

CONFERENCE REPORT: 2025 INNOVATIONS IN TWO-YEAR COLLEGE STEM EDUCATION (ITYC) SUMMIT

Executive Summary

The highly successful 2025 Innovations in Two-Year College STEM Education (ITYC) Summit provided participants the opportunity to learn about the range of projects supported by NSF's ITYC program, increase their understanding of NSF's programs supporting two-year colleges (2YCs), discuss challenges and opportunities in leading projects at 2YCs, gain insights for developing future NSF proposals, and build connections across the ITYC community. This inaugural event was held July 29-31, 2025, in Alexandria, VA. The Summit brought together 108 participants representing 50 funded projects, including awardees/PIs, prospective PIs, NSF program officers, and other stakeholders.

The Summit engaged participants in multiple sessions designed to help them get to know each other, share expertise, discuss common challenges and solutions, and begin to form a community of practice (Lave & Wenger, 1991) focused around strengthening STEM education at 2YCs. The Summit included the following:

- Micro-poster sessions: Each ITYC PI/project team was asked to put together a micro-poster ahead of time used during the Summit to help spark conversations in two rounds of small-group table discussions.
- Project-based topical sessions: Throughout the Summit, participants had opportunities to interact with colleagues in a variety of sessions designed so they could work collaboratively and creatively to address topics related to their projects and/or grant management.
- Engagement with NSF Program Officers: NSF Program Officers were integrated throughout the program as speakers, participants, and observers. Individuals and teams were also able to schedule consultations with a Program Officer.
- Leadership, sustainability, and future possibilities: These three sessions were designed to help participants consider dynamic leadership approaches, explore models of sustaining their work long-term, and reflect on what aspects of their Summit experience they would want to share, how, and with whom.
- Post-summit webinars and new ITYC awardee program: A series of four webinars was held as a follow-on experience for Summit participants as well as other team members who were not able to attend the Summit. These webinars included an additional Micro-poster session and panel sessions focused on 2YC Grants Officers and Faculty: Working Together Effectively; Advice for New and Future PIs; and Designing and Implementing a Strong Evaluation Plan: Examples from ITYC Projects. Inspired by the Summit, a virtual program for new ITYC awardees was offered in 2026 and is described in a separate report (Zuber et al., 2026).

The success of the Summit was made clear by the participant responses to daily roadchecks and an end-of-workshop (EOW) evaluation. The satisfaction responses on each of these instruments were above 9 (on a scale from 1-10 where 10 is very satisfied). Participants strongly agreed that all the Summit goals were met and the event was well planned and facilitated. Likewise, webinar participants were asked to complete a short evaluation and they were very satisfied with all four webinars (rating of 9 or greater for each). Overall, participants identified the most valuable aspects of the Summit as learning about the

range of projects under way, the event’s interactive activities, exchanging ideas and solutions to common challenges, the direct access to NSF program officers, and the opportunity to build connections across the ITYC community.

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“This has been the best, most organized, meaningful, and supportive summit (conference/workshop) that I have ever attended. I hope this summit is an annual occurrence.”

1. Introduction

In July 2025, the inaugural “Innovations in Two-Year College STEM Education (ITYC) Summit” brought together awardees and prospective PIs from across the ITYC program and country. The Summit aimed to highlight the range of ITYC projects, share challenges and opportunities in leading projects at 2YCs, increase awareness of National Science Foundation (NSF) program opportunities for two-year colleges (2YCs), provide insights for developing NSF proposals, and build a national network of 2YC STEM leaders equipped to collaborate, innovate, and transform STEM education at 2YCs. An overall goal was to disseminate Summit highlights and recommendations that emerged from the collaborations across the three-day Summit and the follow-up webinars. The Summit program design reflected a deliberate progression from community building to collective inquiry to forward-looking action.

In her welcoming remarks, Dr. Kalyn Owens, Lead Program Director for the Innovation in Two-Year College STEM Education program at NSF, shared that “ITYC came about to fill a critical funding need for two-year colleges. It is really your work, all your projects that are laying the Foundation for the portfolio that is now just developing. We hope you have conversations that last well into the future and that these conversations will lead to bold new initiatives.

The ITYC program supports NSF’s commitment to the more than 1,000 2YCs in the U.S., recognizing that many undergraduates — including nearly half of those earning science & engineering bachelor’s degrees — begin at community colleges (AACC, 2026 a,b). The ITYC program’s twin goals are: (1) to center students’ success in STEM foundational courses and pathways, and (2) to build the capacity of 2YCs — their

faculty, staff, and programs — to offer innovative, evidence-based, and broad-reaching STEM education.

This inaugural “Summit on Innovations in Two-Year College STEM Education” was convened in Alexandria, Virginia, on July 29–31, 2025. The Summit PIs were Eric M. D. Baer (Highline Community College), Ellen Iverson (Science Education Resource Center, Carleton College), and Heather Macdonald (William & Mary). The Summit was designed to celebrate recipients of the ITYC program awards; it brought together 108 participants, including awardees/Pis, prospective PIs, and relevant stakeholders, to exchange knowledge, share the challenges and successes of their projects, and explore opportunities for future collaboration. Broader objectives of the Summit were to deepen the engagement of 2YCs with the NSF and to build the capacity of 2YC faculty to serve as principal investigators on NSF-funded projects.

Over the three days of the Summit, the sessions were designed to move conversations from learning about the range of ITYC projects to sharing strategies for innovation in 2YC STEM education and exploring NSF opportunities for 2YCs, then looking to the future.

2. Participants

The Summit brought together awardees from across the ITC program to share projects, learn from one another, and build a community of investigators aligned with ITC goals. It celebrated the accomplishments of the inaugural ITC awardees and strengthened the capacity of prospective 2YC Principal Investigators. The integration of NSF program officers throughout the program as speakers, participants/observers, and for individual consultations contributed to the success of the Summit.

Participant invitation

We invited three categories of people to the Summit; (1) the PI or PI-designate from each of the awards made through ITC, including SEA-PHAGES, and through PD 21-7980, the precursor program to ITC, as well as one additional person the PI recommended from their project (e.g., co-PI, evaluator, other senior personnel), (2) prospective PIs (based on recommendations from the PI or from a disciplinary society representative), and (3) other relevant stakeholders. A total of 64 funded projects, 31 prospective PIs, and 12 other stakeholders received an invitation to participate. NSF personnel were also invited

Participants by the numbers

Attending the Summit were 108 participants, including 76 ITC PIs and other senior personnel from 50 funded projects, 23 prospective PIs, and 9 relevant stakeholders. Participants represented 63 2YCs and 18 disciplines: Art, Biology, Chemistry, Computer Science, Data Science, Economics, Education, Engineering, ESL, Geography, Geoscience, Mathematics, Meteorology, Physics, Political Science, Psychology, Speech, and Social Science. In addition, three 2YC college grants officers attended, along with seven members of the ITC Summit organizing team. Participants received full support for travel, meals, and lodging.

Leadership Team

The Summit conveners were Eric M. D. Baer (Highline Community College), Ellen Iverson (Director of Science Education Resource Center, Carleton College), and Heather Macdonald (William & Mary, emerita). The leadership team included Holly Kelchner, John McDaris, and Amy Collette from SERC, and consultant Sharon Zuber (William & Mary, emerita).

3. The Summit Program

The Summit program was intentionally designed to provide an engaging, interactive, and productive in-person event that celebrated the participants' accomplishments and incorporated their experience and expertise. The program leaders used a variety of interactive sessions that provided opportunities for community building and network development, including birds-of-a-feather gatherings and other participant-driven conversations. Through structured participant feedback, via online confidential roadchecks administered at the close of each day, and multiple opportunities for participant individual and collective reflection, the leaders were able to respond to participant comments and concerns in real time.

The Summit's goals were to:

1. Share ITC awardees' expertise and experience about their ITC projects
2. Discuss solutions to challenges and explore opportunities in leading funded projects
3. Increase awareness of NSF program opportunities for 2YCs
4. Provide guidance and support for prospective awardees
5. Foster networking and community-building across ITC awardees, prospective PIs, and NSF

The Summit program followed a deliberate arc from community building to collective inquiry to forward-looking action as suggested by the daily titles in the following figure.

Day 1 Community Building & Learning about ITYC Projects <ul style="list-style-type: none"> • Welcome & Introductions • Celebrate ITYC Projects: Share & Learn • Working Dinner: Food for Thought 	Day 2 Strategies for Innovation; NSF Opportunities for TYCs <ul style="list-style-type: none"> • <i>Birds-of-a-feather discussions</i> • ITYC in Action: Sharing Innovations • Working Groups: What Works • Working Lunch: Leadership • NSF Opportunities for TYCs: ITYC & Beyond • Working Together <ul style="list-style-type: none"> ◦ Community Conversations: ◦ From Concept to Funding: Shaping STEM Education Ideas for Submission to NSF • Closing Session • <i>Dinner at Hilton</i> 	Day 3 Looking to the Future <ul style="list-style-type: none"> • <i>Birds-of-a-feather discussions</i> • Opening Session with Panel on Sustainability & Scaling-Up • Grant Management: Wouldn't it be great if...? • Closing Session: Future Possibilities & Next Steps
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The first afternoon and evening emphasized relationship-building and provided participants with opportunities to learn about one another's projects, thereby laying a foundation for a shared understanding. The second day, held at NSF, centered on the exchange of ideas around issues of critical importance to TYCs, while also situating these discussions within the broader context of NSF goals and programs. The final half-day sessions provided an opportunity for participants to turn their attention to the future, focusing on strategies for effective grant management, sustainability of funded initiatives, and disseminating insights about the ITYC program and ITYC opportunities.

In addition to the structured program, participants were given opportunities for individual or project-level consultations with ITYC program officers. To extend the impact of the Summit beyond the in-person convening, a series of four post-Summit webinars provided time to continue the dialogue, facilitated the dissemination of outcomes, and further strengthened engagement with the ITYC program.

4. Summit Program Details

The following table provides a snapshot of the sessions and activities held over the three-day Summit. The Summit offered live, real-time captioning for all the sessions.

Day 1: Community Building & Learning about Awardees' ITYC Projects
Pre-conference meetings with NSF Program Officers and Registration
Opening Session: Welcome by conveners & NSF leaders; norms, expectations, goals; whole group guided ice-breaker; Summit overview. Bring your sense of curiosity!
Celebrate ITYC Projects: Share & Learn Micro-poster sessions at tables to share and learn about the range of ITYC projects [Break]
Working Dinner: Food for Thought Guided discussions about ITYC projects; reflections, questions, next-day plans; daily roadcheck
Day 2: Strategies for Innovation; NSF opportunities for TYCs
Shuttle or walk to NSF Headquarters, Informal Birds-of-a-Feather Conversations, Meetings with NSF Program Officers
Opening Session: ITYC Program Goals and Your Projects Micro-poster sessions to continue sharing and learning about ITYC projects
Working Groups: What Works Participants engage in small group discussions related to several topics of interest to ITYC. Working group topics include: supporting students in our programs, undergraduate research, students' professional pathways, emerging technologies, faculty professional development, cultural change, and education research. [Break]
Working Lunch with Dr. Becky Wai-Ling Packard, Mount Holyoke College - Dynamic Leadership: Navigating Complex Collaborations [Break]
NSF Opportunities for TYCs: ITYC and Beyond Session led by Kalyn Owens (ITYC: IUOE) with Jennifer Lewis (IUOE:EDU), Mary Crowe (ExLENT), & Tom Kim (S-STEM) [Break]
Working Together Option A: Community Conversations: Strategies for effective collaborations and partnerships with other offices on your campus, other TYCs, 4YCs, evaluators, and others. Option B: From Concept to Funding: Shaping STEM Education Ideas for Submission to NSF - This interactive session was led by NSF Program Directors Kalyn Owens, Chris Delahanty, & Olivia Long
Closing Session - reflections, next steps, daily roadcheck
Dinner at the hotel - Unconference: networking, games, puzzles, cards, conversation
Day 3: Looking to the Future
Informal Birds-of-a-Feather discussions during breakfast
Opening Session: Panel on scaling-up and sustainability
NSF Grant Management: Wouldn't it be great if...? Share challenges, strategies, discuss lessons learned, and make recommendations [Break]
Closing Session: Future Possibilities and Next Steps: New project ideas; ITYC ambassadors; reflections & recommendations; webinars, Summit evaluation
Pick up box lunches

Program Highlights

The Summit offered opportunities for participants to share details about their projects, discuss topics of interest related to innovations in STEM education in 2YC's, and connect with colleagues from other 2YC's, sharing challenges and strategies, and building relationships. This section highlights four types of key sessions and activities that helped inform and inspire participants as they considered ways to advance their work.

1. Micro-poster sessions
2. Project-based topical discussions
3. Engagement with NSF Program Officers
4. Leadership, sustainability, and future possibilities

"I really enjoyed the conversations and interactions the most - the way we were brought together during each session enabled a lot of brainstorming and problem-solving that I think is essential for this kind of work. Sharing the microposters was a highlight and the ability to hear directly from NSF program officers about opportunities was great and inspired new ideas."

1. Micro-poster sessions

In preparation for the Summit, each PI/project team representing an NSF-sponsored ITYC project was asked to put together a simple micro-poster to help spark small-group table conversations. They were provided a template and guidance for the kind of information to include (see figures below and <https://serc.carleton.edu/312830>). This adaptation of a traditional conference poster session gave participants with posters an opportunity to articulate key elements of their project. The posters were available on a password-protected Summit website, and poster authors received multiple copies of their 8.5"x11" poster in their registration folders. To learn more about the guiding principles of this type of poster, watch "[a Better Poster](#)" by Mike Morrison (Morrison, 2019).

These are the prompts for the poster sections:

- Share one sentence about a **big idea**, a key question, or an important takeaway
- **Goals/Objectives** - What are you trying to accomplish?
- **Activities** - What are the project activities you want to highlight? Include figures, graphics, or images as you wish.
- **Results and/or Other Details** - What 1-2 results do you have or anticipate getting, and/or other information you'd like to share; figure, graphic, background, etc.
- **Challenge Areas** - What challenges are you encountering or have overcome (and how)?

The bottom of the poster included the project title, award number, names of the people on the project, and how to find more information about the project by linking to a QR Code, a website, or providing email addresses.

Share one sentence about a big idea, a key question, or an important takeaway.

Goals/Objectives <small>[What are you trying to accomplish?]</small>	Results and/or Other Details <small>[What 1-2 results do you have or anticipate getting and/or other information you'd like to share – figure, graphic, background, etc.]</small>
Activities <small>[What are project activities you want to highlight? Include figures, graphics, or images as you wish.]</small>	Challenge Areas <small>[What challenges are you encountering or have overcome (and how)?]</small>

Project Title
Name 1*, Name 2, Name 3 (*ITYC participants names in bold)
 Affiliation(s)

[Make it easy for people to follow up by adding a QR code, your email(s), and/or a website link.]

QR Code

Template as a PowerPoint slide

Our virtual workshop supporting 2YC faculty in developing & writing NSF proposals increased participants' expertise, confidence, & submissions.

Goals/Objectives <ul style="list-style-type: none"> Build capacity in the 2YC community to support & mentor 2YC geoscience & other STEM faculty to develop, write, & submit NSF proposals. Build a community within the workshop. Potential to transform geoscience education! 	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <i>"This workshop helped me to do what I always wanted but thought was impossible."</i> </div> <p>Helpfulness of workshop elements on a scale from 1-4 where 4 = extremely helpful</p> <ul style="list-style-type: none"> Week-long workshop in July 4.0 Other workshop elements highly rated. <p>Self-reported confidence in ability to develop and write NSF proposals increased from 4.6 to 8.1 from beginning to end of program.</p> <p>12 NSF proposals submitted!</p> <div style="text-align: center;"> </div> <p>Writing consultants support the writing process.</p>
Workshop Program <ul style="list-style-type: none"> Workshop Part 1 (June) - 2 days learning about NSF & exploring proposal ideas Workshop Part 2 (July) - 5 days including structured writing time & feedback <div style="border: 1px solid #0072bc; padding: 5px; margin-top: 5px;"> Part 2: Proposal development & writing </div> <div style="background-color: #fff9c4; padding: 2px; margin-bottom: 2px;">Day 1: What's at the heart of your proposal?</div> <div style="background-color: #fff9c4; padding: 2px; margin-bottom: 2px;">Day 2: Moving your project description forward</div> <div style="background-color: #fff9c4; padding: 2px; margin-bottom: 2px;">Day 3: Working towards success</div> <div style="background-color: #fff9c4; padding: 2px; margin-bottom: 2px;">Day 4: Getting details under control</div> <div style="background-color: #fff9c4; padding: 2px; margin-bottom: 2px;">Day 5: Sharing, feedback and next steps</div>	Challenge Areas <ul style="list-style-type: none"> Budget elements could be strengthened by earlier engagement with campus grants office. The 1-week workshop was intense for all – would change to 6 workshop days over 2 weeks.

Conference: A Virtual Workshop for Two-Year College Geoscience Faculty to Develop National Science Foundation Grant Proposals (NSF #2349758)
Rebecca Walker (Mt. San Antonio College), Eric Baer (Highline College), Laura Guertin (Penn State Brandywine), Heather Macdonald (William & Mary), Sean Tveitia (Suffolk County Community College) with Karen Layou (Reynolds Community College) and Sharon Zuber (William & Mary)

Check out the project website for more info

Micro-poster example

For the micro-poster session on Day 1, participants were at tables with five presenters and two other Summit participants. After handing out copies of their micro-poster, the presenters were each given 10 minutes to briefly talk about their project, then answer questions or field comments from the other participants. This activity, which was repeated after the opening on Day 2, provided all participants with an opportunity to learn about the range of NSF-funded projects, identify commonalities, explore other approaches to their work, and highlight opportunities for collaboration. These conversations helped strengthen connections among participants and fostered cross-pollination of ideas across the ITC program.

"Reading the micro-posters was a wonderfully efficient way to learn about dozens of ongoing projects."

2. Project-Based Topical Discussions

Throughout the Summit, participants had opportunities to interact with colleagues in a variety of session formats designed so they could work collaboratively and creatively to address topics building from ITC awardee projects. These sessions were: (A) Working Groups: What Works; (B) Community Conversations; (C) NSF Grant Management: Wouldn't it be great if...?; and (D) Birds-of-a-Feather Conversations.

A. Working Groups: What Works

For this session on Day 2, participants were assigned to small groups based on preferences identified before the Summit on their registration form. Participants briefly introduced themselves, sharing in one sentence why they cared about their topic.

The participants were given two tasks: (1) to identify *what works*—effective practices, approaches, or strategies related to the group’s topic; and (2) to discuss *how success is measured*. Participants were asked to begin each task with brief individual reflections, jotting down their ideas, followed by group discussion and synthesis. Each table had a volunteer facilitator.

At the end of the session, each group made a poster summarizing their discussion, highlighting one or two key ideas about what works and two or three key measures of success. These posters (preserved in the password-protected workspace) were shared during an informal poster session as participants circulated to view other posters, read the work of groups they were not part of, and left comments on Post-It notes. This session focused on the strategies that worked for their topics, emphasizing practical solutions and measures of success.

Working group topics

Supporting students in our programs

- Instructional and co-curricular approaches
- Internships and experiential learning
- Mentoring and coaching of students
- Assessment of learning

Undergraduate research

- CUREs
- Summer UG research
- Engaging external partners in UG research
- UG research: General
- Institutionalizing undergraduate research

Pathways

- Workforce preparation & skill development
- 2YC-4YC transfer and partnerships
- 2YC-industry partnerships

Other

- Emerging fields and technologies
- Faculty professional development
- Changing departmental, institutional, or disciplinary culture
- Education research (2 groups)

B. Community Conversations: Strategies for Effective Collaborations and Partnerships

This concurrent session on Day 2 was designed to foster discussion about the range of partnerships and collaborations as part of ITC projects. Participants formed themselves into groups at twelve tables. Each table was given a poster-sized sheet of paper with one of the following questions and asked to share strategies used for that type of collaboration.

1. In what situations have you found it to be beneficial working with **other offices or units on your campus**?
2. What are effective strategies for getting your **administration** on board?
3. How to develop and sustain collaborations with **faculty at other 2YCs**?
4. What strategies for initiating **2YC-4YC collaborations** are important for long-term success?
5. What makes for a successful collaboration with **evaluators and/or education researchers**?
6. What are effective strategies for working with an **industry partner**?

The aim was to gather a range of perspectives (not trying for consensus), and to focus on what makes a successful collaboration or partnership, including effective strategies and benefits. A variation of the carousel method was used for the brainstorming table conversation: the first group added their ideas on stickies of one color, then posters were moved from table to table, where additional ideas were added on different color stickies. When the original poster came back to a table, the group read all the stickies

and identified the top three ideas. Each group then gave a short report on each question. A short poster tour followed. This session generated a range of ideas and strategies for building strong partnerships.

C. NSF Grant Management: Wouldn't it be great if...?

In this session on Day 3, participants chose one of three topics, each focused on a different stage of the grant process to discuss challenges and solutions:

1. **Pre-award** (proposal preparation and submission)
2. **During the award** (grant management and reporting)
3. **Next steps** (planning for the future after the award)

After selecting which topic they wanted to discuss, participants went into separate breakout rooms where they formed smaller groups for table discussions. They were asked to introduce themselves and then, individually, write 1-2 key challenges related to their topic on sticky notes. Next, the participants at each table organized the challenges on a large piece of poster paper, prioritizing 2-3 of the challenges to focus on. Each group then brainstormed solutions to the challenges they had identified and added them to the poster, allowing time to discuss and summarize the ideas as a group.

The final step was to bring their poster back to the main room for a session in which everyone could view all the other posters, add comments, and ask questions. One person from each group was asked to stay with the poster to explain the group's ideas. By brainstorming solutions and sharing them with the group, the session inspired practical approaches for addressing the challenges identified by participants.

D. Informal Birds-of-a-Feather Conversations (Optional)

These informal, participant-driven sessions provided opportunities beyond the structured Summit schedule for topic-specific discussions. Held first thing in the morning, before the scheduled sessions began, these discussions connected participants over shared interests with the potential for networking and possible new professional connections. Topics for Day 2, listed below, were identified by the Summit leaders based on responses from the participant registration form.

1. Recruiting faculty participants to ITC projects
2. Working in & with rural and remote areas and communities
3. Partnerships with K-12
4. Dissemination strategies and publication opportunities for your project
5. Getting writing done & supporting writers - Sharon Zuber, Writing Center Director
6. Fostering Communities of Practice / Communities of Transformation
7. 2YC grants officers & others interested in what they do
8. Planning grants & Conference grants
9. Department chairs, deans, Center Directors, other administrators

Day 3 topics were suggested by participants on an open sign-up sheet:

1. Badging/micro-credentials
2. Dual enrollment
3. Transfer + CTE collaboration
4. Community college S-STEM network (growing 2YC S-STEM grants & STEM pathways)
5. NSF funding for cybersecurity/cyber infrastructure (NSF-25-531)
6. Information about programs like Expand AI but for 2YC
7. Conference grants

One example of these informal discussions is the “*Getting Writing Done & Supporting Writers.*” Participants at the table briefly introduced themselves, then shared a metaphor for their writing process: building with Legos; a casserole; a roller coaster; and swimming upstream. These metaphors inspired sharing of strategies to help writers overcome obstacles - writing in chunks, using a reverse outline when revising, and the importance of getting feedback during the process of writing instead of waiting until a final draft. Participants valued the opportunity to connect with others with similar interests and appreciated the opportunity to learn about and share strategies.

3. Engagement with NSF Program Officers

The integration of NSF program officers throughout the program as speakers, participants/observers, and for individual or team consultations contributed to the success of the Summit.

- Participants could sign up for an individual or team meeting with an NSF program officer. These 15-minute meetings were held before the workshop, during non-scheduled time during the Summit, and in the hour after the end of the Summit. More than 30 meetings were held!
- On Day 1, NSF Program Officers Dr. Rosalyn Hobson Hargraves, Director of the Division of Undergraduate Education (DUE), and Dr. Kalyn Owens, program director in the Division of Undergraduate Education and Lead Program Director for the NSF ITYC Program, gave opening welcome presentations. On Day 2, Dr. James Moore, head of the Directorate for STEM Education at NSF, welcomed the group to the Summit and NSF headquarters.
- On Day 2, NSF program officers Kalyn Owens, Jennifer Lewis, Mary Crowe, and Tom Kim led a session titled *NSF Opportunities for 2YCs: ITYC and Beyond*. Following their presentations, which included information about various NSF programs, participants were divided into breakout groups for Q&A sessions; breakout topics were: S-STEM, ExLENT, and IUSE and IUSE:ITYC (in disciplinary groups: Biology; Engineering/Physics/Geosciences, Math/Chemistry, and Social Science/Evaluation).
- In one of the concurrent sessions on Day 2, participants could pre-register for From Concept to Funding: Shaping STEM Education Ideas for Submission to NSF. This interactive session, led by ITYC Program Directors Kalyn Owens and Chris Delahanty and NSF Program Director Olivia Long, was designed for prospective PIs and those with less NSF experience. The presenters guided attendees step-by-step through the process of developing an idea for an NSF proposal, demystifying the grant development process.

In his welcoming remarks, Dr. James Moore, Head of the Directorate for STEM Education at NSF, highlighted “the richness that students bring from community colleges,” emphasizing the significance of the moment when he told participants, “This [Summit] is the highest point. You are the inaugural group.” His remarks set a tone that was both celebratory and forward-looking, positioning the **Summit as a beginning**—one that affirmed the collective impact of the ITYC community and its potential to shape the future of STEM education at two-year colleges and beyond.

4. Leadership, sustainability, and closing reflections

This section gives a brief summary of three sessions that addressed the topics of leadership, sustainability, and closing reflections including future possibilities.

A. Working Lunch - Dynamic Leadership: Navigating Complex Collaborations

In this lunchtime session on Day 2, Dr. Becky Wai-Ling Packard, Mary E. Woolley Professor of Psychology and Education at Mount Holyoke College, offered perspectives from contrasting leadership models that

shed light on the dynamics (and frustrations) that sometimes emerge within higher education collaborations. Dr. Packard noted that leadership could take different forms - serving as a leader by role, aiming to lead from the middle, or simply leading by example. Then, participants discussed in small groups the challenges of collaborations and identified ways to positively shift the dynamics when facing leadership challenges.

B. Sustainability

On Day 3, a panel of three PIs shared their project management stories and addressed two questions: (1) How are you scaling up in your project (scaling up could be size, scope, or capacity)? and (2) What parts of your project are sustainable and could have lasting effects? The presentations were followed by a Q&A session. The panelists were:

- Christine O'Connor, SUNY College, *Collaborative Research: Supporting Innovation in Chemistry Teaching at Two-Year Colleges via Professional Development and Networking*.
- Heather Price, Seattle Community College, *Incorporating Civic Engagement in Undergraduate STEM: Working to Enable and Sustain Transformation*.
- Solomon Russell, El Camino College, *Support for Education and Employment in Data Science*.

Ideas for scaling up included faculty professional development, forming communities of practice around a specific topic, documenting project activities for use by other disciplines/institutions, and connecting with community partners. When considering sustainability, the panelists suggested putting resources on a stable website where they would be available in the future, connecting project activities to a local topic, and disseminating project outcomes through community and industry partners. This session was a good example of strategies for dissemination and transformation.

C. Closing Reflections including Future Possibilities

In the final session of the Summit, the leaders asked the participants to reflect on their Summit experience and respond to the following two questions. (1) What are one or two things coming out of the Summit that you want to share? Who would you share with and what would you share? and (2) What are ways to sustain this community/network into the future? The comments below are from comments made in the last session of the summit:

Examples of what participants plan to share:

- *The NSF staff, the program officers, have been so amazingly helpful and open to supporting us, so I would like to take that back to my institution.*
- *We would like to bring back some resources regarding leadership.*
- *I already emailed my academic Dean, and I'm going to present at the professional development day to share about these opportunities*
- *We got excited about . . . having a LinkedIn group for our projects to stay connected with the students who are going through our programs. We can keep in touch with them and what they're doing in the future.*
- *I'm full of the optimism and enthusiasm you shared with me.*

Examples of ways to sustain network/community

- *Another Summit-virtual or in-person.*
- *It was phenomenal to meet people from two-year colleges and to have these connections*

- *Offer regular open Zoom meetings around a specific topic? Webinars for birds-of-a-feather conversations to continue and showcase our projects.*
- *Organizing meetings for different cohorts: regional, by discipline, for people at similar timeframes in their grant process, and by topic (e.g., 2YC leadership).*

5. Post-Summit Webinars and New ITYC Awardee Program

The series of virtual webinars following the 2025 ITYC Summit were designed to continue the community-building begun at the in-person Summit and explore issues related to the ITYC program and Summit. For each hour-long webinar, participants registered in advance and submitted questions about the webinar topic that were used to focus the presentations. The first webinar focused on the micro-posters presented during the Summit. The other three webinars were open to anyone. Each webinar was followed by a daily roadcheck survey. Following the Summit, a six-session virtual program for awardees who received ITYC grants in 2025 was offered in 2026 and is described in a separate report (Zuber et al., 2026).

The first webinar was made available only to those who were at the Summit. The latter webinars were open to all, but were primarily advertised to Summit participants through an email listserve.

Webinars

- Webinar 1: Micro-poster session (September 12) **39 participants**
- Webinar 2: 2YC Grants Officers and Faculty: Working Together Effectively, (September 26) **34 participants**
- Webinar 3: Advice for New and Future PIs (October 10), **62 participants**
- Webinar 4: Designing and Implementing a Strong Evaluation Plan: Examples from ITYC Projects (October 24), **54 participants**

1. September 12 – Micro-poster Session

Many of the Summit participants requested more time to talk about project posters and exchange ideas. Thus this first webinar, open exclusively to Summit attendees, provided participants with an opportunity to learn about a broader range of projects than was possible during the in-person Summit. Modeled after the Day One micro-poster session at the Summit, each presenter had 10 minutes to describe their project, respond to questions, and receive feedback. Most of the webinar time was spent in small groups discussing micro-posters organized by the following topics: undergraduate research, evaluation activities and results, student pathways, and faculty professional development.

Participant comments from the Daily Roadcheck:

- *[We] considered different ways of motivating faculty to participate in CUREs and participate in workshops. Money, course release, annual review, bettering their classes, etc.*
- *Appreciated the discussion around the utility of microcredentials.*
- *Love being able to continue these conversations and continue learning! Building community is really important to keeping me going!!*
- *This was a great follow-up and I look forward to future webinars.*

2. September 26 - 2YC Grants Officers and Faculty: Working Together Effectively

The second webinar, open to anyone interested in the topic, focused on how 2YC faculty and grants officers could work together on National Science Foundation grant proposals. The panel of 2YC grant

officers shared ways they support NSF proposal development, writing, and submission in partnership with faculty, followed by a Q&A session. The panelists:

- Adrienne Price, Director, Grants & Sponsored Programs, Mt San Antonio College
- Matt Swenson, Director of Grants, Green River College
- Troy Tucker, College Associate Dean for Sponsored Programs, Suffolk County Community College

Each of the panelists introduced themselves, then responded to questions about ways grants officers and faculty could work together effectively. A key takeaway was the value of faculty contacting a grants officer, if there is one on their campus, as early as possible in the proposal development process. Also, faculty need to know that a grants officer can serve as an ally or “grant champion” and can help translate information for prospective PIs writing for varied audiences. The grants officers want to be visible and get to know their faculty; they do so by attending department meetings, working with new PIs, and offering professional development workshops about grants. Collectively the panelists’ remarks reinforced the message that grants officers were there to help 2YC faculty: “I work for you”; “I’m an advocate, not a gatekeeper”; “I’m an ally.”.

Participant comments from the Daily Roadcheck:

- *Earlier is better for contacting the grant officers*
- *“It’s a marathon, not a sprint” [comment by one of the panelists]. It’s a good mantra to keep in mind during both the proposal stage and the implementation stage!*
- *Wonderful panel discussion: thoughtfully prepared and presented. Enjoyable and informative.*

3. October 10 - Advice for New and Future PIs

For the third webinar, a panel of 2YC ITYC PIs who had been recently awarded grants shared what they wish they had known before they began the grant development, writing, and submission process, and then managing their grants. Participants had a chance to ask questions following the presentations.

Panelists:

- Melanie Harvey – Johnson County Community College, Building a Sustainable Community College CURE Program
- Seth Miller – Anne Arundel Community College; Building Undergraduate Research Infrastructure in Community Colleges
- Maggie Prater – Front Range Community College; Changing Department Culture to Achieve Inclusive Excellence in 2-year STEM Education

After sharing details about their individual projects, the panelists contributed tips for the participants that included the following:

- Learn about and communicate with your grants office pre-award
- Determine appropriate scope
- Work with your external evaluator during the writing process. If possible, meet with possible external evaluators during the planning stage as they will have ideas that can help you focus.
- Think about your collaborators and pay structure.
- If [your project] is curricular development or has an institutional change focus, plan a timeline that will encourage long-term adoption

- Talk to your NSF program officer
- Dream and don't be afraid to ask for money for things that will really enhance your grant (e.g., food for meetings).

Topics that had been submitted by the participants fell into two major categories: pre-award and during the project.

Pre-award: Proposal development, writing, and submission	During project: Grant management, project leadership, & reporting
<ul style="list-style-type: none"> • Deciding on scope, scale, plans • Budgets • Evaluation • Establishing collaborations • Contacting NSF program officer & 1-2 pagers • Writing the proposal 	<ul style="list-style-type: none"> • What should we keep in mind in the 1st year? • Dealing with unexpected issues • Managing your budget • Navigating the grants office, accounts payable, & administration • Keeping your project team on track

Participant comments from the Daily Roadcheck:

- *I need to reach out to my program manager right away and start to get more of my questions answered. It was great to hear that they really want to help us.*
- *While writing, work with college grant officers & establish grant policies early, such as paying students, faculty. Find outside evaluators. Don't do too big a scope.*
- *A great collaborative sharing experience. Difficult to reduce to one thing, several big takeaways: Find the right evaluator, interview several. Think of long-term adoption. Scope is important.*

4. October 24 - Designing and Implementing a Strong Evaluation Plan: Examples from ITYC Projects

For this final webinar, a panel of 2YC ITYC PIs who had been awarded grants explored components of a strong evaluation plan, sharing key elements of their plan, examples of instruments they used, and outcomes measures. As they told their stories, they shared challenges and successes along the way and insights about successful collaborations with evaluators. A Q&A session followed the panel.

The panelists were:

- Kris Lui, American Association of Physics Teachers - Creating The Organization for Physics at Two-Year Colleges (OPTYCs)
- Donna Barron, Hudson Valley Community College - Advancing Community College Students through Mentored and Course-based Research
- April Kilgore, Somerset Community College - Enhancing STEM Education with Leadership Academies in a Rural Two-Year College Context

The participants for this webinar included 2YC faculty, grants officers, administrators, evaluators, and 2YC faculty. [Highest attendance]

A few takeaways from the panelists:

- Our evaluator “guided us to craft a theory of change, vision, and mission statements.”
- An evaluator can be an active participant throughout the grant - ours helped by creating/administering surveys, scheduling campus visits to collect anecdotal information related to grant efforts, and suggesting approaches to garner support to overcome initial resistance.
- “A good relationship with your evaluator is key.”

Participant comments from the Daily Roadcheck:

- Evaluators can offer a lot more value to the project than I originally thought. Interested in developing a project dashboard as discussed.
- The information is directly useful and empowering
- I think the webinar format was great, and I like that the panelists had the opportunity to see the questions ahead of time.

6. Summit Success: Participant Perspectives

The success of the Summit was made clear by the participant responses to the daily roadchecks and an end-of-workshop (EOW) evaluation. Participants were asked to complete a short online evaluation at the end of each day (daily roadcheck). Their responses gave the Summit leaders valuable feedback, highlights of which were shared with participants in the next day’s opening session, along with any program adjustments emerging from the feedback. The overall satisfaction rating of the daily roadchecks and the end-of-Summit evaluation (on a scale of 1 to 10, where 1 = very dissatisfied and 10 = very satisfied) are given below:

- July 29 Daily Roadcheck: Overall satisfaction 9.2/10
- July 30 Daily Roadcheck: Overall satisfaction 9.1/10
- End-of-Summit Survey: Overall satisfaction 9.5/10

The four webinars, offered in September and October after the in-person Summit, were also rated positively by the webinar participants. The mean satisfaction rating of the webinars was 9.3 on a 10-point scale, where 10 = very satisfied.

- Webinar 1 (Micro-posters): 9.6/10
- Webinar 2 (2YC grants officers): 9.7/10
- Webinar 3 (Advice for new & future PIs): 9.2/10
- Webinar 4 (Designing and implementing evaluation plans): 9.0/10

In addition to their high overall satisfaction with the Summit, participants reported that all Summit goals were met based on the end-of-Summit evaluation. Specifically, they indicated that the Summit increased their understanding of the range of projects funded through the ITYC program (Goal 1) and an increased awareness of NSF program opportunities for 2YCs (Goal 2). We attribute the high rating of these two goals to the interactive sharing of micro-posters in multiple sessions, related project-based discussions throughout the Summit, and engagement with NSF program officers during the Summit.

Degree to which the goals of the Summit were met (n=73) Scale of 4 (strongly agree) to 1 (strongly disagree)	
Goal 1: Learn about the range of ITYC projects	3.92
Goal 2: Increase awareness of NSF program opportunities for TYCs	3.92
Goal 3: Discuss challenges and opportunities in leading projects at TYCs	3.79
Goal 4: Gain insights useful for developing future NSF proposals	3.77
Goal 5: Build connections across those participating in the Summit	3.86

Participant responses (see table below) indicate that the pre-Summit communication and website were useful and the Summit logistics were well executed. Support from the SERC team, including their onsite facilitation during the Summit, was instrumental to the event's success. In addition, the use of active learning strategies across the Summit sessions supported building connections among participants (Goal 5).

Logistics and facilitation of the Summit (n=73) Scale of 4 (strongly agree) to 1 (strongly disagree)	
The pre-Summit communications gave me the information I needed to learn about and prepare for the Summit	3.92
The website was useful in preparing for the Summit	3.78
The Summit events engaged me in active learning	3.79
The Summit sessions were well facilitated	3.89
The logistics of the Summit were well executed.	3.92

Overall, the ITYC Summit was well received. Participant responses to open-ended questions provided insights about what they found most valuable and least valuable, and why as well as how they planned to share and implement what they learned at the Summit. The responses to the following three questions are given below.

1. What aspects of the Summit were the most valuable for you? Why?

The 73 participants who responded to the end-of-Summit survey identified various aspects of the Summit as most valuable. Their responses can be grouped into five categories; some responses included items in more than one category.

- Learning about the range of projects and about projects with similar goals
- The interactive activities, particularly the microposter session about their NSF projects
- Exchanging ideas and solutions to common challenges with other TYC faculty
- NSF presentations, the proposal writing workshop, and the opportunity to meet one-on-one, in-person with an NSF PO
- Networking and making connections across the country and within their region

Below, we provide examples of individual responses to illustrate what participants found valuable and why.

A. Learning about the range of projects and about projects with similar goals

- *Learning about other ITYC projects and NSF grants has really expanded my ideas about STEM education and multidisciplinary collaborations*
- *Seeing the degree to which colleges face similar issues.*
- *[most important was] to learn about their individual projects and take away ideas from their experiences (this was best exemplified during the Micro-poster session, but took place informally throughout the conference at all the various sessions).*

B. The interactive activities, particularly the micro-poster session about their NSF projects

- *Variety of learning activities: brainstorm tasks had relevance, were fun, collaborative and encouraged critical (as well as creative!) thinking*
- *Micro-poster sessions - got great feedback for my specific concerns about our project*
- *This was a fantastic and well organized event! In every single session I found something of value. I definitely will use what I learned in the future.*
- *The way you designed and ran this gathering was (and is) instructive, This was a kind of professional development, [...] for which I am deeply, deeply appreciative.*

C. Exchanging ideas and solutions to common challenges with other 2YC faculty

- *Being able to connect with others doing similar work; hearing how they address the challenges*
- *Hearing about the proposal writing process and parts to the proposal was extremely helpful. It was also great to hear from those that have grants and hear their experiences.*
- *The co-thinking of new ideas and ways of doing things is incredibly helpful.*
- *Networking with other 2YC faculty doing this work and talking about the challenges and strategies around project management and funding opportunities in 2YC contexts. So, basically, all of it!*

D. NSF presentations, the proposal writing session, and the opportunity to meet one-on-one, in-person with an NSF Program Officer

- *The openness and visible support from the NSF Program Officers (and leadership) was also very meaningful and inspiring.*
- *Access to NSF Program Officers - all the opportunities to ask any specific questions we had*
- *The opportunities to engage directly with NSF program officers. These conversations provided valuable insights into current funding priorities, potential collaborations, and best practices for strengthening proposals. Building these relationships will be instrumental in advancing both my research and broader professional goals.*
- *Direct contact and conversations with Program Officers. All of my previous proposals to NSF were without discussion with these people, and I now know better!*

E. Networking and making connections across the country and within their region

- *Networking/Birds of a Feather - conversations with others very energizing and full of useful practical ideas*
- *Seeing ideas and potential collaborations. Feeling that you are not alone was reaffirming to continue the work.*
- *I made several connections that I will take back to my campus and that I'm confident will inspire and/or improve our projects.*
- *These [exchanges with other 2YC faculty] allowed opportunities to dream and connect*

2. What aspects of the Summit were least valuable and why?

Of the 65 participants who responded to this question, approximately two-thirds (44/65) identified items that were least valuable for them. These responses can be grouped into three broad categories (some identified more than one aspect as least valuable)

- **Logistical issues** (15 responses): e.g., acoustics in meeting rooms, start time, length of Summit day, concerns about meals
 - *Loud room - hard to hear when brainstorming.*
- **The opening icebreakers** (9 responses)
 - *Not a fan of the kinesthetic ice breakers, though I get why it's useful for a large group.*
- **Specific programmatic aspects** (27 responses): Every session in the Summit program was identified by 1 or more participants as least valuable, reflecting that different people found different sessions least valuable). A few participants noted a session (different sessions) that would have benefitted by better facilitation, one person suggested the concurrent sessions be offered to all participants, and another responded that there were too many reflections.
 - *Birds of a feather sessions. I think they needed a bit more structure to work.*
 - *Sometimes the poster session share outs weren't long enough for meaningful learning.*

Notably, one-third of the participants who responded to this question (21/65) wrote that nothing was least valuable (e.g., “N/A”, “None”, “Everything was valuable. I appreciate the intention that went into the planning.”) One respondent added that “it was clear that the leadership reacted dynamically to attendee input.” Another wrote: “It ALL was valuable. Even the down time/unconference time.”

3. How will you use and/or apply what you learned in the Summit? (72 responses)

The following four categories emerged from participant responses to this question. Some responses overlapped categories.

- A. Sharing what was learned (~30 responses)
- B. Applying what was learned (~30 responses (18 in project, 11 in other work))
- C. Engaging with NSF (~34)
- D. Building connections and contacts (~20)

A. Sharing what was learned (~30 responses)

Participants wrote about sharing what they learned with their team, with administrators and grants officers, colleagues on campus, and others in their discipline. They plan to share ideas and strategies related to their projects, strategies for teaching and professional development, and other opportunities including inspiring others to get more involved with grants.

- *I have lots of info to share with my Co-PIs, grants officer, administration, and evaluator. This includes improvements to my existing project and ideas for new proposals.*
- *One of the first things I will do is host a professional development at my institution (either formal or informal) to share information about all of the grant opportunities.*
- *I'm also sharing several key takeaways like the leadership models*
- *I plan to share the mini posters with faculty to inspire other faculty to get more involved with grants, even if starting small.*
- *I will be taking this great information back and sharing it with my other faculty - there's SO MUCH we can do!*

B. Applying what was learned (~18 in project/additional steps ~11 other work (~11) total (~30)

Participants wrote about applying what they learned to their project or to courses, on their campus, in professional development, in their discipline, or other work.

- *Our grant is just starting so there is so much I will use, including suggestions for project management, report writing, student tracking, and resources (website and miniposters).*
- *Looking at the various leadership models and implementing that as part of grant work and discipline work.*
- *I have made a note of publications mentioned on mini-posters that I will incorporate in my own work.*
- *The microposter idea was neat (I learned a lot about the theory driving it by watching the videos you referenced. I also got some ideas for PD - project design, funding, and management, for example, which I will report back to my project team.*
- *I will use the ideas that were shared with me during the microposter sessions, birds of a feather (badging, K-12). I plan to use some of the active Learning methodology used during the summit, the carousels, the kinesthetic icebreakers, the working group posters in various situations.*

C. Engaging with NSF (~34)

Participants wrote about a variety of ways they plan to engage with NSF following the Summit, including plans for promoting NSF engagement on campus, ideas for proposals, plans to submit proposals, and the value of contacting NSF program officers.

- *Will promote NSF campus wide by presenting at our next PD day. I plan to apply for some of the upcoming grants so this helped me further think about what our department needs and how a grant could support that.*
- *Learning more about ITYC and related NSF grant programs will help me and my institution to submit more competitive NSF grant proposals in the future, as well as manage our NSF awards more capably*
- *I am already starting to think about the next grant, and the first steps needed. I think of the ITYC Summit as an enzyme, lowering the activation energy to start writing a grant and continuing it to its completion.*
- *Having been a co-PI on two NSF grants, it is time to be a PI. I will need collaborators and the Summit gave me some tips on how to assemble a team.*
- *I [will] share opportunities for getting involved as reviewers.*
- *I will also use what I have learned to think about future funding possibilities. And I will not hesitate to contact my program officer when needed,*

D. Building connections and contacts (~20)

Participants wrote about making new connections and plans to follow-up with people they met at the Summit, including possible collaborators (~20)

- *I'm already slated to follow up with several people I met to pick their brains about their projects and vice versa.*
- *I plan to continue to meet with some of my new connections, including joining an assessment working group, collaborating with another ITYC group that is working on CUREs but farther along than we are and getting advice.*
- *I've established connections with contacts from within WA State and other states, and I will follow up with them to discuss questions and ideas.*

- *New Leadership academy contact*
- *I've made connections for other projects and learned about a conference for next year.*

Rosalyn Hargraves, Director of the Division of Undergraduate Education at NSF, began her remarks by saying “This [Summit] is a dream come true.” “So we believe in you, we are here on this journey and path with you, so we can create the most outstanding educational experiences for our students and continue in our own endeavors to be better teachers, be better learners, be better educators, be better administrators. We are fiercely committed to continuous improvement and leading the world in creating the best learning experiences for our students. So thank you.”

7. Recommendations

From participant comments and our own observations, we identified the following recommendations for awardee meetings where there is an intent to build connections, facilitate peer learning, and strengthen community.

1. **Micro-poster sessions:** Participants overwhelmingly reported on the value they found in the micro-poster sessions as a mechanism for learning about other projects and sharing with others their own project successes and challenges. The clear structure of the posters amplified what the presenters most wanted to share. Participants valued having dedicated time to discuss each other’s projects within a group. From these sessions they gained knowledge of potential promising practices as well as strategies to mitigate common challenges.
2. **Modeling active learning:** Rather than have a multi-day speaker series, we aimed to provide a range of sessions that modeled active learning strategies (e.g., small working groups, mini-workshops, interactive table discussions) around topics of high interest to 2YC faculty. From this approach, participants gained deeper understanding of practices and insights for their own project as well as how to use active learning in a workshop. Additionally, they stated the value of structured conversations with others as key to building connections.
3. **Participant mix:** The meeting was designed for both awardees and a small set of prospective PIs to learn and connect through the sessions. Additionally, we invited experts in education research and evaluation with experiences working in 2YC settings. We valued having those individuals with particular expertise participate and found it enriched sessions aimed at strengthening the impact of awardees projects. We also encouraged projects to have two individuals from their project participate in the meeting. When having multiple project members engagement was possible, participants stated that they were able to gain greater clarity around ideas and more perspectives. Designing a program that would work for awardees and prospective PIs took some additional thought but made for a format where all types of experience and expertise advanced ideas and enhanced individual and project professional development.
4. **NSF engagement:** We had debated whether to hold the meeting in a location more central geographically. The decision to hold the meeting near NSF headquarters (with one day at NSF) facilitated high levels of engagement by NSF program officers. The opportunity to connect with program officers and hear about a range of programs was highly valued by participants.

8. Conclusion

This [Summit] group is very supportive and feels like a little bit of a life-line for me.

As the first PI meeting for the ITYC program, the Summit represents an important, transformative moment for 2YC STEM education. Bringing together leaders from 50 funded projects, prospective PIs, other stakeholders, and NSF representatives, the Summit fostered a vibrant community dedicated to sharing successes, addressing challenges, and identifying practical solutions. The Summit documented emerging innovations across the ITYC portfolio and generated actionable strategies to strengthen grant leadership, partnerships, program effectiveness, and STEM education in 2YCs.

Equally important, the Summit set a celebratory and forward-looking tone—affirming the richness of 2YC contributions to STEM while building momentum for what comes next. By strengthening participants' expertise, deepening professional networks, and engaging future leaders, the Summit's impact will extend well beyond the event itself. Through the knowledge generated, connections formed, and shared commitment to advancing opportunities for 2YCs, the ITYC community is in a position to shape a stronger STEM education ecosystem for years to come.

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