar Survey (n=8): Fall 2024 survey that collected information regarding Scholars' professional seminar attendance, experiences, and key takeaways.
- Cohort 1 Focus Group (n=9): Spring 2025 group discussion focusing on highlights and challenges of the program experience.
- Cohort 1 Satisfaction Survey (n=8): Spring 2025 survey assessing Scholars' engagement in high impact activities and satisfaction with program components.
- Shadow Day Feedback Survey (n=74): Spring 2025 survey of event participants (student visitors and hosts, parent/guardian visitors) that collected information regarding key outcomes, satisfaction, and recommendations for improvement.
- Cohort 2 Pre-Program Survey (n=6): Fall 2025 survey of incoming Cohort 2 Scholars establishing a baseline understanding of relevant attitudes, beliefs, and expectations (Cohort 1 results included for comparison).

Year 3 Progress Toward Outcomes

Results will be organized under the following Year 3 performance indicators:

- Extent to which the program is being implemented as planned,
- Developing a baseline understanding of Scholars' engineering-related attitudes, confidence, and career interest and knowledge,
- Satisfaction with the program by key stakeholder groups,
- Identification of supports and challenges influencing implementation plans, processes, and outcomes, and
- Enhanced faculty understanding of Scholar needs and experiences.

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 Y3 goals.

- Recruitment and marketing materials (including program website) in use - https://sunypoly.edu/academics/colleges/college-engineering/nsf-sstem.html
- Promoted the program during recruitment events (e.g., Open Houses and Accepted Students Day), sent targeted emails to eligible students, and posted application flyers in prominent campus locations (e.g., main classroom buildings).
- Shadow Day event held and evaluation feedback collected from event.
- First Year Seminar curriculum developed and implemented.
- Accepted ten scholars into Cohort 1, retained nine into their second year and accepted 7 new students into Cohort 2.

Table 1. Scholar Enrollment & Demographics

	2024-2025 (n=10)		**2025-2026** (n=6)		**Overall** (n=16)	
	#	%	#	%	#	%
Identified Gender						
Male	7	20.0	5	83.3	12	75
Female	2	70.0	1	16.7	3	18.7
Non-Binary	1	10.0	0	0	1	6.3
Ethnicity						
Domestic Students of Color	7	70.0	4	66.7	11	68.8
White/Unknown	3	30.0	2	33.3	5	31.2
Transfer Student	--	--	3	50.0	3	18.8
First Generation	8	80.0				

Developing Baseline of Scholar Confidence, Engineering Interest, & Career Knowledge

Results presented in this section are drawn from the Cohort 2 pre-program survey, with Cohort 1 results shown for comparison.

In the pre-program survey, Cohort 2 Scholars were asked to rate their agreement with 18 statements measuring their attitudes toward the field of engineering.[1] Generally, responses indicate that Scholars have a highly positive view of engineering as a major, career choice, and vocation, with respondents tending to agree with statements favorable of the field and disagree or express neutrality with negatively worded items.

As shown in Figure 1 (next page), *all Scholars agree* to some extent that:

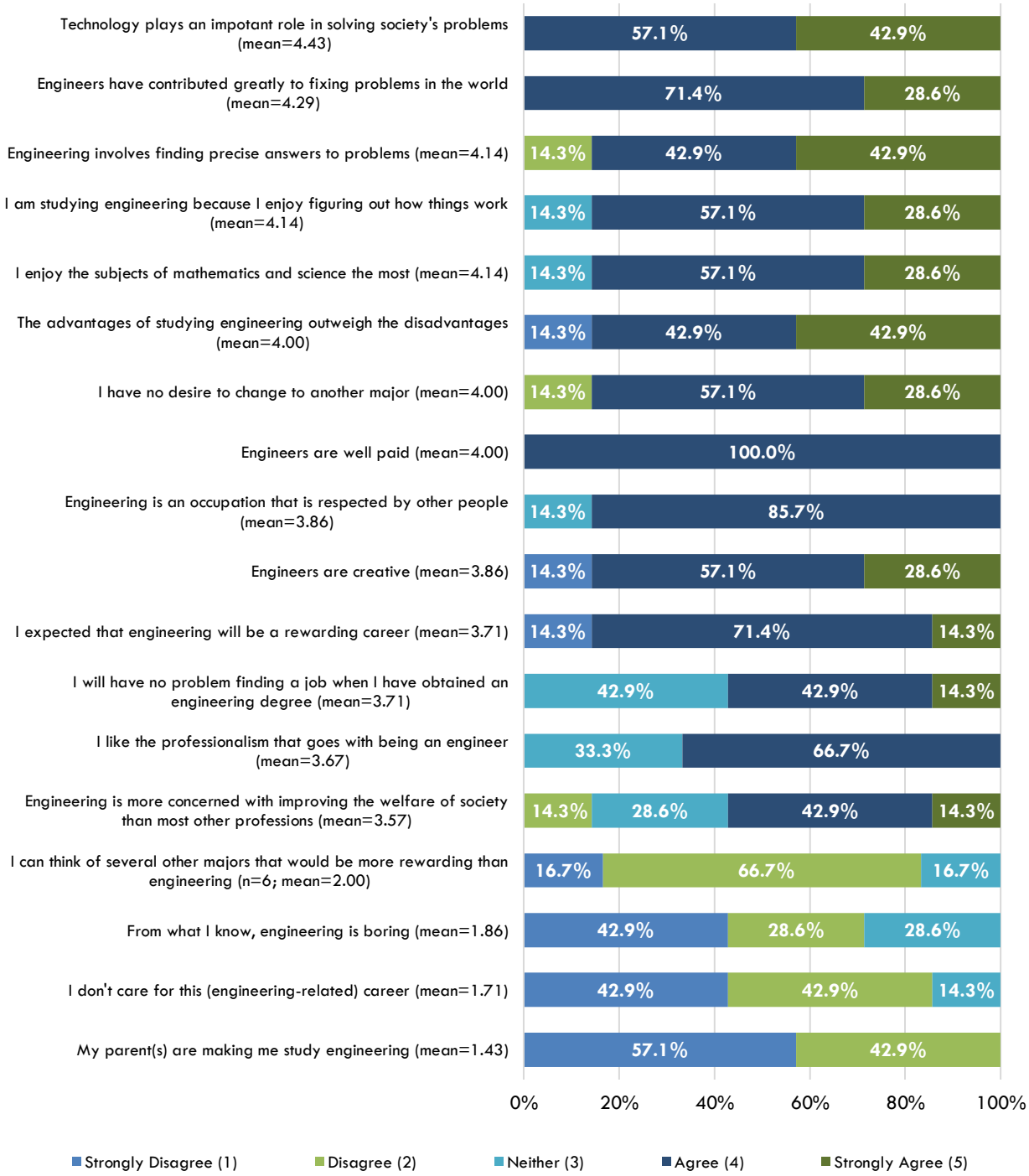
- Technology plays an important role in solving societal problems,
- Engineers have contributed greatly to fixing societal problems, and that
- Engineers are paid well.

In contrast, Cohort 2 Scholars average the *lowest level of agreement* when asked whether:

- They can think of other majors that would be more rewarding than engineering,
- From what they know, engineering is boring,
- They do not care for a career in engineering, and whether
- Their parents are making them study engineering.

[1] These items were adapted from the Pittsburgh Freshman Engineering Attitudes Survey.

Figure 1: Cohort 2 Pre-Program Perceptions of Engineering



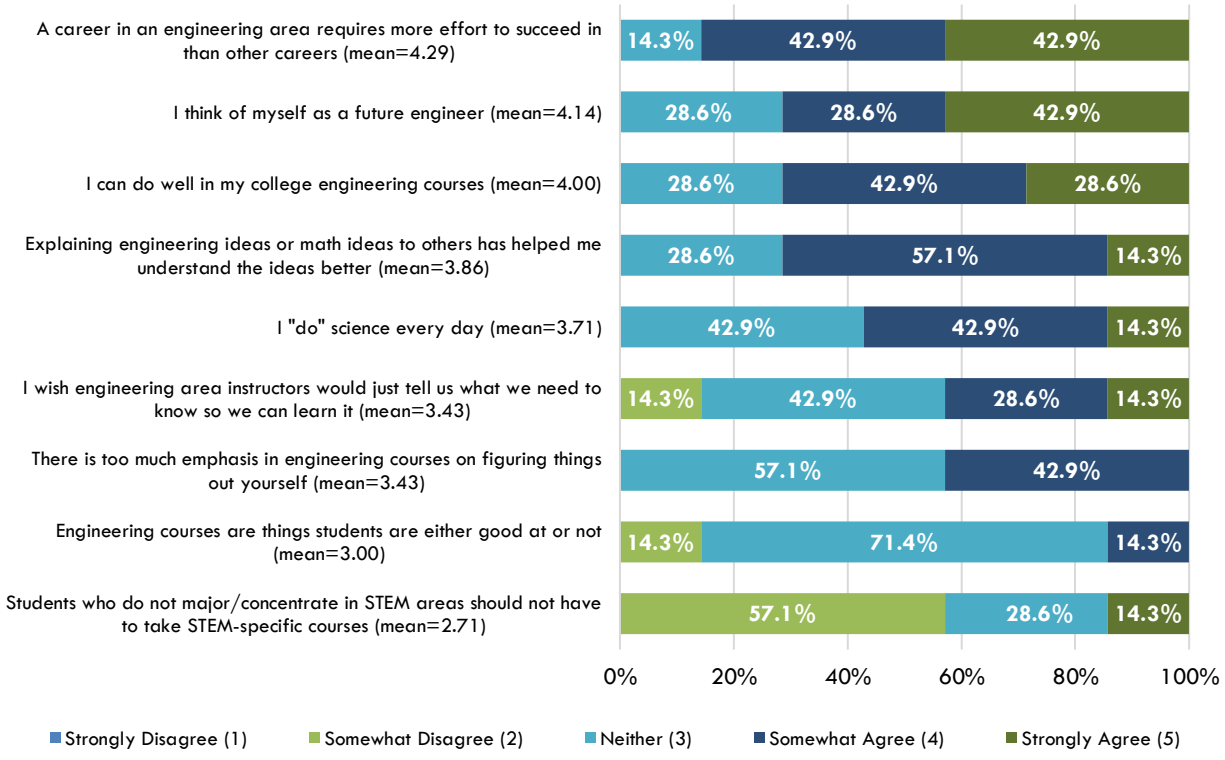
As shown in Table 2, cross-cohort comparisons suggest that Cohort 2 Scholars hold *less positive* views toward the field of engineering, with these Scholars slightly or considerably less likely to agree with positively worded statements and more likely to agree with negatively worded statements compared to those in Cohort 1.

Table 2. Cross-Cohort Differences on Pre-Program Perceptions Measures

Indicator	Cohort Means		Overall
	Cohort 1 (n=9)	Cohort 2 (n=7)	
Engineers have contributed greatly to fixing problems in the world.	4.56	4.29	**4.43**
I am studying engineering because I enjoy figuring out how things work.	4.67	4.14	**4.41**
Technology plays an important role in solving society's problems.	4.33	4.43	**4.38**
I enjoy the subjects of mathematics and science the most.	4.44	4.14	**4.29**
Engineers are creative.	4.56	3.86	**4.21**
I expect that engineering will be a rewarding career.	4.67	3.71	**4.19**
The advantages of studying engineering outweigh the disadvantages.	4.22	4.00	**4.11**
I like the professionalism that goes with being an engineer.	4.33	3.67	**4.00**
Engineering is an occupation that is respected by other people.	4.11	3.86	**3.99**
Engineering involves finding precise answers to problems.	3.78	4.14	**3.96**
I have no desire to change to another major (ex. biology, English, chemistry, art, history, etc.)	3.89	4.00	**3.95**
Engineers are well paid.	3.89	4.00	**3.95**
I will have no problem finding a job when I have obtained an engineering degree.	3.89	3.71	**3.80**
Engineering is more concerned with improving the welfare of society than most other professions.	3.56	3.57	**3.57**
I can think of several other majors that would be more rewarding than engineering.	2.11	2.00 (n=6)	**2.06**
From what I know, engineering is boring.	1.67	1.86	**1.77**
I don't care for this (engineering-related) career.	1.44	1.71	**1.58**
My parent(s) are making me study engineering.	1.22	1.43	**1.33**

Regarding Cohort 2 Scholars' ideas about STEM and engineering-related courses, most either "Somewhat" or "Strongly" agree that: they think of themselves as a future engineer; an engineering-related career requires more effort to succeed than other careers; they can do well in their college engineering courses; explaining engineering or math ideas to others has helped them to better understand such ideas; and that they "do" science every day. Over half express either neutrality or disagreement with the remaining statements, with most disagreeing that students who do not major in STEM should not be required to take related courses (see Figure 2, next page).

Figure 2: Cohort 2 Pre-Program Ideas About STEM & Engineering Courses



Disaggregated results show that, compared to their Cohort 1 counterparts, Cohort 2 Scholars are considerably *less likely* to agree that explaining engineering and math ideas to others is helpful for their own comprehension and *more likely* to agree that:

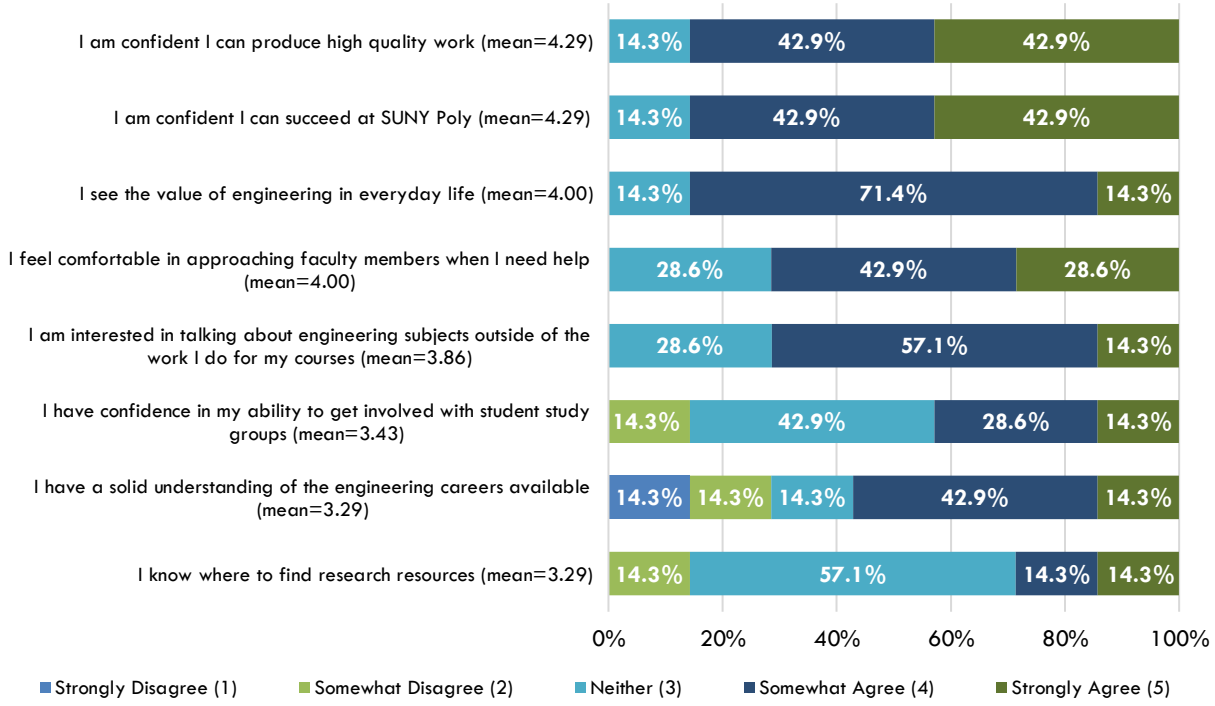
- There is too much emphasis on self-directed learning in engineering courses, and
- They wish engineering instructors would just tell them what they need to know.

Table 3. Cross-Cohort Differences on Pre-Program Ideas Measures

Indicator	Cohort Means		Overall
	Cohort 1 (n=9)	Cohort 2 (n=7)	
I think of myself as a future engineer.	4.67	4.14	**4.41**
Explaining engineering ideas or math ideas to others has helped me understand the ideas better.	4.44	3.86	**4.15**
I can do well in my college engineering courses.	4.22	4.00	**4.11**
A career in an engineering area requires more effort to succeed in than other careers.	3.89	4.29	**4.09**
I "do" science every day.	3.67	3.71	**3.69**
Engineering courses are things students are either good at or not.	3.33	3.00	**3.17**
There is too much emphasis in engineering courses on figuring things out for yourself.	2.78	3.43	**3.11**
I wish engineering area instructors would just tell us what we need to know so we can learn it.	2.67	3.43	**3.05**
Students who do not major/concentrate in STEM areas should not have to take STEM-specific courses.	2.22	2.71	**2.47**

Pre-program survey results also show that Cohort 2 Scholars are confident in their ability to succeed in the S-STEM Program, with nearly all agreeing that they are confident they can produce high quality work and succeed at SUNY Poly. Most also agree that they: feel comfortable approaching faculty for help; see the value of engineering in everyday life; are interested in discussing engineering subjects outside of their courses; and have a solid understanding of available engineering careers. However, a majority express uncertainty or disagreement when asked whether they are confident they can become involved in student study groups and know where to find research resources.

Figure 3: Cohort 2 Pre-Program Confidence at SUNY Poly



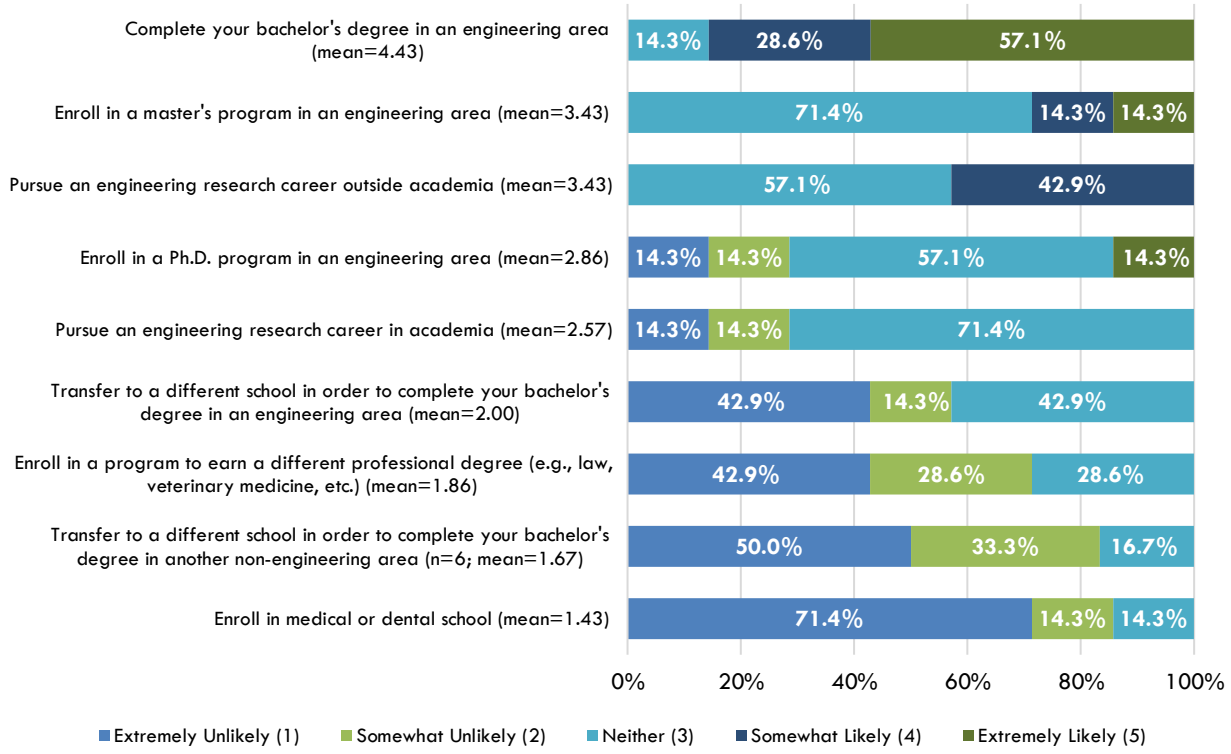
Compared to Cohort 1 Scholars, those in Cohort 2 provide either substantially or marginally *lower* mean ratings on nearly all of the aforementioned measures.

Table 4. Cross-Cohort Differences on Pre-Program Confidence Measures

Indicator	Cohort Means		Overall
	Cohort 1 (n=9)	Cohort 2 (n=7)	
I see the value of the engineering field in everyday life.	4.78	4.00	**4.39**
I am confident I can succeed at SUNY Poly.	4.44	4.29	**4.37**
I am confident I can produce high quality work.	4.44	4.29	**4.37**
I am interested in talking about engineering subjects outside of the work I do for my courses.	4.44	3.86	**4.15**
I feel comfortable in approaching faculty members when I need help.	4.22	4.00	**4.11**
I have a solid understanding of the engineering careers available.	4.33	3.29	**3.81**
I have confidence in my ability to get involved with student study groups.	3.89	3.43	**3.66**
I know where to find research resources.	3.00	3.29	**3.15**

When asked how likely it is that they will achieve nine possible academic and professional goals, most Cohort 2 Scholars indicate it is "Somewhat" or "Extremely" likely that they will complete their bachelor's degree in an engineering area and nearly half report the same likelihood that they will pursue an engineering research career outside academia. As shown below, a majority report that they are uncertain about or unlikely to pursue the remaining goals listed.

Figure 4: Cohort 2 Pre-Program Academic & Career Goals



While Scholars across cohorts provide similar mean likelihood ratings across the goals listed in the questionnaire, responses suggest that Cohort 2 Scholars are considerably *less likely* to pursue a research career either in or outside of academia.

Table 5. Cross-Cohort Differences on Pre-Program Goals Measures

Indicator	Cohort Means		Overall
	Cohort 1 (n=9)	Cohort 2 (n=7)	
Complete your bachelor's degree in an engineering area	4.33	4.43	**4.38**
Pursue an engineering research career outside academia	4.00	3.43	**3.72**
Enroll in a master's program in an engineering area	3.56	3.43	**3.50**
Pursue an engineering research career in academia	3.22	2.57	**2.90**
Enroll in a Ph.D. program in an engineering area	2.78	2.86	**2.82**
Transfer to a different school in order to complete your bachelor's degree in an engineering area	2.33	2.00	**2.17**
Enroll in a program to earn a different professional degree (i.e., law, veterinary medicine, etc.)	1.78	1.86	**1.82**
Transfer to a different school in order to complete your bachelor's degree in another non-engineering area	1.56	1.67 (n=6)	**1.62**
Enroll in medical or dental school	1.22	1.43	**1.33**

Satisfaction with Program

Findings presented in this section are drawn from all primary data sources apart from the 2025 Shadow Day event and Cohort 1 focus group discussion.

Participants of the 2025 Shadow Day events tend to provide favorable ratings of all program components, including communication with organizers, program materials and activities, and their interactions during the visit, with responses further demonstrating that both student and parent visitors found the experience informative, had the opportunity to familiarize themselves with campus, and would highly recommend the program to others. Still, as shown in the table below, parent visitors tend to provide slightly higher quality ratings of the components probed in their questionnaire, while hosts average higher ratings of their interactions with program staff and lower ratings of interactions with their assigned partner relative to high school visitors. Further, student visitors are more likely to agree that the pairing was a good match and less likely to agree that they would recommend the experience to others relative to the comparison groups, and are more likely to agree that instructors were knowledgeable and engaging compared to their host counterparts.

Table 6. Group Comparisons on Close-Ended Shadow Day Survey Items

Item	Group Means		
	Student Visitors (n=42)	Parent Visitors (n=13)	Student Hosts (n=19)
Program Component Ratings†			
Communication following event registration	4.38	4.46	4.42
Check-in process	4.52	4.85	4.74
Materials received during the program	4.31	4.69	4.26
Dining hall experience	4.31	4.33 (n=12)	4.16
Interactions with student/host	4.81	--	4.42
Classes attended with student/host	4.02 (n=41)	--	4.05
Interactions with program staff	4.52	--	4.84
Other Items‡			
The student/host was a good match	4.81	4.54	4.42
I will recommend the experience to others	4.31	4.69	4.58
I was able to explore campus with the student/host	4.81	--	4.74
Instructors were knowledgeable and kept the student's attention	4.32 (n=41)	--	3.83 (n=18)
Likelihood that student will apply to SUNY Poly±	--	3.60 (n=10)	3.84 (n=16)

Note. For some items, respondents were given the opportunity to select 'N/A'; such responses are treated as missing.
† Items are measured on a 5-point scale from "Poor" (1) to "Excellent" (5)
‡ Items are measured on a 5-point scale from "Strongly Disagree" (1) to "Strongly Agree" (5)
± Item is measured on a 4-point scale from "Not At All Likely" (1) to "Very Likely" (4)

Regarding highlights of their Shadow Day experience, receiving or providing insight into student life at SUNY Poly was mentioned by respondents across the three participant groups. Further, both visitor groups underscore the campus tour and their interactions with members of the campus community, while both student groups emphasize their class attendance as a highlight of the experience (for comments, see next page).

Select Comments:

- *"Meeting new professors and new people; experiencing the many different aspects."* (Student Visitor)
- *"The conversations we had about the place and how to adapt."* (Student Visitor)
- *"Seeing the classes I would be taking."* (Student Visitor)
- *"Tour around campus and talking with student host."* (Student Visitor)
- *"It was great to see the classroom and experience student's life of campus."* (Parent Visitor)
- *"Sitting in on classes and meeting faculty was great!"* (Parent Visitor)
- *"Being able to talk about college as a college student."* (Student Host)
- *"Getting to know future wildcats, and influence/help them figure out what they are interested in here."* (Student Host)
- *"Being able to take the visiting student to class with me was really fun."* (Student Host)

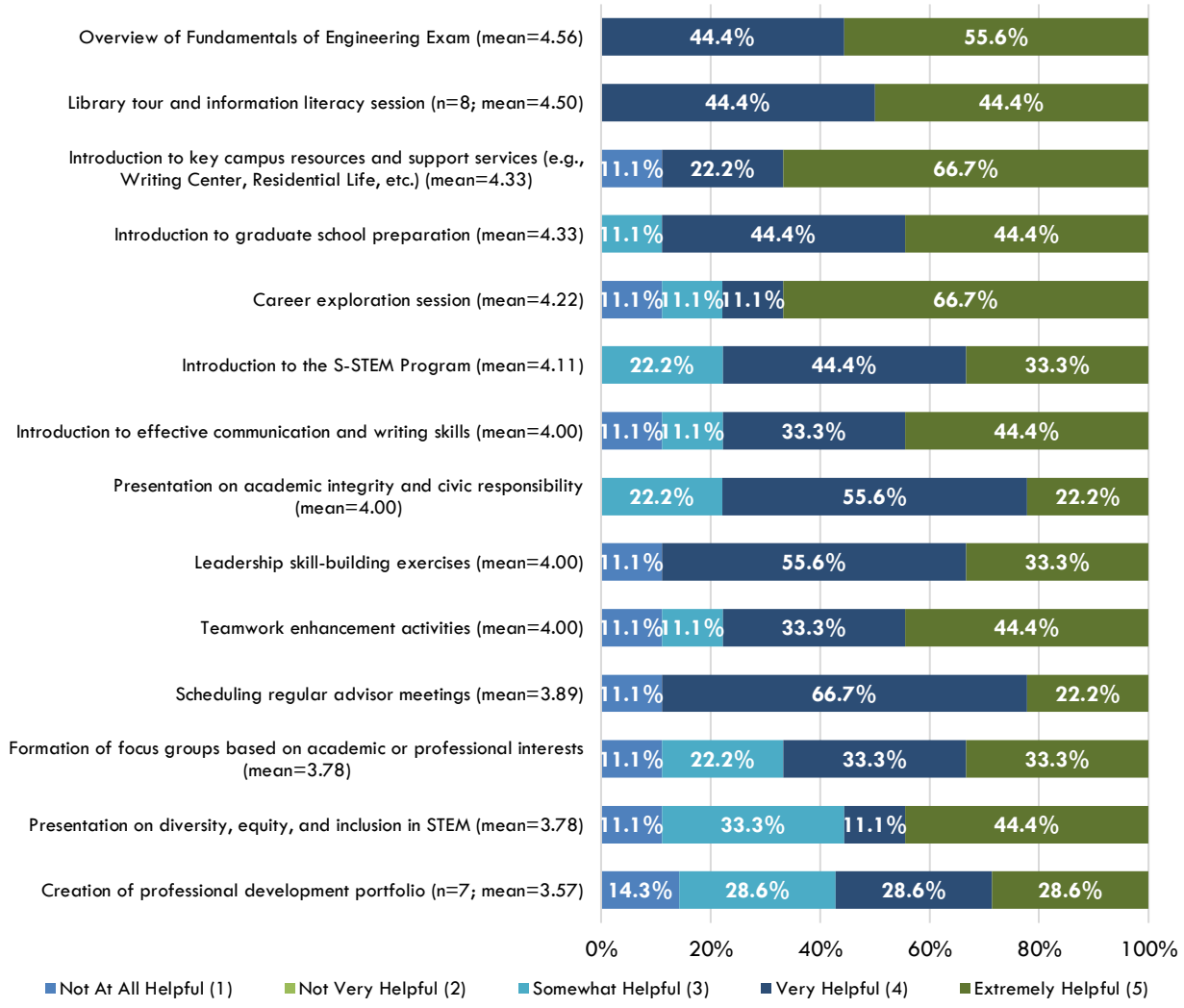
Regarding recommendations for improvement, participants across all groups suggest organizing additional, alternative, and/or more engaging activities, as well as providing additional information and materials to program participants prior to the event. Further, changes to class visit scheduling/selection and ways of facilitating communication between paired students prior to and during the visit were recommended by both student visitors and hosts.

Select Comments:

- *"Addition of allowing participants to view or join an active campus event or game."* (Student Visitor)
- *"More activities throughout classes."* (Student Visitor)
- *"Maybe the students could email each other prior to meeting each other?"* (Student Visitor)
- *"Display class schedules to pick days with more classes."* (Student Visitor)
- *"A tentative schedule before arrival would help."* (Parent Visitor)
- *"It might have been nice to get an idea what classes were scheduled for the day when choosing the dates."* (Parent Visitor)
- *"We would really like to see the freshman dorm on the tour. We've toured three times, but have never seen where she would probably live."* (Parent Visitor)
- *"Assigning days with classes or having more student & host activities."* (Student Host)
- *"More things to do during breaks."* (Student Host)
- *"Making announcements to professors, so they also know and could try and plan something interesting."* (Student Host)
- *"I believe we should be able to show the student all the residential hall on campus."* (Student Host)

In the First Year Seminar feedback survey, Cohort 1 Scholars were asked to indicate how helpful they felt each course topic or activity was in preparing them for success at SUNY Poly. On average, respondents rate the overview of the Fundamentals of Engineering Exam and the library tour as *most helpful* and the creation of their professional development portfolio as *least helpful*. Nonetheless, as shown in Figure 5 (next page), Scholars overwhelmingly report that they found each topic or activity at least "Somewhat" helpful.

Figure 5: Cohort 1 Perceived Helpfulness of First-Year Seminar Components



Note. Respondents were given the option to select 'N/A – Not Covered or Not Present'; these responses are treated as missing.

When asked to rate their overall satisfaction with the First Year Seminar experience on a scale from "Not At All Satisfied" (1) to "Extremely Satisfied" (5), Scholars provide an average rating of **4.33**, indicating a generally favorable view of the offering among Cohort 1 Scholars. Still, these Scholars variously recommend incorporating more engaging topics and activities, providing more information about the SUNY Poly engineering program, and more thoughtful organization of the course schedule in order to improve the experience for future students.

Select Comments:

- *"It needs to be more engaging and hands-on."*
- *"More engagement, less speakers."*
- *"Probably a bit more detail [about] the engineering program."*
- *"The arrangement of the resources discussed could have been better. Learning about what the library has to offer and how to register for tutoring would have been more helpful in the beginning than the end of the semester."*

Cohort 1 Scholars were also surveyed to collect information regarding their required professional seminar attendance and, when asked to rate their overall satisfaction with the sessions they attended during the Fall 2024 semester on a scale from "Not At All" (0) to "Extremely" (10), these participants provide a moderately high rating of **7.50**. In their open-ended feedback, Cohort 1 Scholars comment on their seminars' timing and scheduling, planning and organization, and lack of engaging or interactive elements, with respondents generally recommending that organizers strive to create a more engaging and accessible seminar experience for prospective attendees. Cohort 2 results are pending and will be reported out in the Y4 annual evaluation report.

Select Comments:

- *"Later sessions, too early made me drained and tired."*
- *"Preferably later in the day, we were always drained or tired."*
- *"One of the seminars I went to was not very organized but that is the only thing I think could be better."*
- *"Some of the seminars I went to weren't very well put together and were kind of messy."*
- *"I would say that they should involve more audience engagement."*
- *"These seminars could be improved by including more interactive sessions, such as Q&A panels or hands-on demonstrations."*

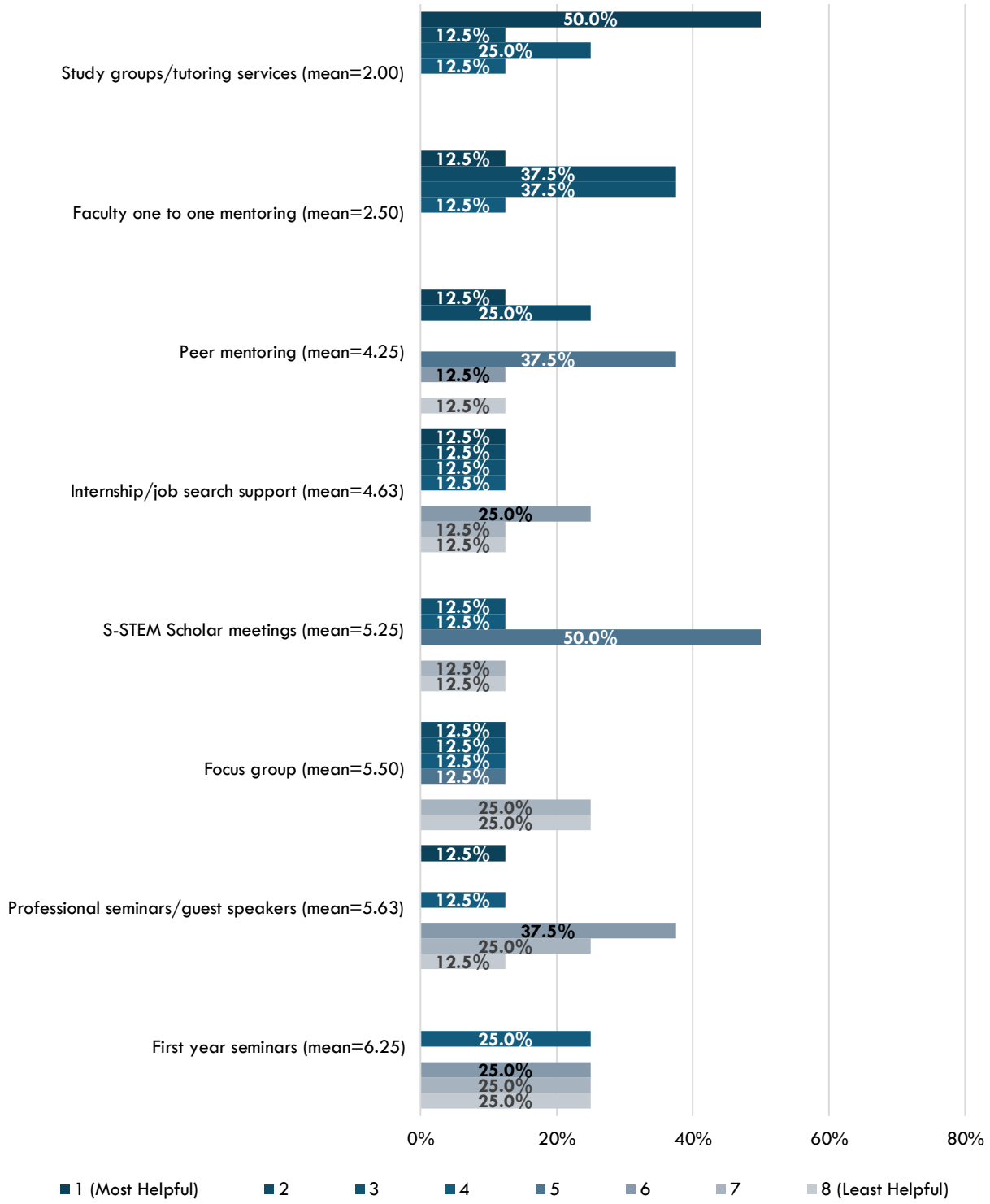
In the Spring 2025 satisfaction survey, Cohort 1 Scholars were asked to rank eight key program supports and activities in descending order from "Most Helpful" (1) to "Least Helpful" (8). Figure 6 (next page) shows that, on average, respondents rank study groups/tutoring services as *most helpful* (mean=2.00) and the First Year Seminar as *least helpful* (mean=6.25).

When asked to rate their overall satisfaction with their 2024-25 S-STEM Program experience on a scale from "Not At All Satisfied" (0) to "Extremely Satisfied" (10), respondents provide an average rating of **8.88**, indicating a generally favorable program experience among Cohort 1 Scholars. To improve the overall program experience for new and returning students, most of these Scholars recommend organizing workplace tours and providing other career exploration/preparation opportunities, while others suggest changes to the pacing of program meetings and seminars.

All Comments:

- *"To improve the program, they should schedule some trips to local companies for tours and what an engineer looks like in the workforce and after college."*
- *"Maybe outside support like touring engineering firms?"*
- *"I think to go on trips and visit companies."*
- *"Have more opportunities for students to learn about their future careers."*
- *"I feel that the program should include more seminar events per semester."*
- *"Have meetings every 2 weeks instead of every week."*

Figure 6: Cohort 1 Helpfulness Ranking of Key Program Supports/Activities, 2024-25



Note. Percentages represent the share of respondents who ranked each support or activity at a given level of helpfulness and total 100% for each item, with individual scale points totaling 100% across items. Items are ordered from the lowest (*most helpful*) to highest (*least helpful*) mean ranking.

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

Results summarized in this section are drawn from the Spring 2025 Cohort 1 focus group discussion and Scholar satisfaction survey.

The satisfaction survey asked respondents to identify the most important ways in which the S-STEM Program has helped them to achieve their goals for the 2024-25 academic year. In response, Cohort 1 Scholars underscore their access to study groups and tutors, routine check-ins and support from faculty, and guidance on academic and career planning.

Selected Comments:

- *"It helped me with studying and get ready for my classes."*
- *"The most important way S-STEM Scholars program helped me was having a study group with a tutor every day."*
- *"Provided regular checkups and support."*
- *"The S-STEM program has helped create a setting where it is comfortable to raise your own concerns you have and be able to share with a group or sometimes to a faculty mentor and be able to find solutions."*
- *"This program has helped me to stay on top of my work and tailor my education towards my career goals."*
- *"Given me help in improving my academic life and balance."*

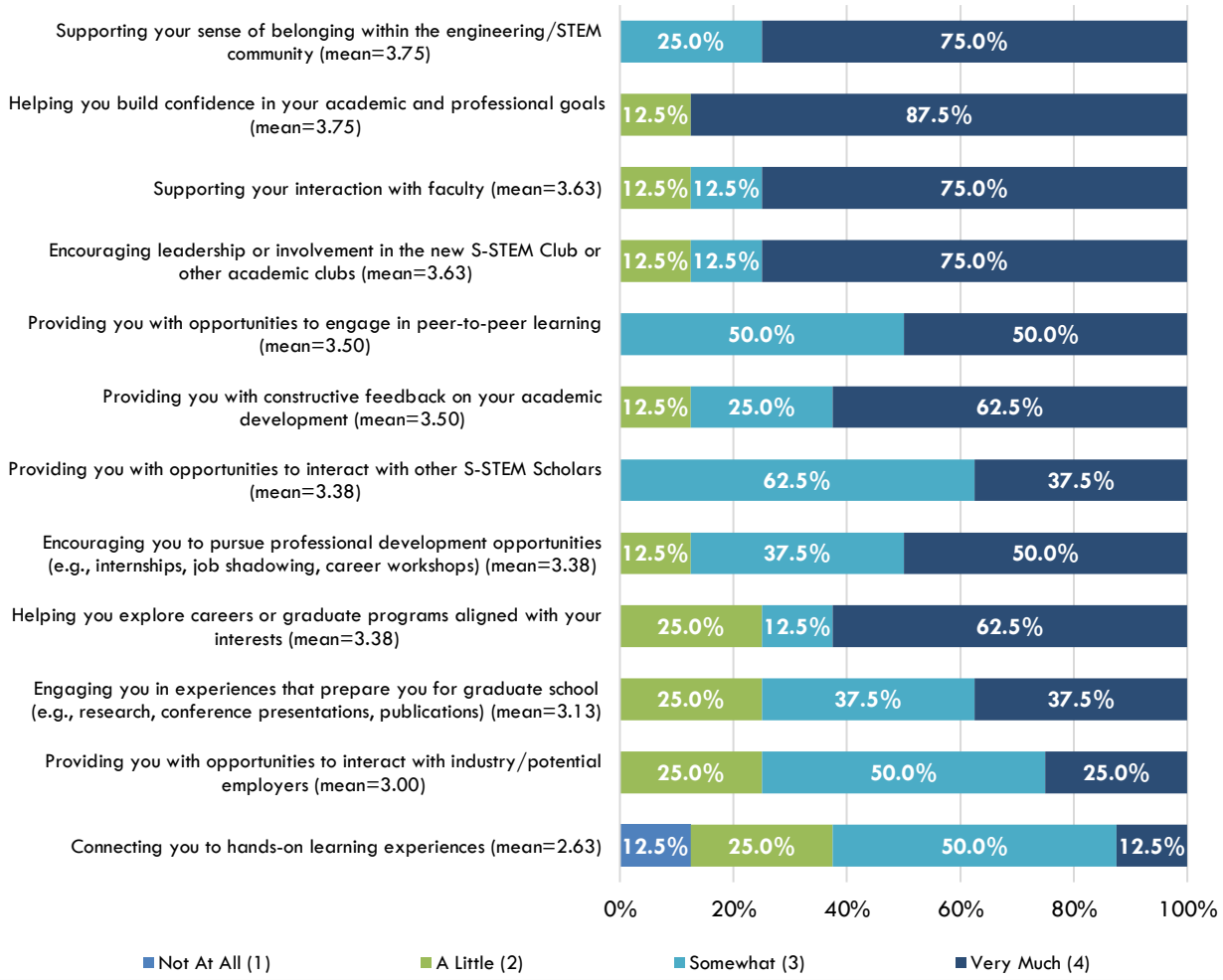
Satisfaction survey respondents were also asked how, if at all, being a Scholar in the S-STEM Program has influenced their academic or career goals, with most Cohort 1 Scholars explaining that the program has consistently motivated them to do well, instilled a sense of confidence, and encouraged them to explore their substantive interests, while other Scholars note specific supports and resources that they have found helpful.

Selected Comments:

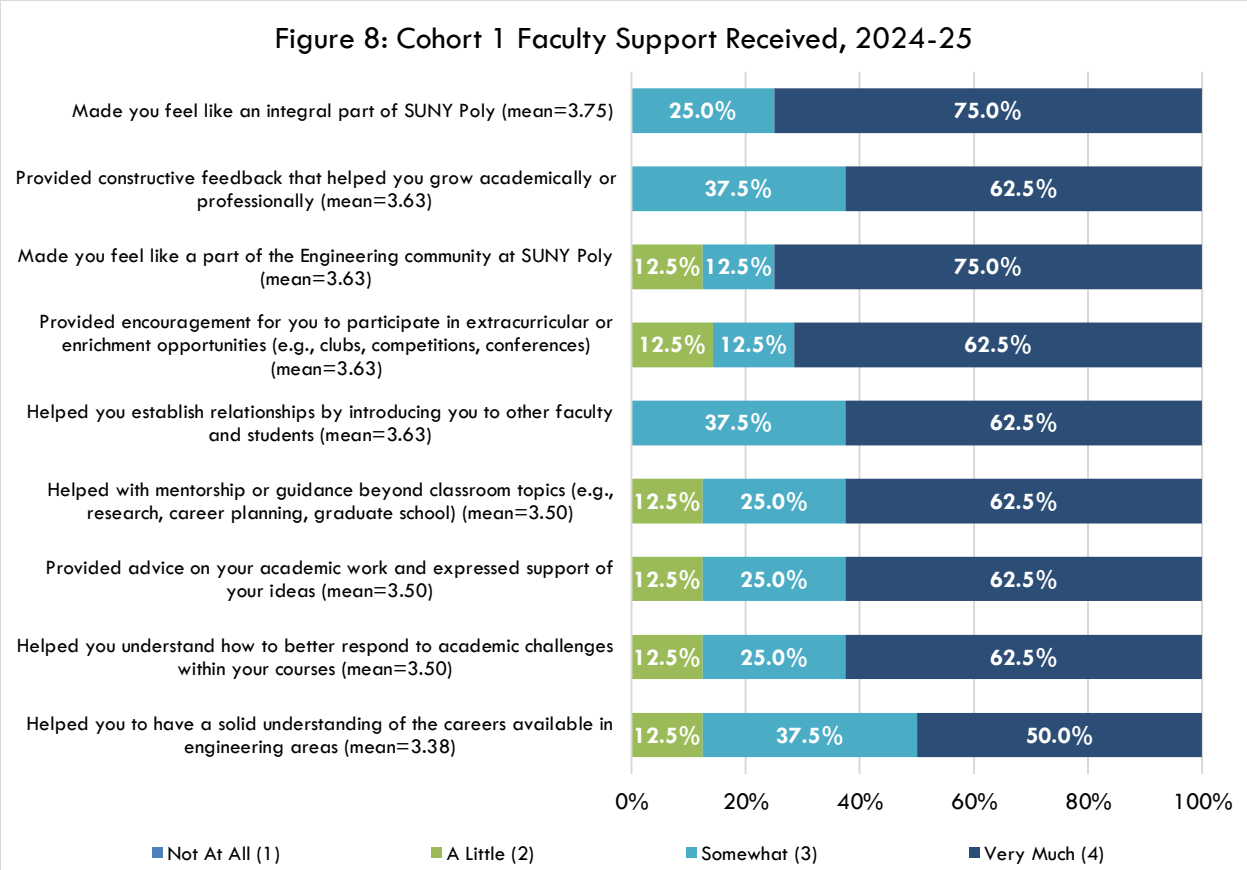
- *"It has introduced me to possible pathways with career goals and pushed me to have even more motivation to do better academically."*
- *"The help has shown me that all of my goals are possible with just a little more work."*
- *"It has made me realize that my goals are much more achievable than I had thought."*
- *"The S-STEM Program has connected me with other engineering students who are in the same field as me with similar courses which has had a positive academic impact on me."*
- *"By giving us helpful resources to succeed in class."*

As shown in Figure 7 (next page), all Cohort 1 Scholars indicate that the program either "Somewhat" or "Very Much" supported their sense of belonging within the engineering/STEM community and provided opportunities for both peer learning and to interact with fellow Scholars during the 2024-25 academic year. While most respondents similarly report a moderate to high level of support in the remaining areas listed in the satisfaction survey, over a third report that they have been met with little to no opportunity for hands-on learning.

Figure 7: Cohort 1 Program Support Received, 2024-25



As shown in Figure 8 (next page), survey results demonstrate that, on average, Cohort 1 Scholars found STEM faculty *most supportive* during the previous academic year by making them feel like an important part of SUNY Poly and *least supportive* with regard to helping them understand available engineering career options.



Throughout the Cohort 1 focus group discussion, participants were asked to speak to their experience engaging with various program resources and supports, with testimony broadly demonstrating that:

- Participants consider personalized academic support from faculty and guiding Scholar requirements (e.g., GPA, seminar attendance) as **top benefits** of the S-STEM Program.
- Few Scholars have accessed SUNY Poly's **Career Services**, with a single participant noting that attending the career fair resulted in a summer research offer.
- All Cohort 1 Scholars are members of the **ACE Program** and have found the seminars and meetings helpful for "soft skill" development (e.g., time management), learning about available career options, and receiving professional advice and guidance.
- Some Scholars have found the **study sessions** helpful when struggling with their math coursework in particular. Notably, Scholars tend to compare the program-sponsored study sessions with college-level tutoring services, either labeling the supports as complementary or noting their preference for the study sessions.
- Scholars have generally found their **First Year Seminar** useful and engaging, with participants highlighting various resources or supports introduced during these sessions that they have since utilized (e.g., tutoring, Career Services).
- When asked **how they rely on other Scholars** for support, participants primarily mention their peer study groups and tend to describe these gatherings as source of motivation, academic support, and personal accountability.

- Regarding **faculty mentorship**, many Scholars highlight Dr. Shen as supportive and reliable, though others recount seemingly unproductive relationships with their assigned mentors and explain that they have turned to other faculty and staff for academic guidance.

<u>Select Quotes</u>:

Top Benefits

- *"It's helped **to have someone who's consistently checking up on you to make sure that you are meeting standards**. Like, we meet every Friday and professor Shen is always checking up on us, making sure we're doing well in our classes. And if we aren't, **she can always provide us with resources that we might not have easy access to**."*
- *"**The tutoring support. [One professor] has always been there to help us move along through our work**. She wants all of us to be successful. And she would help us write our resumes and stuff like that. That's what I find really excellent about [the program]."*
- *"I think **the Friday meetings really help because she checks in on how you're doing in classes and stuff**. And if you're not doing great, she'll help you find tutors and stuff like that. It's a really big help."*
- *"In a way, **some of the requirements are keeping me on track, specifically the GPA requirement**. Knowing that I have to have a B or above in pretty much all my classes is really kind of making me… a little bit wary of what's going on in my courses. Just knowing I have that requirement with a lot riding on it."*

Career Services

- *"We just had a career fair held by the career services [and] **they sent me an email that connected me to a research thing that I got lucky to get into** for the summer. … **They have also helped a lot with networking**. … [At the career fair], I made a lot of connections, got a lot of cards, talked to a lot of people."*

ACE Program

- *"The last {ACE seminar] I went to **was about time management and I feel like that was really helpful**. They had some upperclassmen come in and show us how they used their time and how they managed things."*
- *"**They had a resume building workshop**. … **And definitely the career events**—you get networking [opportunities] and just learn a lot each time there's an event. You're always going to get something out of it that will help you become more successful."*
- *"The ACE Program. … **The monthly meetings really help**. We check in once a month with our advisors."*

Study Sessions

- *"They're helpful. Last year I was struggling in calculus I and I went to one of those study groups and they taught me some stuff. I also went to tutoring the same week. … I passed my final and **it really helped me in general, not only in math but also in physics**."*
- *"The study group **definitely helped me with my math and calculus skills.** … And the tutoring sessions definitely helped me with calculus I."*
- *"The study groups are kind of helpful because with tutoring you have to set your own schedule and go with it. But, with the study groups, you just show up and come with any questions you may have. So, **just having that set schedule is kind of helpful**."*

First Year Seminar

- *"That **career services has a closet to borrow from for interviews** in case you have [problems with your] wardrobe."*
- *"**They introduced us to this one app where you can practice interviews** with someone online. … I've used it for an interview I have coming up."*
- *"**When we learned about all the resources on campus that can help us be successful**. I definitely utilized that. … Like information on how to get tutoring, how to use databases, the library catalog—stuff like that."*

Peer Support

- *"At the beginning of the school year, **some of us would get together on weekends to study chemistry. Everybody just adds something different**, and I think that really helped in the beginning when I was struggling."*
- *"Also, **the fact that we all made to-do lists. Like, everyone saw it and you were held accountable for things**, like [attending] study sessions and whatnot. …That accountability forces you to actually do the work."*
- *"Motivation from friends is a big thing. That's why I like the idea of this study group meeting every Friday, because **seeing each other doing work kind of holds me more accountable**."*

Faculty Mentorship

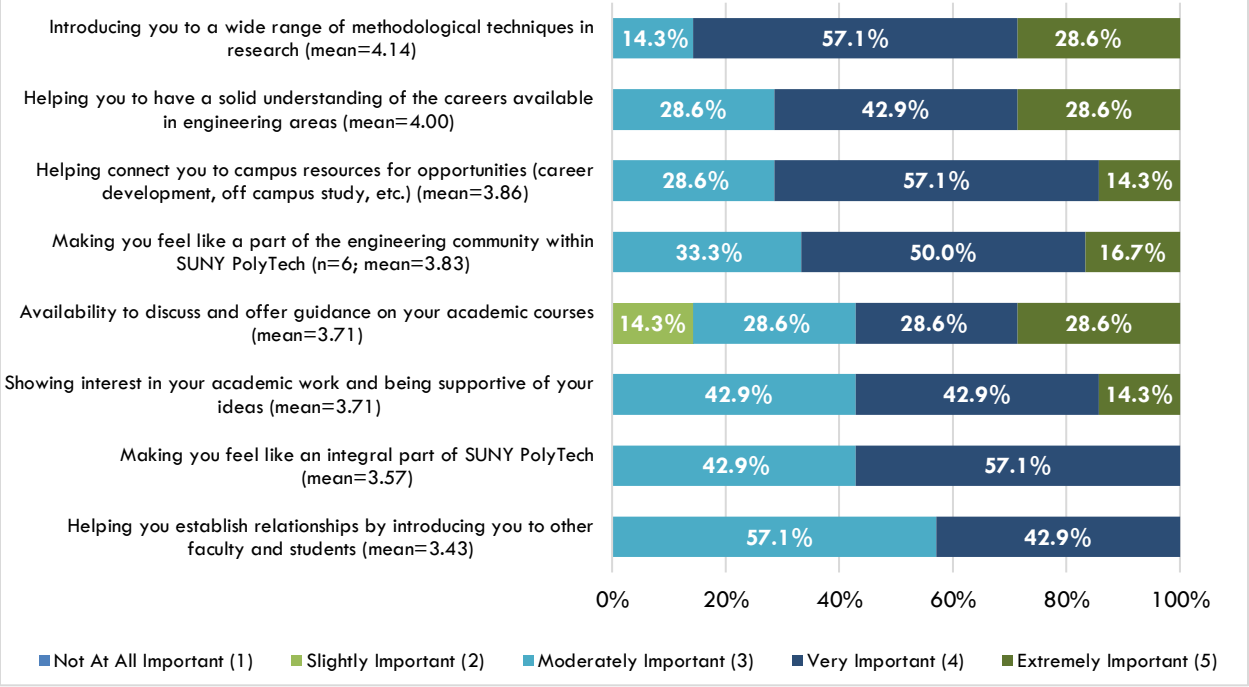
- *"**Shen is the first person I go to if I know I'm having any kind of trouble in class**. If I know my grades are in danger, I go straight to her and tell her I'm having trouble. **She connects me with who I need to be in contact with, you know, gives me a direct contact**. I don't have to jump through hoops to find advisors or to get in line for tutoring or pay for programs out of my own pocket. I just have that direct connection and it cuts out a lot of the hassle."*
- *"I kind of feel like **Ms. Shen is like a family member on campus** that we kind of have to go through. I'm from [out of town] and I don't have family here. I feel like going to her is the closest thing to having family on campus—**her and my ACE advisor**."*
- *"I switched majors [and], because of that, I switched advisors. … **[My first mentor] was never really around**, so I didn't feel like I was getting the attention I needed. It just didn't seem like he cared. **With Shen, there's more consistency**."*
- *"**[My mentor] is busy most of the time**, so whenever he's not available **I usually go to my ACE advisor** because she would help me out a lot."*

Enhanced Faculty Understanding of Scholar Needs & Experiences

Results presented in this section are drawn from all primary data sources apart from the 2025 KOBO feedback survey.

When presented with eight items regarding expectations of faculty engagement, all or nearly all incoming Cohort 2 Scholars find it at least "Moderately" important that faculty provide each type of support listed (see Figure 9, next page). On average, these Scholars feel it is *most important* that faculty introduce them to a range of methodological techniques and engineering career options, and indicate it is *least important* that faculty make them feel like an integral part of the campus community and help them establish relationships with other faculty and students.

Figure 9: Cohort 2 Pre-Program Expectations of Faculty Support



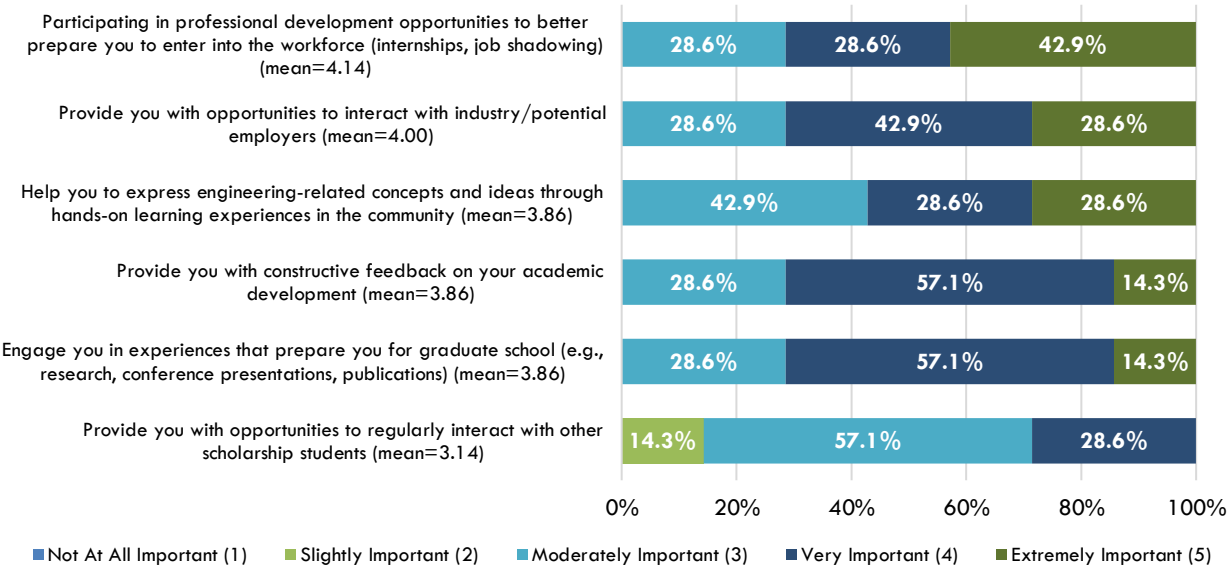
As shown in the table below, Cohort 2 Scholars provide slightly or substantially *lower ratings* of nearly all forms of anticipated faculty support compared to those in Cohort 1.

Table 7. Cross-Cohort Differences on Pre-Program Faculty Expectation Measures

Indicator	Cohort Means		Overall
	Cohort 1 (n=9)	Cohort 2 (n=7)	
Helping connect you to campus resources for opportunities (career development, off campus study, etc.).	4.44	3.86	**4.15**
Availability to discuss and offer guidance on your academic courses.	4.56	3.71	**4.14**
Introducing you to a range of methodological techniques in research.	4.11	4.14	**4.13**
Helping you to have a solid understanding of the careers available in engineering areas.	4.22	4.00	**4.11**
Making you feel like a part of the engineering community within SUNY PolyTech.	4.33	3.83 (n=6)	**4.08**
Showing interest in your academic work and being supportive of your ideas.	4.22	3.71	**3.97**
Making you feel like an integral part of SUNY PolyTech.	4.22	3.57	**3.90**
Helping you establish relationships by introducing you to other faculty and students.	4.00	3.43	**3.72**

Relatedly, all or nearly all Cohort 2 Scholars feel it is at least "Moderately" important that the program provide six additional supports. Average responses indicate that these Scholars find it *most important* that the program provides professional development opportunities and occasions to interact with industry partners, and *least important* that they receive regular opportunities to interact with fellow Scholars.

Figure 10: Cohort 2 Pre-Program Expectations of Program Support



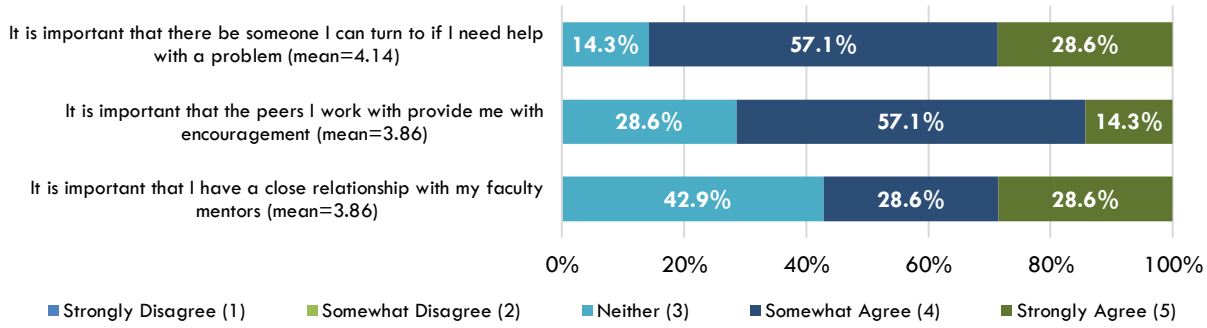
Once again, disaggregated results show that incoming Cohort 2 Scholars place *less importance* on all forms of program support listed in the pre-test survey compared to their Cohort 1 counterparts.

Table 8. Cross-Cohort Differences on Pre-Program Expectation Measures

Indicator	Cohort Means		Overall
	Cohort 1 (n=9)	Cohort 2 (n=7)	
Participating in professional development opportunities to better prepare you to enter into the workforce (internships, job shadowing).	4.78	4.14	**4.46**
Provide you with opportunities to interact with industry/potential employers.	4.78	4.00	**4.39**
Provide you with constructive feedback on your academic development.	4.56	3.86	**4.21**
Engage you in experiences that prepare you for graduate school (e.g., research, conference presentations, publications).	4.22	3.86	**4.04**
Help you to express engineering-related concepts and ideas through hands-on learning experiences in the community.	4.11	3.86	**3.99**
Provide you with opportunities to regularly interact with other scholarship students.	4.33	3.14	**3.74**

Pre-program survey responses also demonstrate that Cohort 2 Scholars expect interpersonal support during their time in the program, with most respondents agreeing it is important that: there be someone they can turn to if they need help with a problem; their peers provide them with encouragement; and they have a close relationship with their faculty mentors.

Figure 11: Cohort 2 Pre-Program Expected Interpersonal Support



Compared to those in Cohort 1, incoming Cohort 2 Scholars are notably *less likely* to agree that it is important there is someone they can turn to for help and that they have a close relationship with their faculty mentors during their time in the program.

Table 9. Cross-Cohort Differences on Pre-Program Interpersonal Support Measures

Indicator	Cohort Means		Overall
	Cohort 1 (n=9)	Cohort 2 (n=7)	
It is important that there be someone I can turn to if I need help with a problem.	4.67	4.14	**4.41**
It is important that I have a close relationship with my faculty mentors.	4.56	3.86	**4.21**
It is important that the peers I work with provide me encouragement.	3.89	3.86	**3.88**

When asked to describe one thing SUNY Poly can do to help them succeed during their first year in the program, responding Cohort 2 Scholars primarily underscore the need for close academic and professional guidance during the early stages of their program experience.

All Comments:

- *"Improve professors' methods and ways of teaching the course material to make it easier to learn."*
- *"Teach me the different fields of engineering and how to get into them."*
- *"Tell me by teaching me what careers are available to me, so I am actually working towards a goal besides graduating."*
- *"I'm really not sure. A thing that would've probably been helpful was to learn about pulse app during orientation and an idea of what courses to take in the future for a dual major earlier on."*

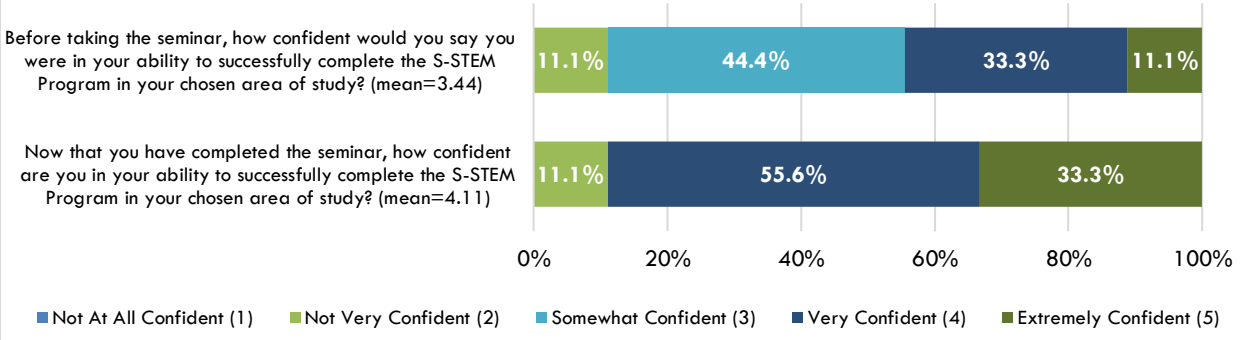
In the First Year Seminar feedback survey, Cohort 1 Scholars were asked to describe key takeaways from the course, with respondents explaining that the seminar helped them understand the importance of utilizing available campus supports and/or introduced a wide range of academic and professional skills, processes, and opportunities (see next page for examples).

Select Comments:

- *"The main thing I learned over the first semester was to take advantage of all of the resources, help, and opportunities offered on campus."*
- *"Use campus resources."*
- *"I can go to tutor sessions and go to office hours if I am struggling in any classes."*
- *"How to apply for a grad school; teamwork; engineering ethics; resources; internships or job opportunities; effective communication and writing skills."*
- *"I think my first-year seminar really helped me understand things about the real world and about college. This has helped me with managing and understanding what I need to do to be successful in college and in life."*

When asked to rate their confidence in their ability to successfully complete the S-STEM program both before and after attending the First Year Seminar, responses suggest that the course was instrumental in boosting Cohort 1 Scholars' self-confidence.

Figure 12: Cohort 1 Scholar Confidence Before & After First Year Seminar



Similarly, when surveyed regarding their professional seminar requirement, current Scholars note that the sessions provided valuable insight regarding academic planning and grad school preparation, career planning and employment opportunities, and other substantive topics covered.

Select Comments:

- *"Graduate school and the team building were the main seminars that I remember best. The graduate school seminar was by far the most important to me as it's my dream to go to graduate school, but the team building was very entertaining and taught me a lot more about the roles in professional environments."*
- *"These seminars showed how spintronics is changing technology, especially with energy-efficient computing like magnon spintronics. They also highlighted how AI and IoT can make roads safer and cities smarter through better traffic systems and personalized driver alerts."*
- *"From the Civil Engineering seminar I learned a lot about engineering in general and helped me learn a lot about the profession that i want to go into. The Standards Seminar brought in many people from different companies. They talked about what standards were and how there are many standards to make in the industry for all of their careers."*

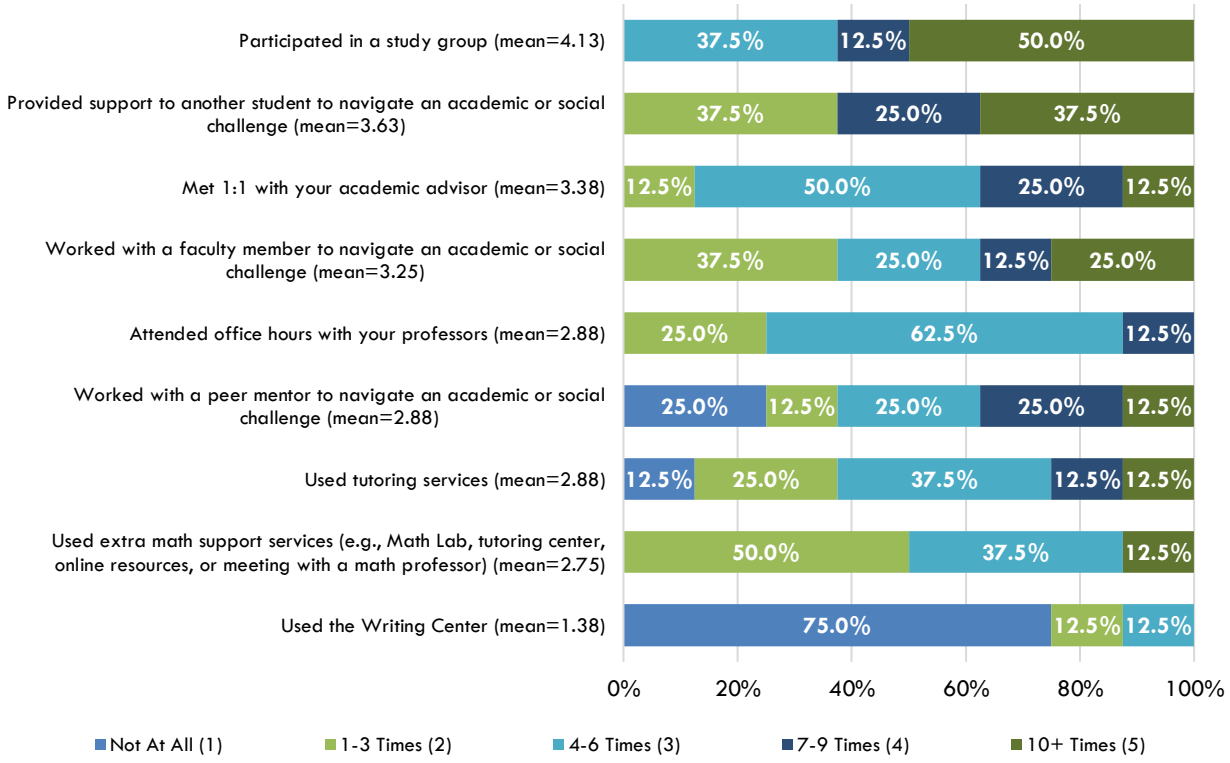
When asked what topics they would like to see covered in future seminars, several Cohort 1 Scholars request more presentations on career preparation and exploration, while others request coverage of field-specific engineering topics relevant to their professional and academic interests.

Select Comments:

- *"More things on career and job building."*
- *"Not a new one but maybe more on job and career building?"*
- *"I would like to hear more about structural engineering when speaking of civil engineering and any issues that may be encountered when doing something in that field."*
- *"I would like to see more about the field of mechanical engineering. All of the seminars on mechanical engineering were during times I couldn't go to so I missed them."*

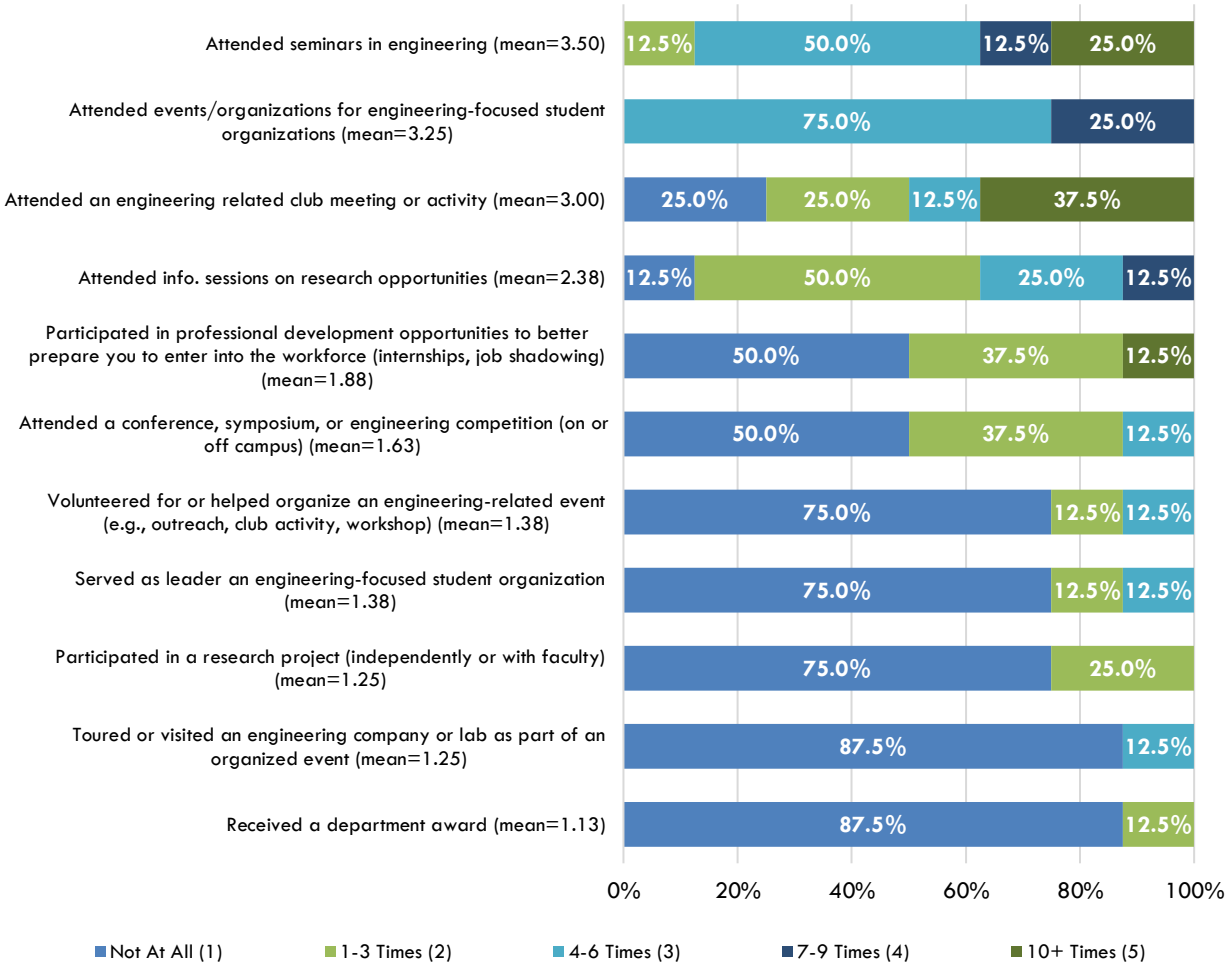
Among the general academic activities listed in the 2025 satisfaction survey, on average, Cohort 1 Scholars *most frequently* participated in study groups, provided support to a peer who was facing an academic or social challenge, and met one-on-one with their academic advisor, and *least frequently* access math support services and the Writing Center during the previous year.

Figure 13: Cohort 1 Engagement in High Impact Activities, 2024-25



Regarding engineering- and STEM-specific activities, on average, current Scholars *most frequently* attended engineering seminars, events for engineering-focused student orgs, and an engineering-related club meeting or event, and *least frequently* participated in a research project, toured an engineering company or lab, and received a department award in the past year. Notably, aside from the four activities that saw the most frequent participation among current Scholars, half or more report *no engagement* in the remaining areas probed (see Figure 14, next page).

Figure 14: Cohort 1 Engagement in Engineering/STEM-Specific Activities, 2024-25



During the focus group discussion, Cohort 1 Scholars were asked what can be done to promote cohesion within their cohort, with participants variably recommending more engaging group activities, more frequent cohort meetings, or events and activities that incorporate engineering students from across subdisciplines.

Select Quotes:

- *"I think **more industry tours would help** out if we could spend some time talking about what we saw. … **It could be fun and help with cohort building**."*
- *"**Something more engaging to do with each other**, because I haven't seen most of these people since our freshman seminar class."*
- *"Honestly, just **having the meetings every week**. I think if we did it like **every other week in-person that would help too**."*
- *"I would like to see the **civil and mechanical [engineering students] mixed more**."*

When asked what else they need in order to be successful as S-STEM Scholars, Cohort 1 focus group participants request additional options for subject-specific tutoring, more off-campus professional development and networking opportunities, and financial aid guidance.

Select Quotes:

- *"It's not needed to be successful, but **I do like the conferences and other meetings they offer around the country**. For example, when I heard about the conference this fall, I was very excited and went straight away to ask how I can apply. I just feel like having more of those kinds of things—not even just conferences—would be very nice to have. **It would be nice to see something that would help outside of college as well, like maybe some [career-oriented events]**."*
- *"…And maybe just **having a connection outside of campus to somebody who's a professional**."*
- *"I guess **more options for tutoring**. Maybe like an online tutor for more niche topics."*
- *"I think something that might help a lot of people alongside the [scholarship] money is like **a short cheat sheet on how to go through filing all your paperwork for financial aid**. … All the FAFSA stuff changes per school… how to do it, who to talk to. Maybe just some general deadlines, what to expect, that sort of thing."*

Toward the Future

In this third year of programming at SUNY Poly, the team collected important data on Cohort 1 Scholars' first-year program highlights, outcomes, and recommendations for improvement; Cohort 2 Scholars' baseline perceptions of engineering, self-confidence, and expectations for the program; and visitors' and hosts' KOBO experience, with results broadly demonstrating consistent progress toward program goals and general satisfaction among stakeholder groups.

Findings show that Cohort 1 Scholars have begun to form supportive relationships with faculty and peers while engaging with a wide range of high impact activities and resources during their first year in the program. Many Scholars consider personalized guidance from program-affiliated faculty and SUNY Poly staff as the top benefit of their S-STEM involvement and reflect positively on both required and elective program components, such as the First Year Seminar, professional seminars, and study sessions. Still, testimony suggests that some Cohort 1 Scholars have been met with unengaged faculty mentors, with many relying on a single engineering professor (Dr. Shen) and outside staff members for academic and professional guidance. Further, while nearly all Cohort 1 Scholars report some engagement across the high impact academic activities probed in the end-of-year survey, few have engaged in STEM- and engineering-focused activities, such as participation in student organizations, research projects, and workplace tours. Broadly, these Scholars hope to see more opportunities for professional development and networking, more engaging and relevant seminar topics, and events and activities that promote intra- and inter-cohort cohesion moving forward.

Pre-program survey responses demonstrate that incoming Cohort 2 Scholars are excited to begin engaging with engineering at the university level and hold favorable views of the field as a major and career choice. These Scholars are confident in their ability to approach faculty members, produce high quality work, and succeed at SUNY Poly, though many express uncertainty regarding their ability to access research resources, become involved in student study groups, and perform well in certain subject areas. Further, these Scholars hold moderate to high expectations of faculty and peer support and expect to be met with sufficient opportunity for professional development and networking during their time in the program. Notably, however, Cohort 2 Scholars place less importance on receiving faculty and program support during their first year at SUNY Poly, provide lower pre-program confidence ratings, and hold less favorable views toward engineering compared to Cohort 1 upon entering the program. Given

these findings, it is important that the program provides Cohort 2 Scholars with early opportunities for professional development, career exploration, and community-building both within and between cohorts, and that organizers continue to monitor differences in perceptions and skills across cohorts.

Lastly, survey responses demonstrate that participants of the 2025 KOBO event were generally satisfied with their experience and considered the event a valuable opportunity for visiting students to gain insight into student life at SUNY Poly, with all participant groups providing moderate to high average ratings of the event registration and materials, communication with organizers, and their classroom visits and interactions with fellow participants. Most student and parent visitors found the experience informative, were able to familiarize themselves with the SUNY Poly campus, and would recommend the program to others, with both visitor groups underscoring the campus tour and their community interactions as highlights of the experience. While the student hosts provide similarly positive feedback, this group rates their student pairings and interactions lower compared to visiting high schoolers. Across participant groups, respondents recommend incorporating additional and more engaging program activities and providing additional information/materials prior to the event, while both student groups further suggest facilitating communication between paired students prior to and during the campus visit.

As Year 3 evaluation activities come to a close, evaluators will continue to share feedback from Scholars and key partners with program organizers in order to inform adjustments to program components and improve the experience for current and incoming cohorts. Recommendations for improvement have been made throughout this year's programming and will only be summarized here.

- **Ensure that faculty mentors are engaged with their assigned mentees**, as many Scholars rely heavily on Dr. Shen and/or have turned to other SUNY faculty and staff for support due to a perceived lack of accessibility, engagement, and/or interest from the assigned mentors.
- **Encourage timely academic feedback from affiliated faculty**, as most participants feel that their instructors are late to assign and grade work which in turn prevents students from seeking needed intervention and guidance. Several Scholars recommend the implementation of a system that tracks Scholars' (or SUNY Poly students') academic progress in real-time, alerts them to changes in their academic standing, and provides next steps for improvement.
- **Explore events and activities that promote Scholar cohesion**, such as field trips and team building activities, informal social events, or more frequent cohort meetings, as some participants explain that they have yet to form close bonds within the cohort despite a desire to do so and their recommendation that future Scholars do the same.
- **Explore or facilitate additional tutoring resources for S-STEM Scholars**, as several participants would like to see specialized support for various subdisciplines and non-STEM areas, with at least one Scholar recommending an online tutoring option.
- **Encourage Scholars to utilize campus services and resources**, particularly Career Services, as several participants desire additional professional networking and development opportunities through the program that may be available via outside student services.

Consideration of any of the above findings can strengthen the S-STEM Scholar experience and support the attainment of long-term program outcomes.