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Using Grant Transition Periods to Improve Program Evaluation & Offerings; Case Study: Washington Space Grant

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Abstract:
Sometimes projects settle into a status quo of doing the same things because that is what has always been done. In this presentation, we'll talk about the process of transitioning a NASA-funded WA Space Grant to develop more meaningful activities/interventions for students and to improve the evaluation of the project. The project is writing a renewal grant now and has been collaborating with an evaluator to refine the planned activities and the SMART goals and planned measurement of the outcomes of those activities.

The project supports students pursuing careers in STEM, helps develop faculty skills/knowledge and supports some pre-college education activities. The new grant has an increased focus on broadening participation and has a new requirement for external evaluation. Historically, 50% of student funding is awarded to marginalized students in STEM. Starting in 2024 the program began to increase the percentage of marginalized student recipients and alongside funding will incorporate cohort programs that honor students' cultural, racial, and ethnic identities. The presentation will discuss the motivations for the changes as well as some of the outcomes from prior work.

The WA Space Grant recently engaged a new evaluator on the project to help write the new proposal and to develop a strong evaluation plan for the renewal grant. This opportunity has led to additional discussion about what goals and outcomes the project is trying to achieve, and has sharpened the project's articulation of how the

project's activities are connected to those outcomes. For example, the new grant includes a focus on building strong, reciprocal relationships with affiliate institutions to support the partners to move toward specific learning objectives that are relevant and sustaining for the students in their programs. The presentation will discuss how projects working towards continued funding/renewal funding can think about framing their work and their changes to ensure that meaningful outcomes are captured in the evaluation.

About WA Space Grant

- Established in 1989 by NASA
- 19 institutions
- 250 students served (2023-2024)

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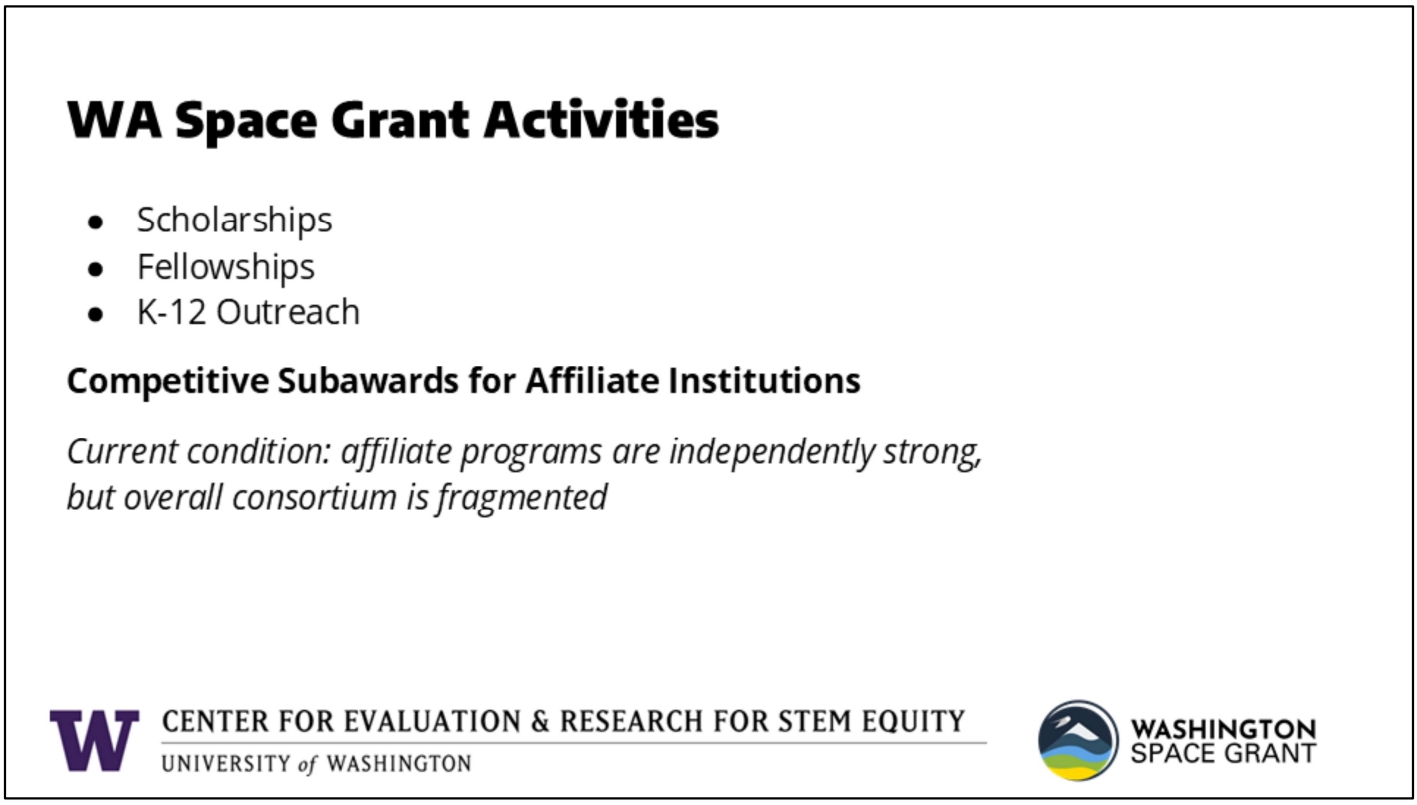
Washington Space Grant was established in 1989 by NASA as one of 52 consortiums around the U.S. WA Space Grant currently includes 19 institutions and serves roughly 250 students in a year.



What exactly does WA Space Grant do? Their direct student funding goes toward providing scholarships, internship or research assistant experiences, and grad fellowships. Once students receive funding, Space Grant is available for students to reach out to for support. We hosted a start of year kickoff. Scholarship students receive a quarterly grade check. Some students also participate in technical projects that aligned with NASA priorities. Through these and other activities, WA Space Grant works to support marginalized students in STEM with direct funding and provide authentic student learning experiences to build technical, professional, and equity-centered skills.

Competitively awarded subawards support affiliate institutions to do any of the listed items in their own regions. Currently, the affiliate relationship is directly with the lead institution, with little collaboration among the affiliates. Participating students and award recipients also don't seem to have a clear concept that they are funded via Space Grant. This is a missed opportunity for students to be connected to a bigger statewide and national network.

Technical Project Examples

Lunar Lava Tube Exploration Challenge

- Multi-state: WA, OR, ID, MT, TX, and WV

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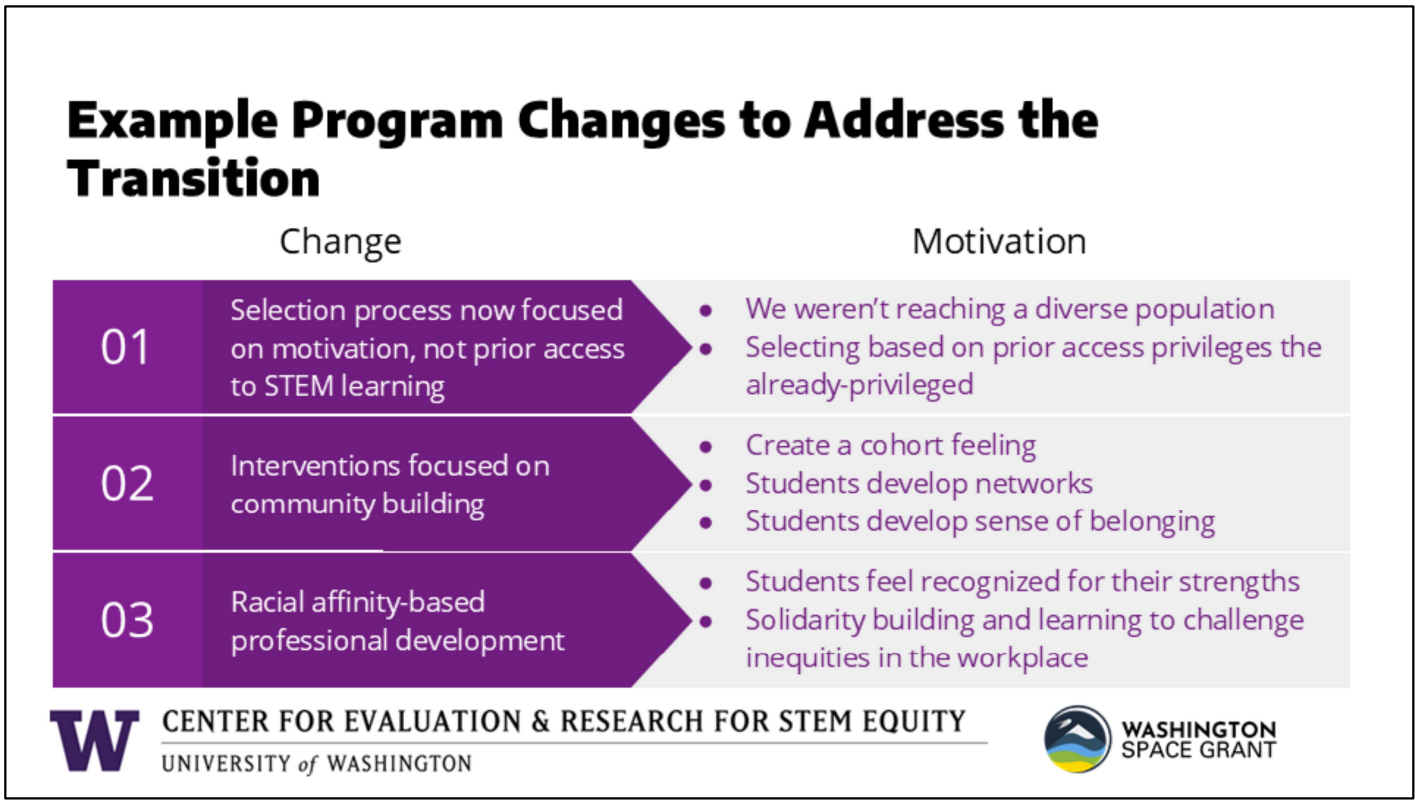
All Space Grant supported work must be aligned with NASA's goals, known as Mission Directorates, which include space technology, aeronautic research, and science missions.

One example of a past project that aims to help students tap into a broader network is the Lunar Lava Tube Exploration Challenge (2022). Pictured is a "lava tube" that students built and must drive a remotely operated robot to conduct specific tasks that mimic what a subterranean lunar mission would be like. This was a pretty special project that involved students working in six different states. This specific project was intentionally designed to engage a mixture of research university and community college students.

There was a new solicitation from NASA for funding beginning in 2025. The new grant requires more of a focus on broadening participation and requires external evaluation. WA Space Grant engaged the University of Washington Center for Evaluation & Research for STEM Equity (or CERSE) to help write the proposal and develop an evaluation plan. This resulted in many discussions about how to draw stronger connections between activities, evaluation methods, goals, and outcomes. In addition, the new relationship between UW CERSE and WA Space Grant is just getting started and that meant a lot of getting to know each other and getting to know the project. We had weekly-ish meetings over multiple months to discuss the proposal and planned changes in activities.



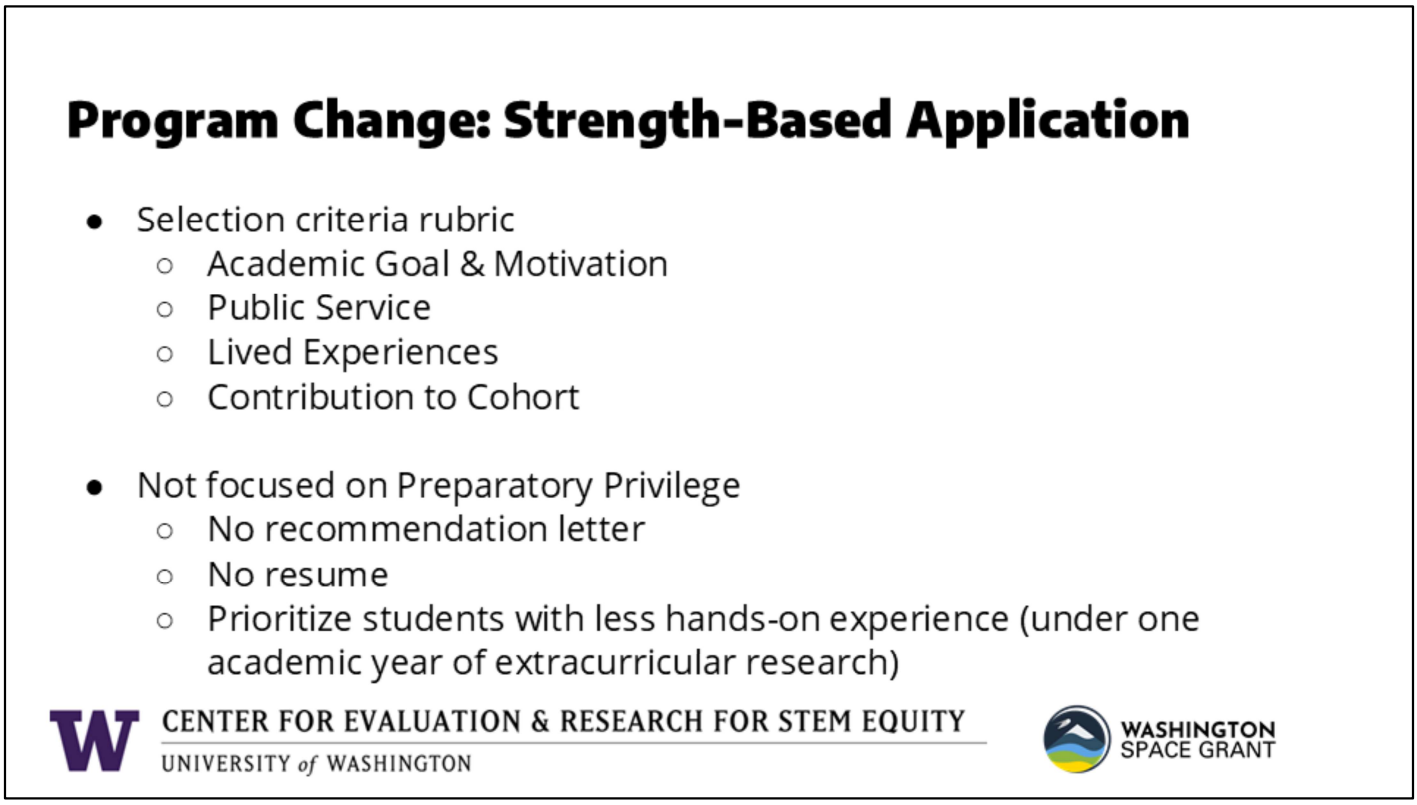
Recently, Washington Space Grant has made a number of changes to respond to the results of our evaluations, to reach a more diverse population, increase community building, and taking a more strength-based approach in its programming. This is partly motivated by the belief that STEM education must be reimagined to center culturally sustaining, justice-centered, and liberatory practices (Morales-Doyle, 2017; Paris & Alim, 2017; Sanchez, 2023) and involves uplifting and connecting with the brilliance in marginalized communities, including ancestral knowledge systems as well as contemporary scientific practices. For example, WA Space Grant's professional development for public speaking has been anchored around students' existing knowledge and experience as storytellers, where trainers will ask participants to consider how they tell stories and do role playing to support them in strengthening their presentation skills.

Starting in 2024, the program began to increase the percentage of recipients who hold marginalized identities, and alongside funding will incorporate cohort programs that honor students' cultural, racial, and ethnic identities.

We'll briefly highlight how the new selection process differs from Space Grant's previous practices, and how it's changed the composition of our summer program cohort. We'll also look at a snapshot of survey results that indicate positive results from a summer quarter of community building activities.

A third program change that we'll describe now will be to introduce the STEM

Leadership Collective, a one-day professional and leadership skills development workshop that honors students' cultural, racial, and ethnic identities.As part of this, the Leadership Collective will prepare students to secure internships with industry employers and connect industry recruiters to a diverse talent pool. This will allow Washington Space grant to support more students than they otherwise could, since resource constraints mean they have historically had many interested and qualified students they unfortunately cannot support through their other programming.



Starting in 2024, WA Space Grant adopted a more strength-based approach to the student and affiliate application review process that focuses on student motivation and desire for STEM community building. Selection criteria focus on the following: academic goals and motivation, contribution to community, and cultural competency and professionalism. They're also implementing a universal application to lower student time and navigation burden.

To reduce bias in the application and selection process, the lead institution no longer requires recommendation letters. Collecting recommendation letters is a time burden on the applicants and recommenders. The letters create biases that unfairly favor students from privileged backgrounds who might have more access to influential or prestigious recommenders. Removing this requirement encourages a more diverse and inclusive applicant pool.

WA Space Grant, as a NASA-funded workforce development program, recognizes that resumes can be a barrier to entry by overemphasizing formal qualifications and serving as proxies for past access to STEM learning programs. Although resumes are still used selectively in some projects, moving away from relying heavily on resumes allows the application process to better accommodate individuals from diverse backgrounds. This approach helps identify valuable skills, potential, and motivations that might not be traditionally recognized in a resume format.

WA Space Grant also asked students to self-identify their prior experience with

research, and students with less experience are prioritized in application review compared with those who have more experiences.

Spotlight: Summer Undergraduate Research Program

- Summer research institute
- Partner with University of Washington faculty mentors
- Goal: provide opportunities to students with little to no prior research experience

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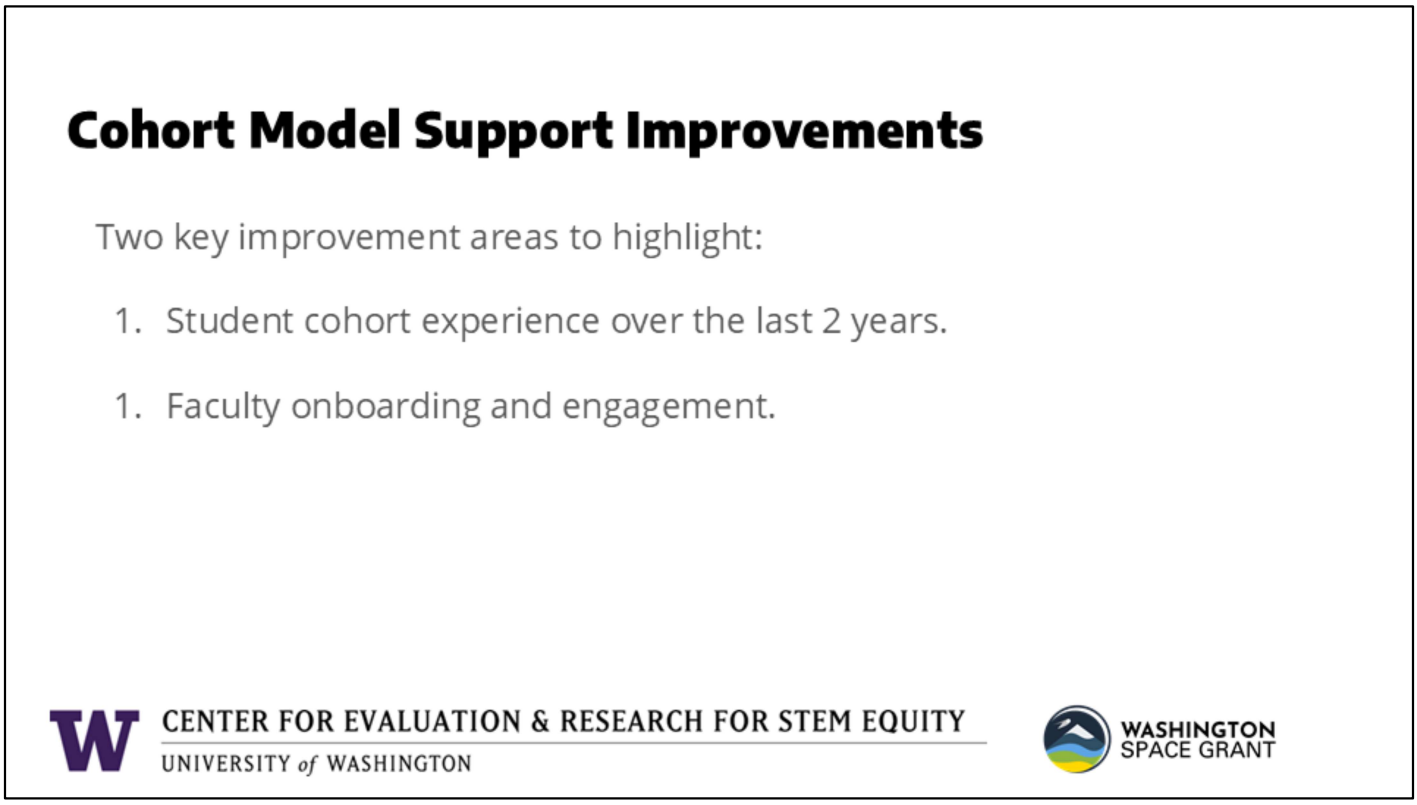
We used this new selection process for our 2024 Summer Undergraduate Research Program, which pairs students with University of Washington faculty mentors to work on research projects.

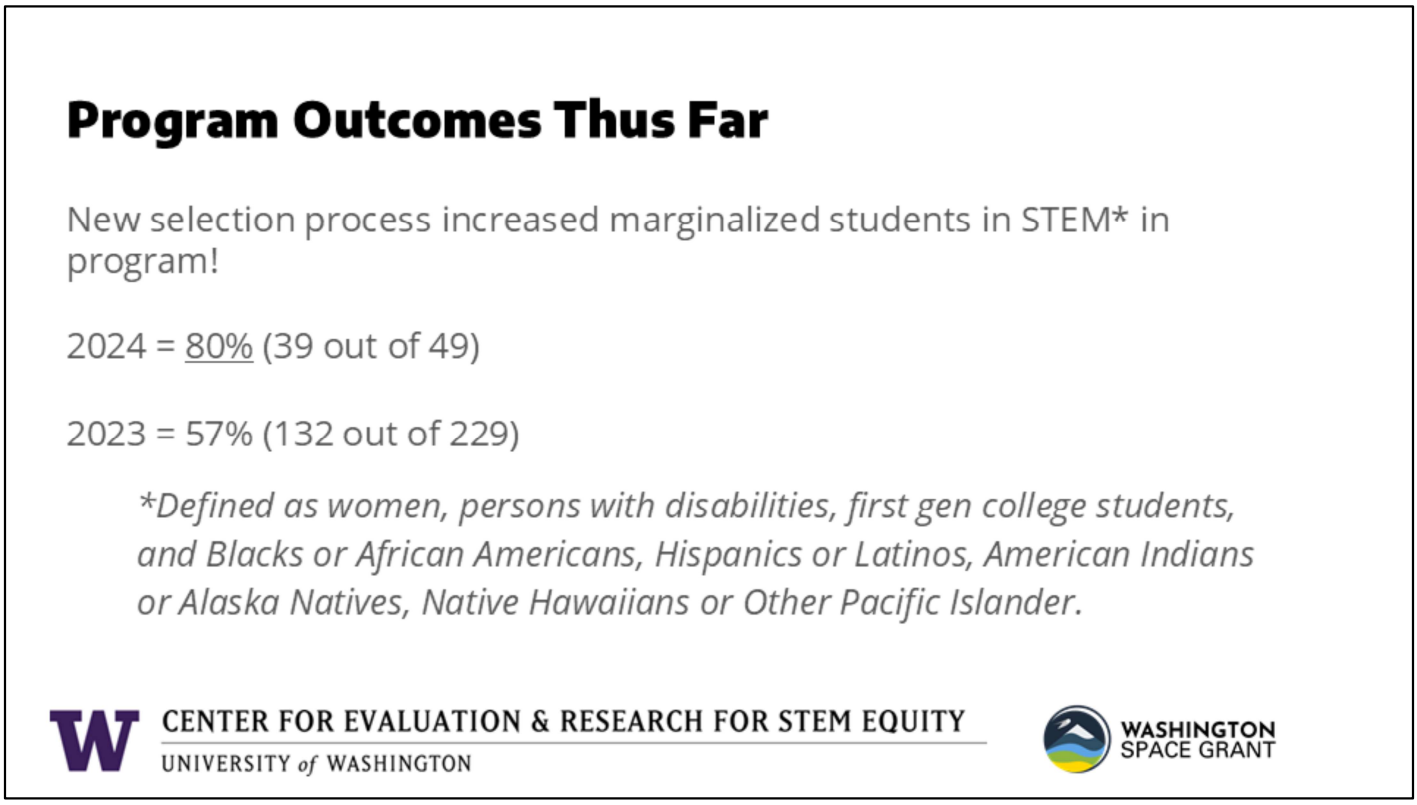
WA Space Grant increased the cohort feel to this program than in the past to build on community cultural wealth and networks. This includes planning events like bowling, shared meals with affinity groups, and career panels with professionals who share some aspect of their identity or background. A cohort model is important because most of the students were the only one or two new researchers at their lab. Being part of a cohort and participating in social events has helped them feel less isolated.

I like this picture because this student's mom and grandma attended the end of program poster session. WA Space Grant staff know their students are not pursuing their education alone. They typically have a lot of social support from their friends and family to help them be successful. The WA Space Grant program leaders always tell students their family members are welcome guests and that they are a part of the Space Grant community as well.



WA Space Grant provides multiple layers of inclusive practices. In addition to the social and professional development events just mentioned, Space Grant also provides institutional navigational skills in the professional development sessions. They are also proactive in providing resources. For example, participants presented at a poster session. Space Grant provided the poster printing services and connected students to a career closet to minimize barriers to participation. Space Grant set a culture of clear expectations and shared information about resources and support upfront for EVERYONE in order to normalize and destigmatize accessing support resources. Building off what was established, the student engagement experience improved to allow students to meet twice/week as a large group and small groups. In addition, various community building activities were arranged outside of the program to build a network for the students.

We also have worked to improve faculty onboarding and engagement. This went from a financial transaction to obtaining faculty buy-in to support students in their research experience. Space Grant has incorporated intentional onboarding for faculty to feel supported in strengthening the research experience for students. This upcoming summer (2025), the Space Grant team will invite faculty and selected summer research students to meet and engage with their assigned faculty earlier and begin establishing a rapport before working together.



The new WA Space Grant selection process that prioritizes motivation rather than prior access to STEM learning resulted in stronger participation of underrepresented minority students in the program. The typical selection criteria focus on students' prior experiences, which is more of a measurement of student access to STEM learning and not a measurement of their STEM skills and potential.

But it's not just about recruiting and selecting students, it's about their experience and retention, too.

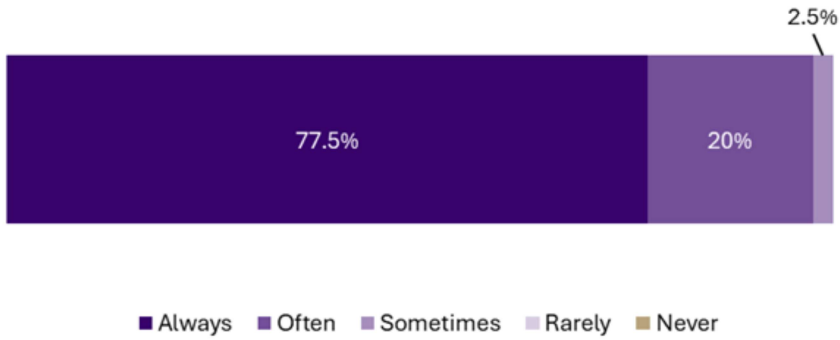
Rubric evaluative components

- Excellent: Articulates clear and compelling motivations for pursuing a STEM degree
- Satisfactory: Presents motivation for pursuing a STEM degree, but the explanation may lack depth or clarity
- Needs Improvement: Offers vague or unclear motivations

Program Outcomes Thus Far

Space Grant aims to create an environment that supports diversity, and is striving to make STEM fields more accessible to underrepresented groups of students by actively working to remove historical barriers (e.g. stipend funding, networking, professional development, intentional mentorship).

Do you feel SURP [Summer Undergraduate Research Program] is consistently creating an inclusive environment?



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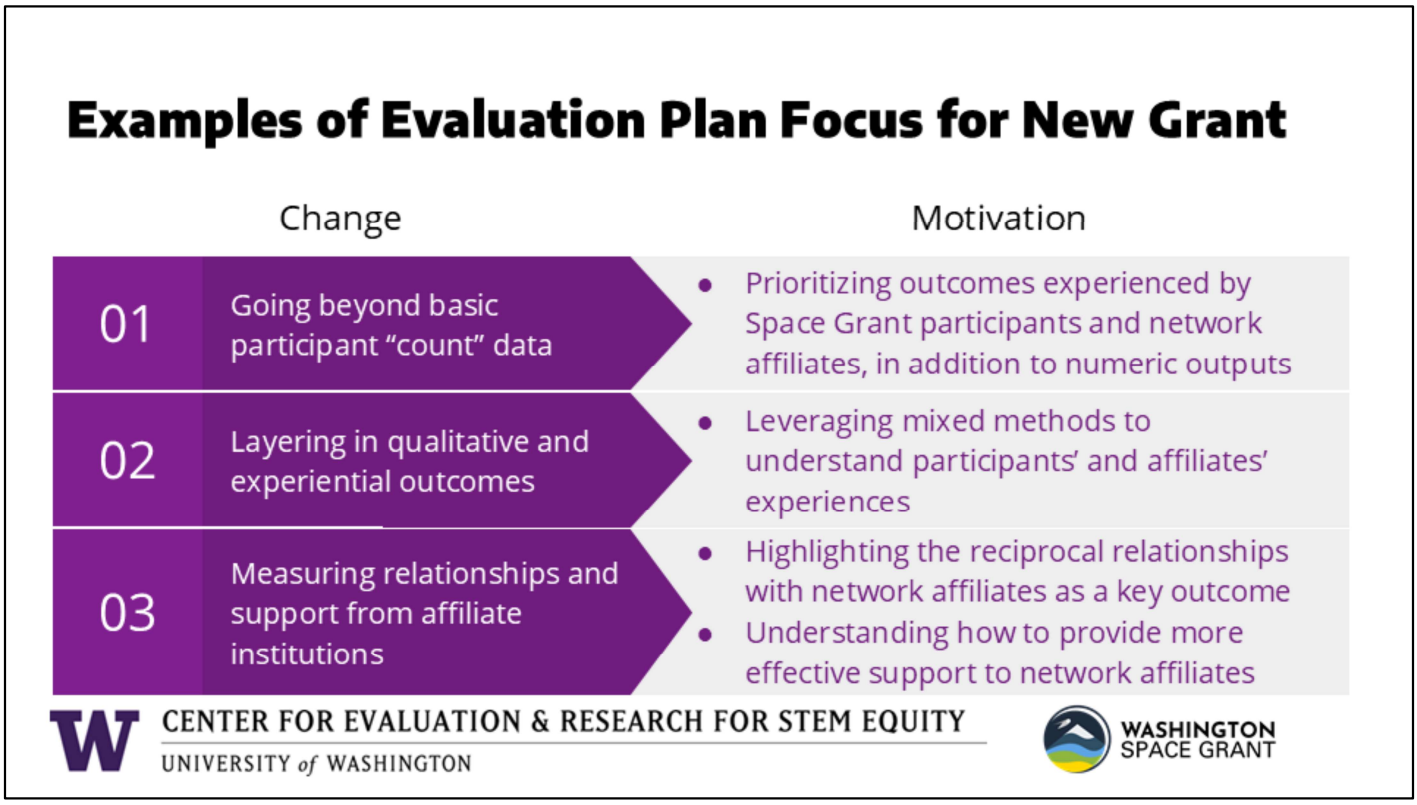
Space Grant conducted an exit survey at the end of the summer program and the results show that the vast majority of participants believe that Space Grant always or often aims to create an inclusive environment. This suggests that the program is creating supportive spaces for most students.



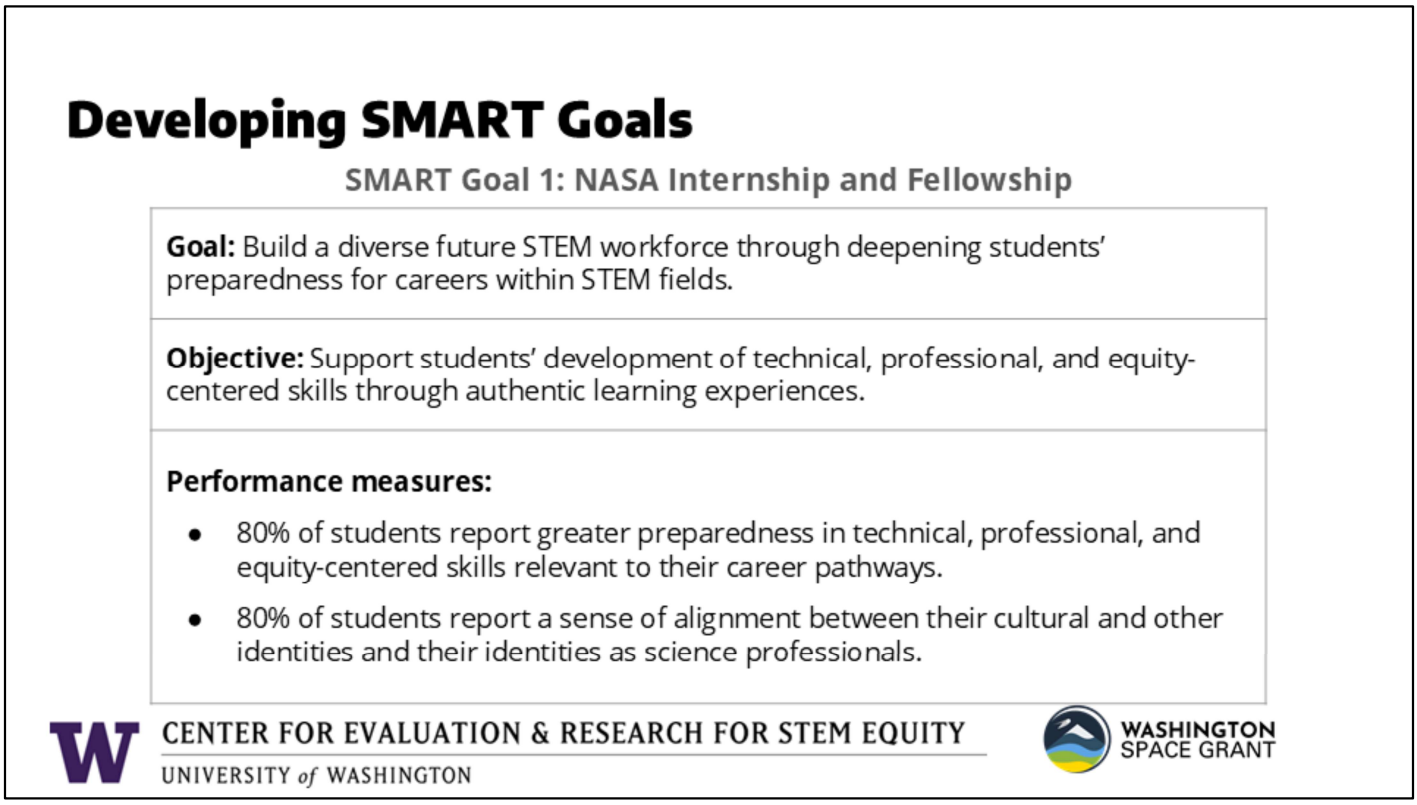
In addition to these programmatic changes, the new grant solicitation created an opportunity for Space Grant to develop more intentional and focused evaluation strategies that are aligned with the program's priorities and can help the program progress toward its goals and target outcomes.

Going beyond counts is important for understanding and demonstrating program impacts. The new grant has performance measures that focus on: students' development of technical, professional, and equity centered skills, alignment between their cultural and science identities, their sense of belonging, their understanding of STEM career pathways. It also measures affiliates' connections to the overall project goals by setting learning objectives that are equitable and specific and measuring and reporting on these objectives. These are described in more detail in the next slides, which provide an overview of the SMART goals in the new grant proposal.

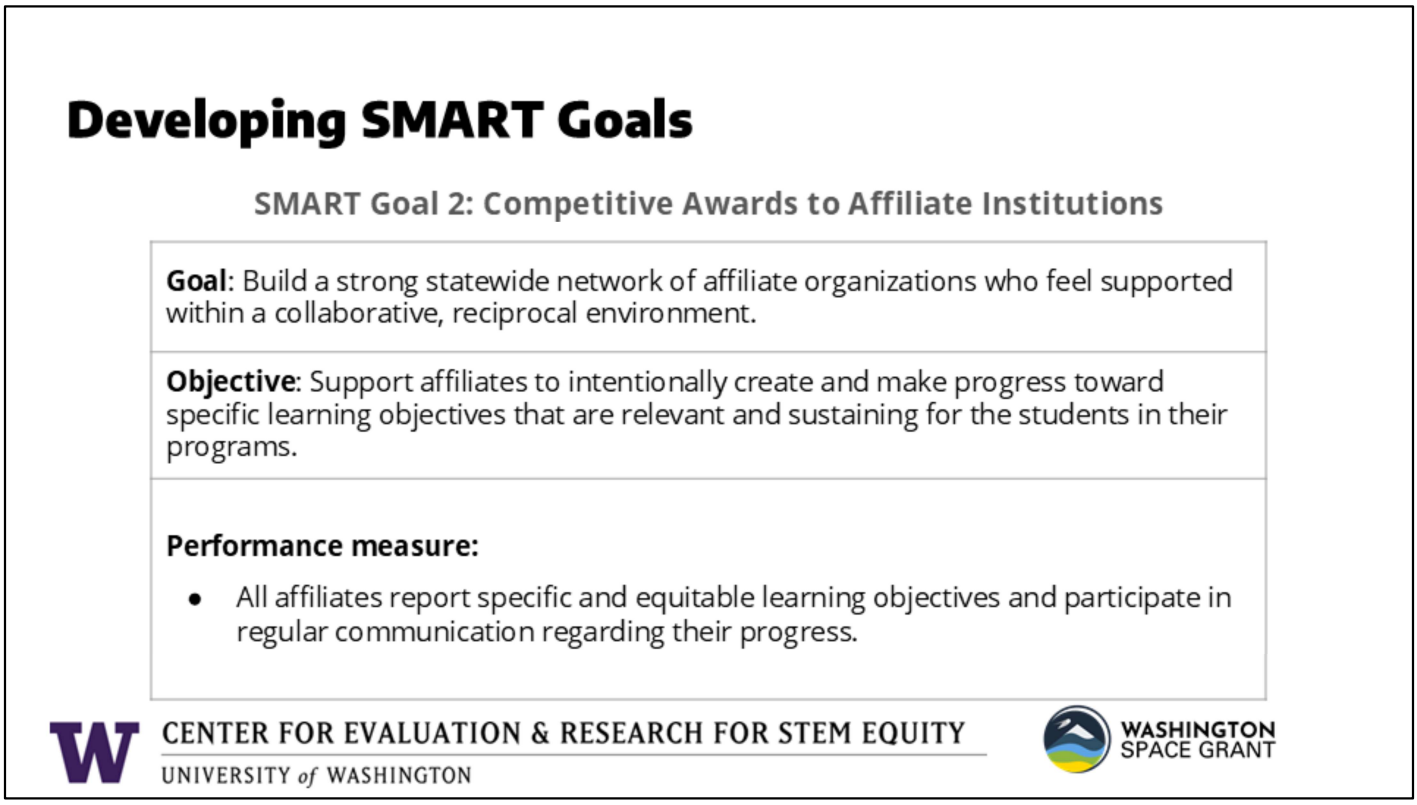
To measure these outcomes, the evaluation approach will include gathering and analyzing qualitative data to better understand student experiences. Qualitative data, such as interviews, focus groups, and observations, can provide more holistic understanding of participants' experiences.

In addition, the program team plans to conduct site visits of affiliate institutions in order to build the relationships among network affiliates. Site visits will build working relationships and manage subaward progress. Site visits prioritize institutions outside of the metropolitan areas, such as Central and Eastern Washington. Visits will also

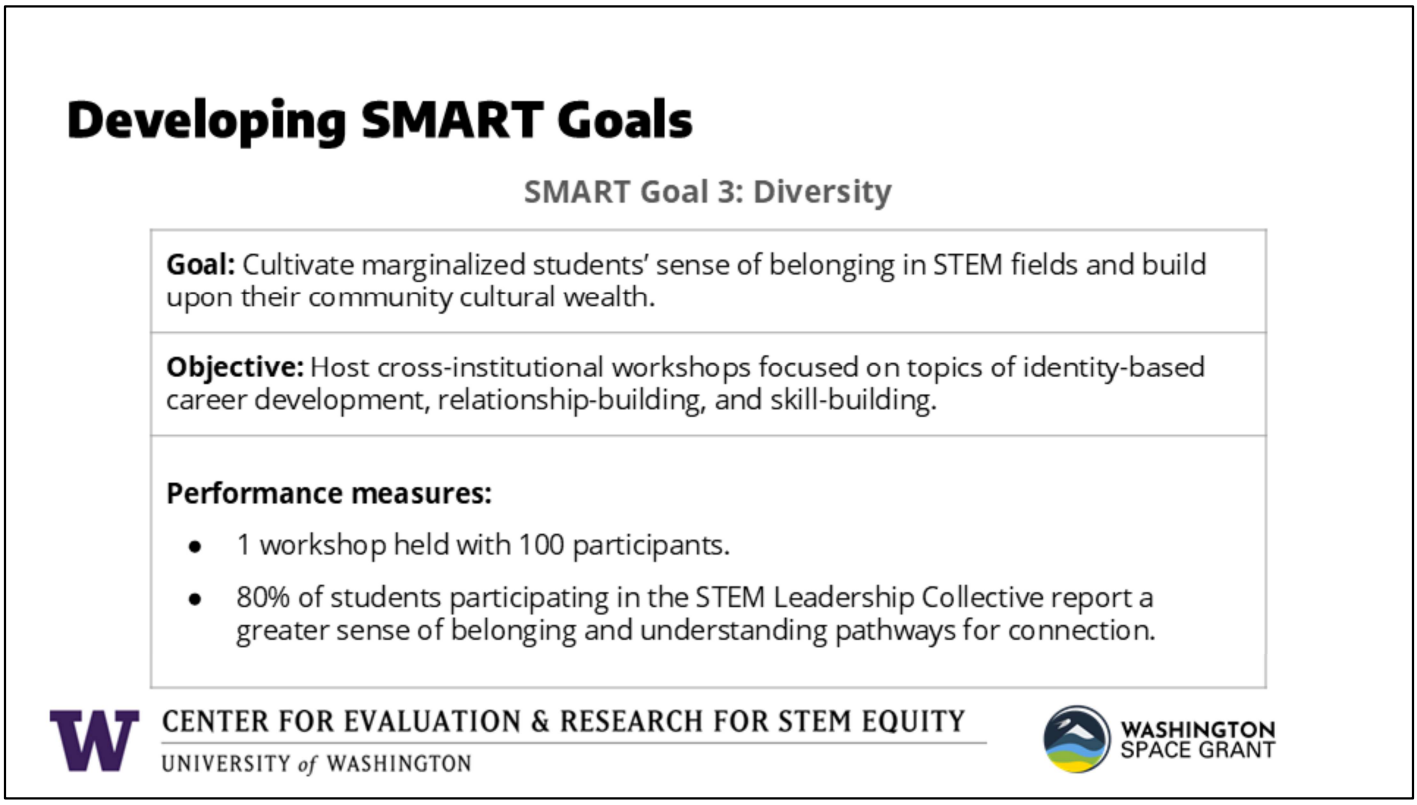
prioritize tribal partners. Conducting on-site evaluations will facilitate the exchange of best practices and strengthen collaboration around the unique contexts of each affiliate's local needs. A higher level of commitment in staff time and travel resources is required to establish meaningful affiliate relationships with populations over a large area.



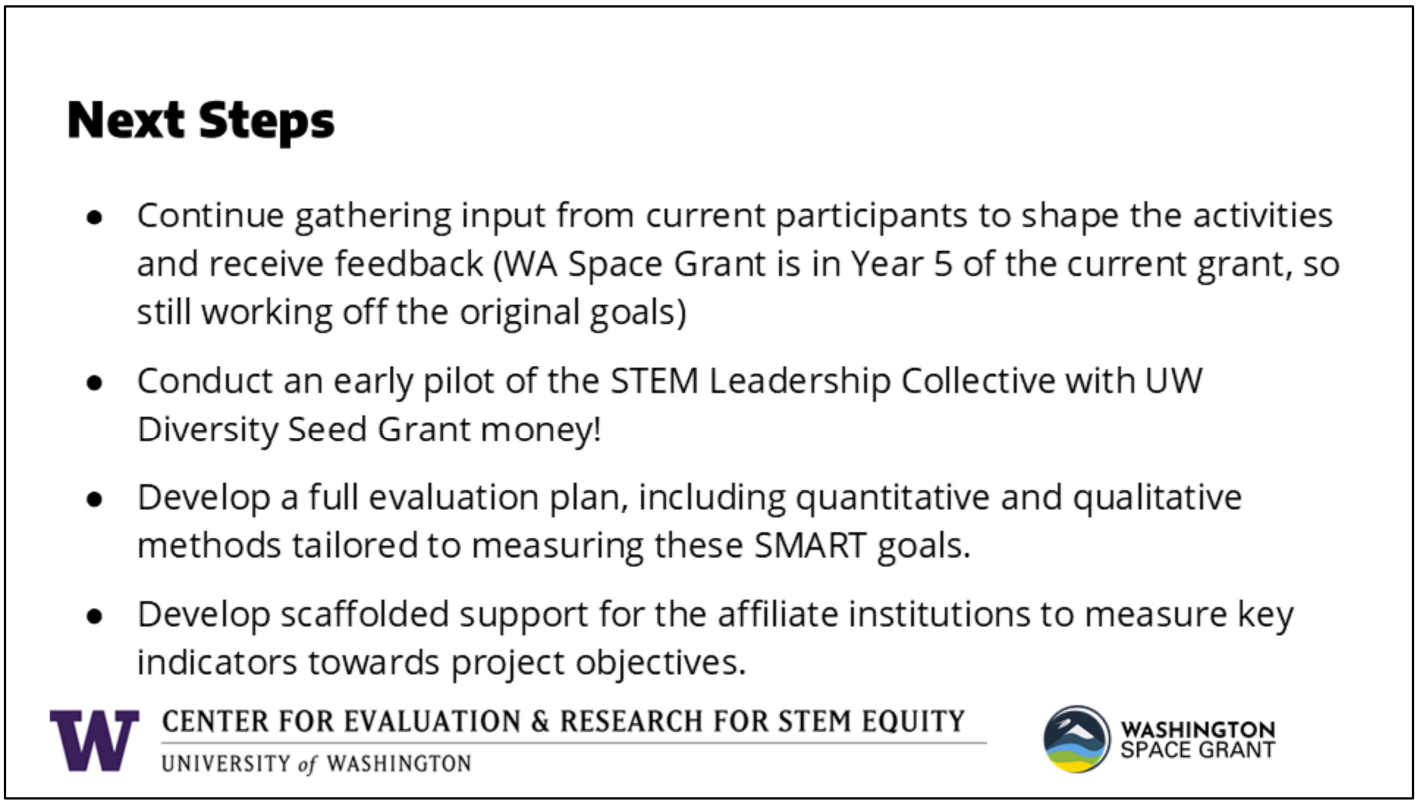
The WA Space Grant goals align with NASA requirements, as you'll see over the next three slides. Here, in order to measure preparedness, we have to measure skills growth in three key areas that the program is focusing on. This grant also has a stronger focus than in the past on engaging diverse populations and trying to make sure that those participants can feel aligned in their cultural identity and their growing identities as scientists. STEM identity is a key concept for persistence in the field, and students from marginalized communities often experience dissonance between their community values and the values embedded in STEM fields. We hope to help students reflect upon and critically engage with these issues.



Space Grant has also identified that current relationships with affiliated institutions and among members are mostly transactional in nature. This presents an opportunity to enhance resource sharing and operate more effectively as a consortium, where all affiliates view each other as peers. Currently, while each affiliate performs its work exceptionally well, there's a sense of disconnect—many are unaware of what others are doing and don't fully feel part of a larger, unified organization. It's important to emphasize that Space Grant is not just a funding source; it is a partnership. The program uses a competitive subaward structure that allows institutions to choose a mission directorate aligned project to implement at their school which makes the projects fit better within their cultural context and will hopefully be more interesting and engaging to participants. In later years of the project, the WA Space Grant team will engage in site visits with a portion of the affiliate institutions to continue to build the relationship and support their work and their communication about progress. Creating closer ties between "space grant HQ" and affiliates should help ensure alignment and engender a feeling of community within the WA space grant.



This third SMART Goal relates especially to the one-day STEM Leadership Collective, but itl is also relevant to the other Space Grant activities. We want all the activities to build students' sense of belonging within STEM and to help students recognize the value of their own existing community cultural wealth. We also expect this Leadership Collective to create new relationships among students, which they can then leverage for support later in their career pathways.



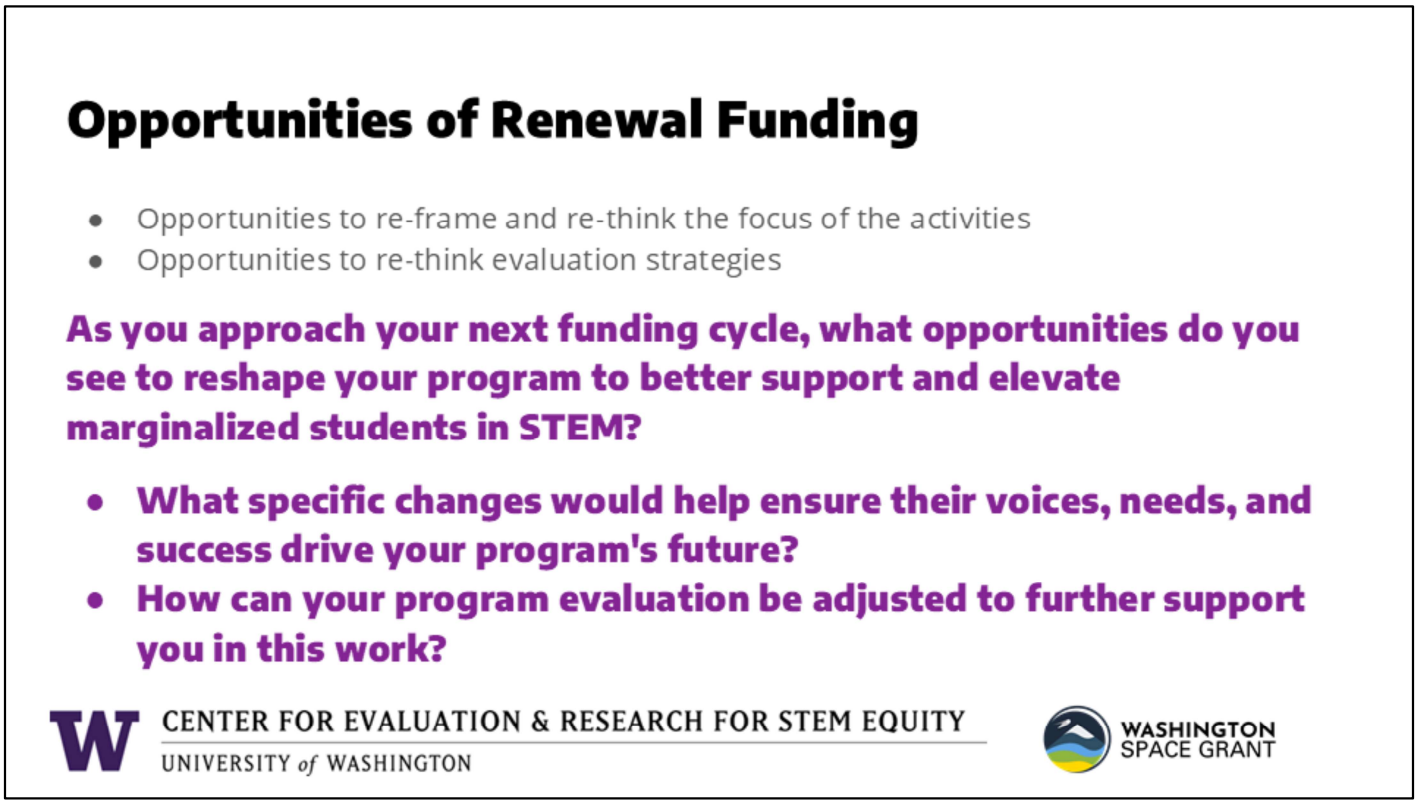
In terms of next steps, WA Space Grant is still finishing out Year 5 of the current grant, and some of the work right now will be to put things into place to ensure the new grant is successful.

WA Space Grant will continue gathering the data they've already been collecting, and gather feedback from participants to understand how best to support them moving forward.

WA Space Grant also recently found out that they were awarded a Seed Grant from UW to pilot the STEM Leadership Collective, so they are looking forward to this fun activity for this year.

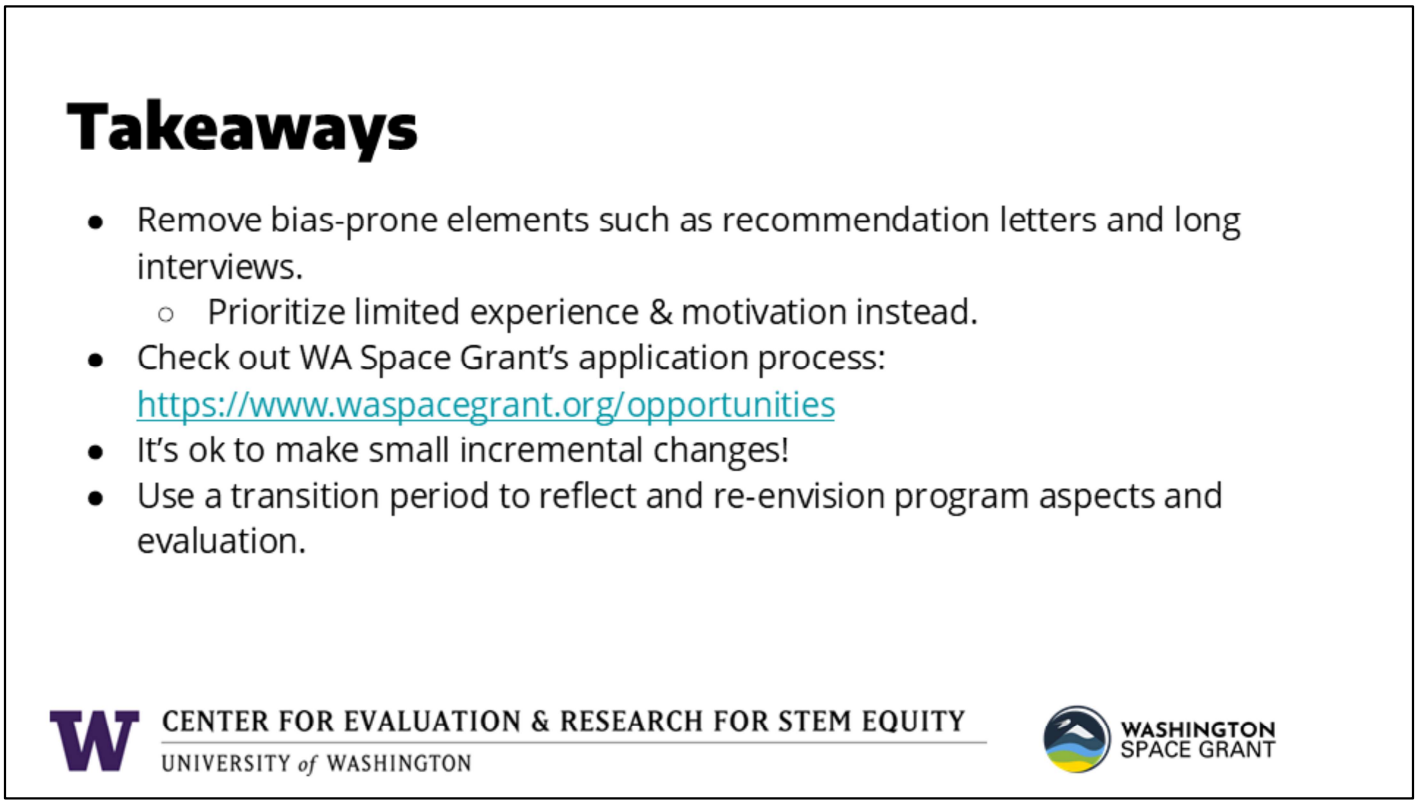
And there will be lots of work to develop a full-featured evaluation plan using the NASA guidelines, which is a many paged document with very specific instructions for what they want to see in an evaluation plan.

We also think that it will be important to provided scaffolded evaluation supports for affiliate institutions in the new grant so that they can appropriately measure their defined learning objectives. The evaluation team will focus on creating support including best practices for surveys, a template of survey questions depending on the concepts and learning objectives, and more.



As we've described, we are using this grant renewal opportunity to make a new connection on our campus (Space Grant + CERSE), and to think more deeply about the intentions for the program, areas to improve, and outcomes we are trying to achieve.

We know this was a deep dive into WA Space Grant, but we want to leave some time (15-20 minutes of 40 minutes) for discussion and reflection on opportunities that audience members may have going forward to re-think their programs and the evaluation of their program activities. We hope that audience members can both learn from us and from each other in this discussion.



We've discussed many features of our program and evaluation and would like to highlight some of the potential takeaways. First, while not application process is perfect, there are ways to minimize bias - for example, removing elements like recommendation letters and long interviews and instead prioritizing motivated students with less experience. The link to the application process is included on the slides for you to review if you would like more details. Another takeaway is that it's okay to make small changes and continue to iterate over time! We only have so much bandwidth and if the resources aren't there to overhaul all the components that need improvement all at once, change can ultimately be more successful if we take on a few or even one doable component at a time. Transition periods can be hard, but they are also opportunities for reflection and positive growth.

In the second bullet, the process is linked to the WA Space Grant Opportunities page. The application process is only public during the application cycle, which typically opens in December or January.

Thank you!

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Thank you! Please feel free to reach out to us with any questions or comments.