

**2020 Evaluation Report
for the
American Association for the Advancement of
Science's
Preparing Diverse STEM Researchers to Address
Global Challenges Project
NSF Grant Number - DUE-1930047**

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Executive Summary

Implementation

The primary input of this program is the Emerging Researchers National (ERN) Conference and all the activities included within the conference. These activities occurred as planned. The activities reached the target participants (STEM students of color, underrepresented minorities, disabled students) and were conducted within the parameters set forth in the project proposal, i.e. providing communities and opportunities for diverse STEM student researchers.

Outcomes

The program activities have met their intended goals by improving student sense of belonging/community, student self-confidence and efficacy in STEM, and student persistence/resilience in STEM. There were matched pre- to post-test data that showed either statistical significance and/or impactful effect size for items in each measured construct of interest. The qualitative data overwhelmingly support the findings of the quantitative analyses and demonstrate progress toward program goals.

Conclusions

The program, through the ERN conference event, has exposed nearly 900 students to activities that are shown to benefit student researchers in STEM in areas that promote student success, i.e. dissemination of resources, building of community/networking, opportunities for students to improve their science skills by sharing their research and learning from peers and mentors.

Recommendations

The findings of this report, while limited by small sample size, indicate that the program is making impactful improvements in all constructs of interest for its participants, therefore it is recommended that efforts are made to increase the pre and post-test response rate for the student perceptions (impact) survey. It is also recommended that the program continue to recruit and facilitate student participation in the annual ERN conference while utilizing the findings of this evaluation to fine-tune the planning of future events. It is recommended that the program continue to engage students and offer platforms for the continuation of the networking and community building that occurs at the conference.

Introduction

The Project

The American Association for the Advancement of Science (AAAS)'s *Preparing Diverse STEM Researchers to Address Global Challenges* 3-year project convenes undergraduate and graduate STEM student researchers for the Emerging Researchers National (ERN) Conference in Science, Technology, Engineering, and Mathematics (STEM). In addition to organizing the conference, the project conducts support and engagement activities for students and faculty who participate in the National Science Foundation (NSF) Human Resources Development (HRD) and Research Experiences for Undergraduates (REU) Programs. The objective of this effort is to prepare diverse STEM student researchers address global challenges. Specifically, the project goals include:

- Provide opportunities to enhance students' sense of community and belonging in STEM
- Provide students with science communication and other professional skills for STEM workforce success
- Disseminate resources and best practices to support student researchers and faculty

This Evaluation

Convergent mixed-methods evaluation strategies are commonly utilized to ascertain the effectiveness of education projects in achieving their intended outcomes (Azzam & Szanyi, 2011). Using both formative and summative process evaluation and impact evaluation, KWE monitors and assesses development, implementation, and outcomes of all project activities. The evaluative questions guiding this process are:

- What is the level of implementation fidelity for the project (are the major activities and deliverables occurring as proposed regarding participants, content, quality, timing, etc.)?
- What project improvements are indicated by formative assessment?
- What is the status of progress toward attaining the intended outcomes (summative assessment)?

To guide the evaluation, a logic model that details the connections between proposed activities (white boxes), outputs (medium blue), and measurable outcomes (darker blue) was finalized in collaboration between project leadership and KWE at the kick-off meeting (Figure 1). NSF reviewer feedback was incorporated into the final evaluation design.

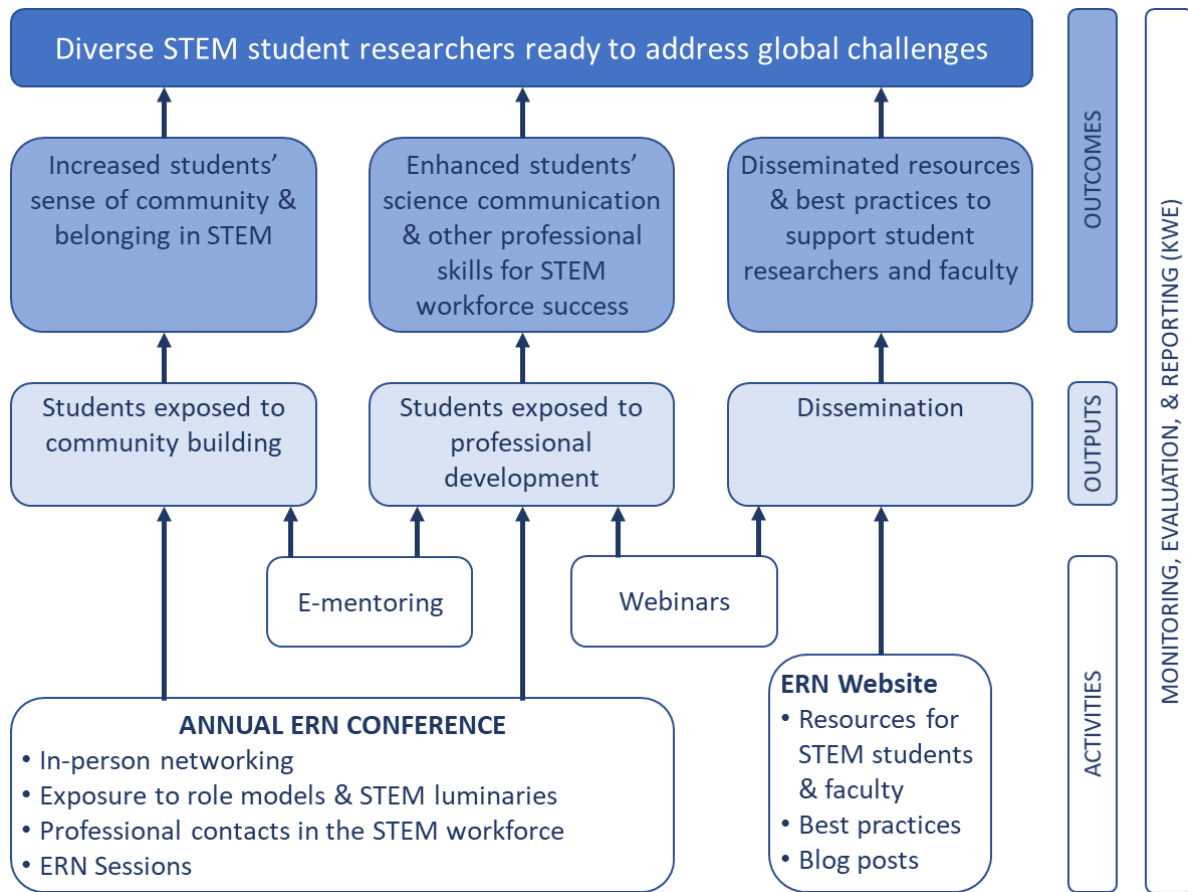


Figure 1. Logic Model for AAAS NSF ERN Project

Data supporting the evaluation comes from planning meeting agendas and minutes, interactions through email and other recorded media, observations of interactions, developed content and resources, administrative records from all aspects of the conference, and focus groups/interviews and/or surveys of project staff and participants (faculty, students, industry representatives).

Year One Activities and Outputs

In the first year, project efforts focused largely on organizing and convening the Emerging Researchers Nation (ERN) Conference, with recruitment strategies for the program's target participants and assignment of travel awards. KWE monitored the internal evaluation of the specific activities included below and performed assessment on specific outcome data from these activities as detailed in the findings section to supplement the internal evaluation efforts.

Student Recruitment and Travel Awards

Students from the target populations and through the target NSF grant funded programs (AGEP, CREST, EFRI-REM EntryPoint, HBCU-UP, HSI, LSAMP, LSAMP Bridges to the Doctorate, REU, TCUP) were recruited actively for participation in the conference. In addition to those target populations, the conference was open to any person that had interest in attending. The proposal sought to grant 300 travel awards and this program year saw 304 participants receive travel awards.

Student Presentation Competition

Students were invited to present their research in nine categories:

- Biological Sciences
- Chemical Sciences
- Computer Sciences and Information Management
- Ecology, Environmental and Earth Sciences
- Math/Statistics
- Physics
- Science/Mathematics Education
- Social, Economic, and Behavioral Sciences
- Engineering/Technology
- Nanoscience

Prizes of \$300 (1st place), \$200 (2nd place), and \$100 (3rd place) were awarded in each category. Student presentations included poster and oral presentations. The presentations were judged by STEM professionals recruited from academia, industry, and the private sector who also serve as role models. Awards were announced on the final night of the conference in a ceremony to honor the achievements of the participants.

Plenary Sessions

Four plenary sessions were delivered, highlighting STEM experts. One of the plenary sessions highlighted ERN conference alumni who are excelling in their respective fields and one highlighted innovators who are engaged in cutting edge research, the other two included keynote speakers Crystal Emery and John Urschel.

Professional Skill Development Workshops

Workshops were facilitated by STEM professionals from academia, industry, the private sector, and NSF program representatives on topics including:

- Preparing for Graduate and Medical School
- Funding for STEM Education
- Science Communications
- Fellowship and Postdoctoral Opportunities
- STEM Career Pathways/Trajectories
- Job Search Strategies
- Writing Oral/Poster Abstracts
- Drop-In Presentation Clinics
- Self-Care in STEM
- Incorporating Diversity and Inclusion into Research
- Mentoring

Educational/Career Fair

Exhibitor sessions during the conference included representatives from Academia, Industry, and Federal Science Agencies to share information with attendees regarding:

- Internships and employment
- Research opportunities
- Funding for STEM education

Faculty-Focused Sessions

To engage the faculty, special sessions were included that focused on:

- Mentoring
- Implicit bias and microaggressions
- Technology transfer
- Best practices in supporting student researchers.

Students in STEM with Disabilities Working Group

Participants who manage programs for students with disabilities, and students with disabilities, were invited to a special half-day convening. This opportunity was designed to share resources and opportunities to support students with disabilities, to discuss the national landscape regarding successful implementation of targeted programs, and to discuss new areas of research that advance the body of knowledge regarding supporting students in STEM with disabilities.

Professional STEM Societies Working Group

A half-day meeting of senior leaders in STEM and various STEM society Presidents was convened with goals to: 1) share resources and information regarding supporting undergraduate and graduate students in STEM, 2) identify gaps in programming that can serve as fruitful areas of future research and targeted

interventions, and 3) produce the framework for a white paper to address the role of professional scientific societies in supporting students.

Advisory Board Meeting

During the conference, the advisory board met in person to discuss, plan, and brainstorm ways to support the program activities and work toward program goals.

Summary of Evaluation Activities

Regular Check-ins

Throughout the implementation to date, KWE has been in regular contact with the PI to ensure that all is proceeding as planned and to access implementation/outcome data, as available.

Assessment of Implementation

Implementation data in this year of the program included monitoring the development and implementation of the February 2020 ERN Conference as described in the Year One Activities and Outputs.

Attendance at Emerging Researchers National Conference 2020

Gabriele Haynes of KWE attended the ERN Conference held in Washington, D.C. February 6-9, 2020. Haynes attended all plenary sessions, the advisory board meeting, and various other workshops/sessions. Field notes about the conference activities were taken and included in the assessment for this program year.

Assessment of Outcome Data

Outcome data for this year were collected in the form of survey and demographic data, as well as field observations from the 2020 ERN Conference held in February. Assessment of all data was performed, and findings are included in this report.

Current Year Report

This report represents one aspect of the evaluation activities for this year.

Findings

ERN Conference Participant Demographics

The conference anticipated approximately 800 attendees including 500-600 student researchers with 150 travel awards given. The 2020 ERN conference convened with 1284 participants, of those, 834 were students and 388 of those students received travel awards for the conference. Collectively, 334 different institutions were represented at ERN 2020, including 57 Historically Black Colleges and Universities. Table 1 below illustrates overall conference registration by participant type.

Table 1 Registrant Overview

| Type of Registrant | Number |
|--------------------|-------------|
| Student | 834 |
| Faculty | 108 |
| Exhibitors | 97 |
| Presenters/VIP | 175 |
| Non-Student/Other | 70 |
| Total | 1284 |

Participant Feedback

Prior to the start and again at the end of the 2020 ERN conference, participants were administered a survey to gather pre- and post- “treatment” data. The survey was designed so that data was collected anonymously using self-generated identification codes (Kearney, Hopkins, Mauss, & Weisheit, 1984; Schnell, Bachteler, & Reiher, 2010) to measure change and test for statistical significance. Along with collecting demographic data, the survey (designed by KWE in collaboration with project leadership and appended to this report) measured participant perceptions on key metrics linked to improved outcomes in STEM (Hart, 2012; Hausmann, Schofield, & Woods, 2007; Maramba & Museum, 2011):

- Science Identity – item used was taken from (McDonald, Zeigler-Hill, Vrabel, & Escobar, 2019)
- Sense of Belonging in STEM
- Self-Efficacy/Ability to Pursue STEM Goals
- Self-Perceptions of Resilience in STEM/Self-Confidence

The survey generated 176 replies to the pre-test and 68 replies to the post-test. Of the respondents who completed the questions generating a unique identifier, 33 completed both pre- and post-test comprising the matched sample used to measure change as a result of conference participation. Survey data was analyzed for baseline scores (pre only) and basic descriptive statistics for the full post only group to give a sense of how the participants’ perceptions changed from the conference experience.

The science identity item used pictorial depictions of student self-perceptions of their identity as a scientist. To accommodate those with visual impairment, “alt text” was added to the images to create

“percentages of overlap” and for analysis, the responses were converted to numeric scores where 1 = the first image with no overlap and 7 = the last image with almost full overlap. The item is included below as it appeared in the survey for ease of interpretation of the findings.

“Select the picture that best describes the current overlap of the image you have of yourself and your image of what a STEM professional is.”

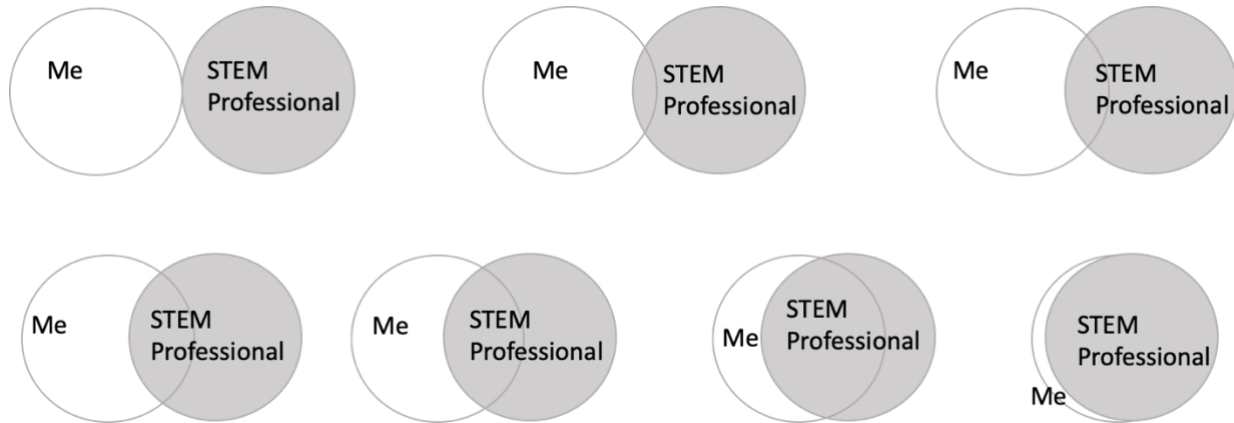


Table 2 shows comparison of the pre- and post-test responses on item one (science identity) only. While not statistically significant ($p = .188$) and with an effect size in the “no effect” range ($ES=.17$), they do indicate a slight improvement in student science identity after exposure to the ERN conference events, which is a direct goal of the program.

Table 2 Overview of pre and post-test mean scores for Item 1

| Select the picture that best describes the current overlap of the image you have of yourself and your image of what a STEM professional is. | N | Mean | Std. Deviation |
|---|-----|------|----------------|
| Pre-test scores | 176 | 4.64 | 1.65 |
| Post-test scores | 68 | 4.91 | 1.56 |

The pre-test and post-test results for the entire group of respondents are included in Table 3 - Table 6. The post-test produced considerably fewer responses and the means are similar to the pre-test when examined across the entire group. While some items show improvement, others do not. Without matching answers by respondent, this type of comparison is not particularly useful or valid, as it is unknown if the same people took each survey. For this reason, change is explored in the matched sample only, as it provides a valid and analyzable set of data from which to draw conclusions. Pre- and post-test summaries are included for context and as a foundation in which to situate the findings of the matched sample.

The first set of items used an agreement scale to measure sense of belonging and self-efficacy in STEM and asked: “To what extent is each statement true for you? 1= To an extremely small extent, 2=To a very small extent, 3=To a small extent, 4=To a moderate extent, 5=To a large extent, 6=To a very large extent, 7=To an extremely large extent.” Items with red font are reverse coded and the scores have not been

altered, so that a lower score is better, and a higher score is worse, which is the opposite of all other items.

Table 3 Full Sample Pre-test Agreement Scale Responses

| Student Perceptions Survey Items | N | Mean | Std. Deviation |
|--|-----|------|----------------|
| I know very few people in STEM. | 173 | 2.95 | 1.50 |
| I have developed personal relationships with other students in STEM. | 173 | 5.27 | 1.54 |
| I feel comfortable contributing to STEM discussions. | 173 | 4.98 | 1.42 |
| I feel that a STEM faculty member would take the time to talk to me if I needed help. | 174 | 5.68 | 1.29 |
| I feel better when I see others who look like me in STEM classes/departments/careers. | 174 | 5.48 | 1.59 |
| Being underrepresented (i.e., by race, social class, ethnicity, gender, ability, etc.) in the academic STEM disciplines makes me more vulnerable to stress than my well-represented peers. | 174 | 4.18 | 1.84 |
| I feel supported in STEM when faced with unique challenges. | 174 | 4.83 | 1.41 |
| Even without the ERN Conference, I have access to the kind of professional development that I need to be successful in STEM. | 174 | 4.68 | 1.32 |
| My health (physical and mental) is as important as my academic STEM success (grades, internships, etc.). | 174 | 5.60 | 1.29 |
| I have a network of people in STEM to help me pursue my educational/career goals. | 174 | 4.82 | 1.45 |
| I understand how to secure internships in STEM. | 174 | 4.66 | 1.47 |
| I know how to navigate my search for a career in STEM. | 175 | 4.30 | 1.42 |
| I can complete my degree/graduate degree in STEM. | 174 | 6.05 | 1.11 |
| I can find and secure adequate employment in STEM upon graduation. | 175 | 4.89 | 1.44 |
| I have communication skills in STEM that will further my career/education goals. (i.e. presenting at conferences, working on teams, etc.) | 175 | 5.07 | 1.29 |
| I have the ability to prepare application essays, resumes, and other documents needed to foster my STEM goals. | 176 | 5.13 | 1.16 |
| I can solve real world STEM problems. | 175 | 4.83 | 1.21 |
| I understand research articles or books about STEM issues. | 176 | 5.03 | 1.11 |
| I can work on a project involving STEM concepts. | 175 | 5.53 | 1.11 |
| I will contribute to STEM scholarship through my education and future employment. | 176 | 5.62 | 1.15 |
| I know how to secure funding to complete my educational goals in STEM. | 176 | 4.31 | 1.36 |
| I have access to enough funding to pursue my goals in STEM. | 175 | 4.08 | 1.44 |
| I have access to enough resources to help me achieve my goals in STEM. | 175 | 4.59 | 1.24 |
| I feel confident in my knowledge about available STEM scholarships. | 175 | 4.05 | 1.40 |

Table 4 Full Sample Post-test Agreement Scale Responses

| Student Perceptions Survey Items | N | Mean | Std. Deviation |
|--|----|------|----------------|
| I know very few people in STEM. | 68 | 2.88 | 1.59 |
| I have developed personal relationships with other students in STEM. | 68 | 5.29 | 1.44 |
| I feel comfortable contributing to STEM discussions. | 68 | 5.12 | 1.43 |
| I feel that a STEM faculty member would take the time to talk to me if I needed help. | 68 | 5.51 | 1.10 |
| I feel better when I see others who look like me in STEM classes/departments/careers. | 68 | 5.44 | 1.49 |
| Being underrepresented (i.e., by race, social class, ethnicity, gender, ability, etc.) in the academic STEM disciplines makes me more vulnerable to stress than my well-represented peers. | 68 | 4.09 | 1.95 |
| I feel supported in STEM when faced with unique challenges. | 68 | 4.97 | 1.17 |
| Even without the ERN Conference, I have access to the kind of professional development that I need to be successful in STEM. | 67 | 4.72 | 1.36 |
| My health (physical and mental) is as important as my academic STEM success (grades, internships, etc.). | 68 | 5.63 | 1.32 |
| I have a network of people in STEM to help me pursue my educational/career goals. | 68 | 5.15 | 1.30 |
| I understand how to secure internships in STEM. | 68 | 4.79 | 1.57 |
| I know how to navigate my search for a career in STEM. | 67 | 4.49 | 1.46 |
| I can complete my degree/graduate degree in STEM. | 67 | 5.82 | 1.23 |
| I can find and secure adequate employment in STEM upon graduation. | 68 | 4.93 | 1.36 |
| I have communication skills in STEM that will further my career/education goals. (i.e. presenting at conferences, working on teams, etc.) | 68 | 5.21 | 1.23 |
| I have the ability to prepare application essays, resumes, and other documents needed to foster my STEM goals. | 68 | 5.32 | 1.15 |
| I can solve real world STEM problems. | 68 | 4.99 | 1.33 |
| I understand research articles or books about STEM issues. | 68 | 5.25 | 1.32 |
| I can work on a project involving STEM concepts. | 68 | 5.56 | 1.27 |
| I will contribute to STEM scholarship through my education and future employment. | 67 | 5.75 | 1.33 |
| I know how to secure funding to complete my educational goals in STEM. | 67 | 4.81 | 1.49 |
| I have access to enough funding to pursue my goals in STEM. | 67 | 4.57 | 1.62 |
| I have access to enough resources to help me achieve my goals in STEM. | 67 | 4.88 | 1.42 |
| I feel confident in my knowledge about available STEM scholarships. | 67 | 4.51 | 1.52 |

The second set of items used a similar scale and asked: “To what extent are you confident that you could... 1= To an extremely small extent, 2=To a very small extent, 3=To a small extent, 4=To a moderate extent, 5=To a large extent, 6=To a very large extent, 7=To an extremely large extent.” The items using this scale measure the constructs of self-efficacy to succeed in STEM and resilience in STEM (i.e., grit).

Table 5 Pre-test Confidence Scale Responses

| Student Perceptions Survey Items | N | Mean | SD |
|--|-----|------|------|
| Find ways to get to know STEM mentors, even if they are busy. | 175 | 4.33 | 1.23 |
| Deal with unfair treatment in STEM classes, if you received it because of your race/ethnicity. | 175 | 3.99 | 1.68 |
| Deal with unfair treatment in STEM classes, if you received it because of your gender. | 176 | 4.06 | 1.73 |
| Persist in STEM classes even if you did not see many other people like you in them. | 176 | 5.42 | 1.35 |
| Deal successfully with competition among peers in STEM. | 174 | 5.24 | 1.24 |
| Stick with the decision to pursue STEM education/career even if someone close to you tried to discourage this decision. | 176 | 5.87 | 1.19 |
| Find ways to overcome communication problems with STEM professors or teaching assistants. | 176 | 5.23 | 1.19 |
| Continue in STEM even if you felt that the environment in these classes was not welcoming for persons of your gender, race, ethnicity, social class, or disability status. | 175 | 5.34 | 1.35 |
| Be recognized by STEM professionals for my work in STEM. | 176 | 5.11 | 1.36 |

Table 6 Post-test Confidence Scale Responses

| Student Perceptions Survey Items | N | Mean | SD |
|--|----|------|------|
| Find ways to get to know STEM mentors, even if they are busy. | 67 | 4.51 | 1.38 |
| Deal with unfair treatment in STEM classes, if you received it because of your race/ethnicity. | 67 | 4.37 | 1.58 |
| Deal with unfair treatment in STEM classes, if you received it because of your gender. | 67 | 4.43 | 1.51 |
| Persist in STEM classes even if you did not see many other people like you in them. | 67 | 5.52 | 1.09 |
| Deal successfully with competition among peers in STEM. | 67 | 5.30 | 1.24 |
| Stick with the decision to pursue STEM education/career even if someone close to you tried to discourage this decision. | 67 | 5.72 | 1.17 |
| Find ways to overcome communication problems with STEM professors or teaching assistants. | 67 | 5.25 | 1.17 |
| Continue in STEM even if you felt that the environment in these classes was not welcoming for persons of your gender, race, ethnicity, social class, or disability status. | 67 | 5.51 | 1.22 |
| Be recognized by STEM professionals for my work in STEM. | 66 | 5.27 | 1.31 |

Matched Survey Response Analyses

Using the self-generated identifiers from the survey, responses by individual participants could be matched from the pre- to the post-test. These 33 matched responses offer the most valid way to measure change that resulted from the program activities. Effect size calculations use Hedge's g to determine whether the change from pre- to post-test scores are of a meaningful size, as well as whether any disparate impacts by participant characteristic (demographic of interest) are present (ES represents the standard deviation difference between scores, with scores below .2 being considered "no effect," scores from .2 to .4 being "small effect," from .5 to .7 is considered "intermediate effect," and .8 or

above is considered a “large effect”). Table 7 details the demographics of the respondents in the matched dataset.

Table 7 Respondent Demographics

| Characteristic | Number of Respondents |
|-------------------------------|-----------------------|
| Gender | |
| Female | 10 |
| Male | 22 |
| Prefer not to answer | 1 |
| Student Type | |
| Undergraduate | 21 |
| Graduate | 12 |
| Age | |
| 19 | 4 |
| 20 | 4 |
| 21 | 3 |
| >21 | 22 |
| Hispanic | |
| No | 19 |
| Yes | 14 |
| Race | |
| White | 15 |
| Black | 8 |
| Asian | 2 |
| American Indian/Alaska Native | 3 |
| 2 Or More | 2 |
| # Of ERN's Attended | |
| 1 | 31 |
| 3 | 1 |
| 4 | 1 |
| Institution Type | |
| Not Specified | 7 |
| HBCU | 9 |
| HSI | 8 |
| Predominantly White | 9 |

The matched participant data were first explored with statistical *t tests* comparing means from pre-test items to those from post-test items. Table 8 details these findings. One item produced statistically significant results, the item asking whether students agree that “I know how to secure funding to complete my educational goals in STEM” which also showed moderate effect size (noted in **orange** below). This indicates that conference activities improved student perceptions of access to resources needed to be successful in STEM, meeting the program goals of disseminating resources and providing support for students in STEM. Additionally, two items had small effect sizes while also showing improvement and are noted in the table in **blue**. Students demonstrate improvement in their confidence

that they could persist in STEM education despite obstacles relating to their race/ability/gender and improvement in their science identity, both of which are metrics that the program sought to improve. The item in red is reverse coded, as previously mentioned, and the negative change in scores denotes improvement on this item "I know very few people in STEM." This again demonstrates attainment of program goals of improving sense of belonging and generating a community for students.

The remaining items show little change from pre to post and lack any statistical significance or effect. This finding is still preliminary as this is the first administration of this instrument and refinements are being explored for the next iteration to ensure the most valid and useful instrument is in use. It is also possible that additional time is required for impacts of the conference to be measurable through survey responses.

Table 8 Matched Sample Mean Comparison with Effect Size (ES)

| Student Perceptions Survey Items | | Mean | N | SD | Sig. | ES |
|--|--------|------|----|------|------|------|
| Select the picture that best describes the current overlap of the image you have of yourself and your image of what a STEM professional is. | pre1 | 4.79 | 33 | 1.41 | 0.06 | 0.26 |
| | post1 | 5.15 | 33 | 1.23 | | |
| I know very few people in STEM. | pre2 | 2.94 | 33 | 1.50 | 0.30 | 0.09 |
| | post2 | 2.76 | 33 | 1.48 | | |
| I have developed personal relationships with other students in STEM. | pre3 | 5.42 | 33 | 1.44 | 0.19 | 0.15 |
| | post3 | 5.12 | 33 | 1.58 | | |
| I feel comfortable contributing to STEM discussions. | pre4 | 4.97 | 33 | 1.26 | 0.27 | 0.16 |
| | post4 | 5.18 | 33 | 1.24 | | |
| I feel that a STEM faculty member would take the time to talk to me if I needed help. | pre5 | 5.55 | 33 | 1.15 | 0.62 | 0.07 |
| | post5 | 5.45 | 33 | 0.97 | | |
| I feel better when I see others who look like me in STEM classes/departments/careers. | pre6 | 5.67 | 33 | 1.43 | 0.48 | 0.09 |
| | post6 | 5.52 | 33 | 1.18 | | |
| Being underrepresented (i.e., by race, social class, ethnicity, gender, ability, etc.) in the academic STEM disciplines makes me more vulnerable to stress than my well-represented peers. | pre7 | 3.97 | 33 | 1.86 | 0.86 | 0.03 |
| | post7 | 4.03 | 33 | 1.79 | | |
| I feel supported in STEM when faced with unique challenges. | pre8 | 5.00 | 33 | 1.25 | 0.43 | 0.09 |
| | post8 | 4.85 | 33 | 1.18 | | |
| Even without the ERN Conference, I have access to the kind of professional development that I need to be successful in STEM. | pre9 | 4.79 | 33 | 1.17 | 0.78 | 0.04 |
| | post9 | 4.85 | 33 | 0.91 | | |
| My health (physical and mental) is as important as my academic STEM success (grades, internships, etc.). | pre10 | 5.48 | 33 | 1.33 | 0.77 | 0.05 |
| | post10 | 5.55 | 33 | 1.18 | | |
| I have a network of people in STEM to help me pursue my educational/career goals. | pre11 | 4.97 | 33 | 1.26 | 0.20 | 0.15 |
| | post11 | 5.21 | 33 | 1.08 | | |
| I understand how to secure internships in STEM. | pre12 | 4.76 | 33 | 1.39 | 0.65 | 0.06 |
| | post12 | 4.88 | 33 | 1.43 | | |
| I know how to navigate my search for a career in STEM. | pre13 | 4.25 | 32 | 1.11 | 0.41 | 0.17 |
| | post13 | 4.44 | 32 | 1.01 | | |
| I can complete my degree/graduate degree in STEM. | pre14 | 5.88 | 32 | 1.10 | 0.63 | 0.05 |
| | post14 | 5.81 | 32 | 1.12 | | |
| I can find and secure adequate employment in STEM upon graduation. | pre15 | 4.64 | 33 | 1.32 | 0.35 | 0.11 |
| | post15 | 4.82 | 33 | 1.04 | | |
| I have communication skills in STEM that will further my career/education goals. (i.e. presenting at conferences, working on teams, etc.) | pre16 | 5.03 | 33 | 0.85 | 0.21 | 0.18 |
| | post16 | 5.21 | 33 | 1.05 | | |

| Student Perceptions Survey Items | | Mean | N | SD | Sig. | ES |
|--|--------|------|----|------|------|------|
| I have the ability to prepare application essays, resumes, and other documents needed to foster my STEM goals. | pre17 | 5.55 | 33 | 0.83 | 0.15 | 0.19 |
| | post17 | 5.33 | 33 | 0.92 | | |
| I can solve real world STEM problems. | pre18 | 5.06 | 33 | 1.20 | 0.54 | 0.06 |
| | post18 | 5.15 | 33 | 1.03 | | |
| I understand research articles or books about STEM issues. | pre19 | 5.15 | 33 | 1.18 | 0.85 | 0.02 |
| | post19 | 5.12 | 33 | 1.22 | | |
| I can work on a project involving STEM concepts. | pre20 | 5.56 | 32 | 1.01 | 0.69 | 0.05 |
| | post20 | 5.63 | 32 | 1.10 | | |
| I will contribute to STEM scholarship through my education and future employment. | pre21 | 5.55 | 33 | 1.23 | 0.10 | 0.18 |
| | post21 | 5.85 | 33 | 1.25 | | |
| I know how to secure funding to complete my educational goals in STEM. | pre22 | 4.34 | 32 | 1.31 | 0.00 | 0.56 |
| | post22 | 5.06 | 32 | 1.19 | | |
| I have access to enough funding to pursue my goals in STEM. | pre23 | 4.34 | 32 | 1.36 | 0.06 | 0.30 |
| | post23 | 4.88 | 32 | 1.39 | | |
| I have access to enough resources to help me achieve my goals in STEM. | pre24 | 4.91 | 32 | 1.03 | 0.46 | 0.10 |
| | post24 | 5.06 | 32 | 1.24 | | |
| To what extent are you confident that you could accomplish the following? | pre25 | 4.41 | 32 | 1.24 | 0.44 | 0.12 |
| | post25 | 4.56 | 32 | 1.24 | | |
| Find ways to get to know STEM mentors, even if they are busy. | pre26 | 4.56 | 32 | 1.05 | 0.77 | 0.05 |
| | post26 | 4.63 | 32 | 1.07 | | |
| Deal with unfair treatment in STEM classes if you received it because of your race/ethnicity. | pre27 | 4.25 | 32 | 1.50 | 0.10 | 0.23 |
| | post27 | 4.66 | 32 | 1.21 | | |
| Deal with unfair treatment in STEM classes if you received it because of your gender. | pre28 | 4.44 | 32 | 1.27 | 0.08 | 0.31 |
| | post28 | 4.81 | 32 | 1.00 | | |
| Persist in STEM classes even if you did not see many other people like you in them. | pre29 | 5.47 | 32 | 0.92 | 0.33 | 0.09 |
| | post29 | 5.59 | 32 | 1.04 | | |
| Deal successfully with competition among peers in STEM. | pre30 | 5.28 | 32 | 1.05 | 0.52 | 0.07 |
| | post30 | 5.38 | 32 | 1.01 | | |
| Stick with the decision to pursue STEM education/career even if someone close to you tried to discourage this decision. | pre31 | 5.63 | 32 | 1.16 | 0.87 | 0.03 |
| | post31 | 5.59 | 32 | 1.10 | | |
| Find ways to overcome communication problems with STEM professors or teaching assistants. | pre32 | 5.25 | 32 | 1.14 | 1.00 | 0.00 |
| | post32 | 5.25 | 32 | 1.14 | | |
| Continue in STEM even if you felt that the environment in these classes was not welcoming for persons of your gender, race, ethnicity, social class, or disability status. | pre33 | 5.09 | 32 | 1.09 | 0.08 | 0.26 |
| | post33 | 5.44 | 32 | 0.91 | | |
| Be recognized by STEM professionals for my work in STEM. | pre34 | 5.44 | 32 | 1.22 | 0.58 | 0.11 |
| | post34 | 5.31 | 32 | 1.15 | | |

To further explore the data regarding impacts of the program by participant type, change scores were calculated for each question by subtracting individuals' pre-test score from their post-test score. This new variable represents the mean change, positive or negative, for each item and is referred to in tables as "mean change." For the variables race and institution type, there were more than two answers but not enough responses in each category to analyze so these variables were transformed into binary variables for the purposes of statistical analysis only. This allowed for the analyses to be conducted without excluding the categories with the fewest responses in any given demographic. Additionally, gender only included one respondent who chose "prefer not to answer" so that person's responses are

not included in the gender analysis and only male and female are explored. Table 9 represents exploration of the mean change scores by gender. The findings reveal a few statistically significant results and several with small, moderate, or large effect sizes. Most items show that females experienced more positive change from the program activities across all metrics compared with males. The items that are statistically significant and/or have impactful effect sizes indicate that being female is associated with more positive change regarding self-confidence, sense of community/belonging, self-efficacy and resilience/persistence in STEM.

Table 9 Matched Sample Change Mean Comparison by Gender with Effect Size

| Student Perceptions Survey Items | Gender | Mean Change | N | SD | Sig | ES |
|--|--------|-------------|----|------|------|------|
| Select the picture that best describes the current overlap of the image you have of yourself and your image of what a STEM professional is. | female | 0.00 | 10 | 1.41 | 0.24 | 0.63 |
| | male | 0.50 | 22 | 1.23 | | |
| I know very few people in STEM. | female | -0.70 | 10 | 1.50 | 0.05 | 0.99 |
| | male | 0.00 | 22 | 1.48 | | |
| I have developed personal relationships with other students in STEM. | female | -0.20 | 10 | 1.44 | 0.75 | 0.37 |
| | male | -0.36 | 22 | 1.58 | | |
| I feel comfortable contributing to STEM discussions. | female | 0.10 | 10 | 1.26 | 0.69 | 0.32 |
| | male | 0.27 | 22 | 1.24 | | |
| I feel that a STEM faculty member would take the time to talk to me if I needed help. | female | 0.20 | 10 | 1.15 | 0.24 | 0.12 |
| | male | -0.27 | 22 | 0.97 | | |
| I feel better when I see others who look like me in STEM classes/departments/careers. | female | 0.60 | 10 | 1.43 | 0.03 | 0.79 |
| | male | -0.41 | 22 | 1.18 | | |
| Being underrepresented (i.e., by race, social class, ethnicity, gender, ability, etc.) in the academic STEM disciplines makes me more vulnerable to stress than my well-represented peers. | female | 0.40 | 10 | 1.86 | 0.62 | 1.20 |
| | male | 0.05 | 22 | 1.79 | | |
| I feel supported in STEM when faced with unique challenges. | female | 0.30 | 10 | 1.25 | 0.09 | 0.14 |
| | male | -0.41 | 22 | 1.18 | | |
| Even without the ERN Conference, I have access to the kind of professional development that I need to be successful in STEM. | female | 0.40 | 10 | 1.17 | 0.31 | 0.50 |
| | male | -0.09 | 22 | 0.91 | | |
| My health (physical and mental) is as important as my academic STEM success (grades, internships, etc.). | female | 0.30 | 10 | 1.33 | 0.51 | 0.07 |
| | male | 0.00 | 22 | 1.18 | | |
| I have a network of people in STEM to help me pursue my educational/career goals. | female | 0.70 | 10 | 1.26 | 0.11 | 0.45 |
| | male | 0.05 | 22 | 1.08 | | |
| I understand how to secure internships in STEM. | female | 0.20 | 10 | 1.39 | 0.92 | 0.25 |
| | male | 0.14 | 22 | 1.43 | | |
| I know how to navigate my search for a career in STEM. | female | 0.90 | 10 | 1.11 | 0.03 | 0.48 |
| | male | -0.14 | 21 | 1.01 | | |
| I can complete my degree/graduate degree in STEM. | female | 0.33 | 9 | 1.10 | 0.06 | 0.13 |
| | male | -0.18 | 22 | 1.12 | | |
| I can find and secure adequate employment in STEM upon graduation. | female | 0.60 | 10 | 1.32 | 0.16 | 0.59 |
| | male | 0.00 | 22 | 1.04 | | |
| I have communication skills in STEM that will further my career/education goals. (i.e. presenting at conferences, working on teams, etc.) | female | 0.00 | 10 | 0.85 | 0.40 | 0.06 |
| | male | 0.27 | 22 | 1.05 | | |
| I have the ability to prepare application essays, resumes, and other documents needed to foster my STEM goals. | female | -0.20 | 10 | 0.83 | 0.93 | 0.44 |
| | male | -0.23 | 22 | 0.92 | | |

| Student Perceptions Survey Items | Gender | Mean Change | N | SD | Sig | ES |
|--|--------|-------------|----|------|------|------|
| I can solve real world STEM problems. | female | -0.10 | 10 | 1.20 | 0.40 | 0.29 |
| | male | 0.18 | 22 | 1.03 | | |
| I understand research articles or books about STEM issues. | female | -0.10 | 10 | 1.18 | 0.78 | 0.05 |
| | male | 0.00 | 22 | 1.22 | | |
| I can work on a project involving STEM concepts. | female | -0.10 | 10 | 1.01 | 0.49 | 0.17 |
| | male | 0.14 | 21 | 1.10 | | |
| I will contribute to STEM scholarship through my education and future employment. | female | 0.40 | 10 | 1.23 | 0.92 | 0.00 |
| | male | 0.36 | 22 | 1.25 | | |
| I know how to secure funding to complete my educational goals in STEM. | female | 1.00 | 9 | 1.31 | 0.43 | 0.55 |
| | male | 0.59 | 22 | 1.19 | | |
| I have access to enough funding to pursue my goals in STEM. | female | 1.00 | 9 | 1.36 | 0.28 | 0.81 |
| | male | 0.32 | 22 | 1.39 | | |
| I have access to enough resources to help me achieve my goals in STEM. | female | 0.56 | 9 | 1.03 | 0.18 | 0.35 |
| | male | -0.05 | 22 | 1.24 | | |
| To what extent are you confident that you could accomplish the following? | female | 0.67 | 9 | 1.24 | 0.10 | 0.56 |
| | male | -0.09 | 22 | 1.24 | | |
| Find ways to get to know STEM mentors, even if they are busy. | female | 0.67 | 9 | 1.05 | 0.06 | 0.68 |
| | male | -0.18 | 22 | 1.07 | | |
| Deal with unfair treatment in STEM classes, if you received it because of your race/ethnicity. | female | 0.56 | 9 | 1.50 | 0.67 | 0.14 |
| | male | 0.32 | 22 | 1.21 | | |
| Deal with unfair treatment in STEM classes, if you received it because of your gender. | female | 0.33 | 9 | 1.27 | 0.95 | 0.07 |
| | male | 0.36 | 22 | 1.00 | | |
| Persist in STEM classes even if you did not see many other people like you in them. | female | 0.22 | 9 | 0.92 | 0.75 | 0.20 |
| | male | 0.14 | 22 | 1.04 | | |
| Deal successfully with competition among peers in STEM. | female | 0.33 | 9 | 1.05 | 0.21 | 0.02 |
| | male | 0.00 | 22 | 1.01 | | |
| Stick with the decision to pursue STEM education/career even if someone close to you tried to discourage this decision. | female | 0.00 | 9 | 1.16 | 0.83 | 0.02 |
| | male | -0.09 | 22 | 1.10 | | |
| Find ways to overcome communication problems with STEM professors or teaching assistants. | female | 0.44 | 9 | 1.14 | 0.18 | 0.41 |
| | male | -0.18 | 22 | 1.14 | | |
| Continue in STEM even if you felt that the environment in these classes was not welcoming for persons of your gender, race, ethnicity, social class, or disability status. | female | 0.44 | 9 | 1.09 | 0.85 | 0.08 |
| | male | 0.36 | 22 | 0.91 | | |
| Be recognized by STEM professionals for my work in STEM. | female | 0.56 | 9 | 1.22 | 0.04 | 0.27 |
| | male | -0.45 | 22 | 1.15 | | |

When explored by race, as previously mentioned, a binary variable was created for “white” and “not-white” in order to include all responses. The data were explored by mean change score comparisons for this binary variable and no significant differences or impactful effect sizes were found. When explored by institution type, (HBCU vs non-HBCU), only one item showed statistical significance and had a large effect size. For the item, “I know how to solve real world problems in STEM,” HBCU participants had a mean change score of -.44 and non HBCU participants had a mean change score of .24 ($p=0.05$; $ES = .80$). This finding is interesting and seems counterintuitive to the program’s goals of improving self-confidence/efficacy in STEM. A possible explanation of this negative change could be reflective of the many examples given during the conference of current real-world STEM problems, causing students to

reconsider their own abilities to work toward solving these issues. However, this finding, as well as non-significant but negative changes identified in the pre to post-test responses indicate that further analyses of the instrument itself may be warranted, in order to determine if it adequately represents aspects of the intended outcomes of the conference for the program population and reliably measures what it was designed to measure. These tests have begun but will require additional data points (i.e., increased sample size) to effectively complete.

Qualitative Data Analyses

Immediately following the conference students were asked three open-ended questions regarding their conference experience. Their responses were compiled anonymously and analyzed using standard, iterative qualitative coding strategies to identify themes. The raw student responses are alphabetized and appended to this report. Analysis of each item revealed themes and useful quotes to support understanding if and how the program goals are being met and impacts on target metrics.

Please list any new information you learned at the conference

Analyses of item one found themes regarding specific, new, scientific facts that participants learned, largely from the presentations. Beyond listing of those science facts, largely unique to each participant, the following themes emerged:

- How to seek fellowships/jobs/internships
- How to secure funding for education
- How to improve skills for presenting research, resume/application writing, etc.
- Networking, the importance of it and how to do it
- Real-world application of STEM education
- Importance of and how to access graduate school
- How to “market myself”
- How social justice applies to STEM
- Research opportunities
- Improved self-confidence in students
- Improved resilience/grit in students

As noted above in the themes, the data regarding this item produced many responses that indicate improvement in the way students perceive their own confidence in STEM and their desire to persist in STEM despite obstacles. The following examples represent just a few:

“You should always persevere”

“It’s okay not to know everything, you should meet yourself where you are at”

“Keep working on doing whatever you can to succeed”

“This was truly an amazing experience”

“Lots of people have my best interest at heart and i should consider grad school”

“...gave me hope that maybe my future isn't doomed because I went through a lot and my grades started to reflect that, but I won't be judged completely on what happened to me, but what I'm doing now.”

“Science is beautiful at its core. It gave me hope. Thank you.”

What Topics, Speakers, Events and/or Activities would you like to see included in the next ERN Conference?

Analysis of item two revealed that students overwhelmingly enjoyed the plenary session with John Urschel and Crystal Emery, the messages they shared and the student's enjoyment of it was a pervasive theme in the data for this item and those two speakers were overwhelmingly requested for the next ERN conference. Additionally, the following themes also emerged:

- More black women in STEM speakers and/or group activities
- More representation of feminists/minorities/Latinx/LGBTQ in STEM
- More exhibits/showcases
- More on social justice in STEM
- More about funding for graduate school
- More for medical students
- More career representatives for specific majors
- Computer science
- Engineering
- Forensic science
- Medical/health sciences
- More on internships/scholarships
- Distinguishing between graduate programs and PhD programs
- Broader government agency representation
- More on diversity
- More on networking
- More on resume preparation

The overarching theme of these data reflect satisfaction with the ERN topics/speakers/activities, as reflected in this quote:

“All the keynote speakers and the panelists were awesome. The organizers seem to be able to bring in excellent speakers each year. For over five years now I have never been disappointed. I look forward to the selections each year. Thank you all so much for making this conference always worthwhile.”

But some quotes, while not producing themes, did offer voices and information that should be noted in the planning of the next ERN conference:

“Some way to identify other LGBTQ people or allies (like ribbons under the nametags) may seem like a really small thing but it is very encouraging and helpful to build solidarity”

“More relatable experiences. Not everyone comes from advantaged families or knows what they want from life, so I believe it is beneficial to have some "regular" people speak so that everything is not so far removed.”

“One of the issues I came across with this conference is that most if not all exhibits, workshops, and sessions were geared towards undergrads. As a grad student, I enjoy attending conference to network and gain information about postdoc or jobs after grad school.”

Other Comments:

The final item allowing for “other comments” simply reiterated the previous data with only two new themes emerging; the majority of respondents requested breakfast to be served daily and many requested that all three meals be included in the conference planning. A minority of the responses mentioned a need for more food options that would accommodate food allergies. Additionally, one respondent mentioned dissatisfaction with one of the judges and the fairness of their experience in that regard. (For context, it should be noted that there were many cancelled flights coming into the conference and several judges were unable to attend, requiring the leadership to make rapid replacement assignments for new judges. This was out of the control of the conference leadership and the difficulties arising from cancelled flights/lost judges was noted and addressed by project leaders.)

The majority of the qualitative data represent satisfaction with the topics, speakers, organization and execution of the ERN conference. The themes listed above indicate change in perceptions on desired constructs that was also seen within the quantitative data; students improved their science identity, sense of belonging, self-efficacy/confidence in STEM, and their resilience in STEM.

Field Observations

Gabbi Haynes from KWE attended the 2020 ERN conference and gathered field observations. Students were observed engaging in workshops and plenary sessions. The plenary on social justice and the plenary with John Urschel were especially well received. Most workshops were well attended, and students were engaged. One workshop specifically, the “Entrepreneurship in STEM” workshop had participants standing along the walls and into the hallways. The room for this event was very small and the workshop was very well attended, participants were very engaged, and many commented that they would appreciate other similar topics.

Students stood in lines for nearly one hour after two of the plenaries (social justice and John Urschel) to ask further questions. Many students were overheard discussing how their ideas for their futures felt brighter and how they felt inspired.

Students were seen engaging with speakers during workshop sessions, exhibit rooms were filled during poster/presentation sessions and during the professional society exhibitions. The workshops with government agencies had moderate turnouts but the students who were present in each session seemed engaged and spent time asking questions and taking notes. The field observations support the quantitative and qualitative findings, that students were engaged, excited, and their energy, enthusiasm and morale were improved by participation in the program activities.

Additionally, attendance at the advisory board meeting saw a robust engagement of STEM leaders with the program activities and goals. Issues regarding judging of the student competitions, representation of STEM societies, inclusivity and access for participants were discussed. Plans were made to maintain engagement with advisory board members and to continue to use evaluative findings to improve program activities.

Internal Evaluation Assessment

The program staff conducted their own internal assessment of the event that included paper surveys administered at the conclusion of each session/workshop, at the end of the conference, and upon completion of the working group meetings. They surveyed student participants as well as the exhibitors from the Exhibition Session and the judges from the Student Presentations Event. The findings of these surveys indicate that participants were pleased with the conference overall. The judges expressed some concern with the function of the app used for their role but otherwise reported general satisfaction. The exhibitors reported satisfaction with the event but also a desire to have more “foot traffic” for the exhibitions. Finally, the students with disabilities working group participants expressed overall satisfaction and the “takeaway” that most respondents mentioned was a need for mentorship.

Conclusion

In summary, the 2020 ERN conference provided activities that met the program goals of improving the constructs of sense of belonging, self-efficacy and resilience in STEM in order to promote the program impacts of disseminating resources and promoting community/networking for disadvantaged and under-represented students in STEM. The data were collected in quantitative and qualitative form and triangulated along with field observations of the event, making this program year successful.

Recommendations

Continue with ERN Conference Activities

The data gathered from the event show participant support for the program activities and have generated evidence of program success. It is recommended that the conference activities continue and that the findings of this report are used to refine the planning of the next ERN conference.

Continue Effective Communication

Project leadership and staff maintained regular communication with the evaluator throughout this program year. Data were collected and shared in a timely and effective manner, promoting timely and thorough assessment of the program. It is recommended that these practices continue.

Continue Instrument Validation

Given the small percentage of overlap between the pre- and post-test survey responses, it is recommended that AAAS not make any changes to the survey instrument until testing can be done with additional responses (i.e., another cohort of ERN conference participants). In the meantime, it is recommended that KWE conduct additional testing to preliminarily determine whether any items may be combined into multi-item scales measuring the constructs of interest, which would have greater validity and reliability than using each item as a separate measure.

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Appendix

Raw Survey Response Data

New Info learned at the conference

- New Info
- ??? Influence on water chemistry; Water ??? Of bacteria using ???
- A collaborator located close to me
- A lot
- A lot
- A lot about money for graduate school
- A lot of access to fellowship and bridge programs. Also, with my major being forensic science and being a woman, I love that there are so many groups and people that are just like me.
- A lot of my personal questions was answered during the Q&A sections; It was really helpful.
- A lot of the resources/issues for students and scientists with disabilities; Grants and graduate opportunity; Resume help
- A lot! There is so much intrinsic knowledge I learned that I can't describe it.
- A way to be a better leader and what it takes to be a good leader
- AAMC programs; How to pay (help) for graduate school; Chimpanzees are 99% compatible to humans
- AAUW Fellowship and the GEM fellowship
- About fellowships; Jobs/Internships/Opportunities at DoE
- About fellowships; Networking; Many different opportunities that undergrads have
- About REU/SURP; That I may decide to minor in math
- About the woman in Academia Conclave
- Advancing my project; How to improve upon presenting
- Advice for John Urschel
- Always network and meet new people
- Always strive for greatness, even when it gets hard, keep pushing through
- Application process
- Applying for PhD. Programs; Networking tips
- As a science major, I should not have to pay for graduate school
- As an international student with lack of communication ability, I find myself improving this particular skill thanks to what I learned from the conference
- Balance school and real life
- Be comfortable with being uncomfortable; Allocate your time to your priorities efficiently
- Beer and hops can affect the proliferation of cancer cells
- Being open and connecting with people that will impact you with their knowledge needed to take you to the next phase
- Better networking in STEM
- Biological effects of pesticides; Behavior of active matter; Quantum mechanics, (specifically of what a ??? Diagram is); Research in nanomachines and the future of their production
- Bringing a resume
- Caffeine causes cell shape change, which is a totally new to me

- Career award
- Confidence; People who want to reach their goals like me
- Contact grad school coordinators. They can make things possible
- Copyright and patent law
- Crystal Emery's talk was the most influential talk; I am a conqueror
- Different career paths I didn't know it was possible to consider; nontraditional pathway of applying science to social justice
- Different conferences; Different research; Most thing
- Different grant/summer internships
- Each talk gave something to learn
- Entrepreneurship; Intellectual prop; Grad programs
- Environmental racism
- Experience to the overall ??? And participants
- Fellowship and scholarship resources and opportunities; The importance and use of statistics
- Fellowship opportunities
- Fellowship opportunities (@ Exhibit)
- Fellowship opportunities; New fields of scientific research
- Fellowship, Internship, and Gap Year Programs; Medical School Application Info
- Fellowships
- Fellowships that are available to graduate students; Opportunities through NOAA; Professional development opportunities
- Fellowships, funding, networking, opportunities
- Financial aid
- Financial aid for graduate and doctorate programs; Proper resume and CV writing
- Find a conference; Explore a different field; Tackle subject you have difficult time with (Math); Connect with university and other students for opportunity; It is okay not to know what you want to do
- Finding a helpful mentor
- Football and math
- Funding for grad school and health insurance in grad school; There are ways to use science for social justice in unexpected ways
- Funding for grad school - fellowships, private and government; Other people's research in my fields of interest
- Funding opportunities for grad school; Universities that had my major, and opportunities for grad school
- Funding options, summer internships, and networking
- GEM Scholarship; Working as a research assistant in academia
- Getting stronger in a subject or topic that I am passionate about
- Good practice giving a poster presentation; first plenary was interesting
- Got contacts for networks and learned potential new fields
- Grad school applications
- Grad schools
- Graduate programs that I can go into in the future, as well as funding for said programs; New REU experiences
- Graduate school funding; Information about STEM societies

- Graduate school funding; New tools for researching opportunities; Difference between degrees; STEM education; MCAT
- Graduate school opportunities
- Grants information; Innovative ideas
- Harvard seems kind of interesting; You can use chicken feathers to strengthen 3D printed plastic
- HBCU Climate Warming conference
- How an oral presentation works
- How it is to interact with researchers in a professional setting versus academic
- How members in the filmmaking community can make a permanent impact on science
- How to accept constructive criticism
- How to access different funding opportunities; How graduate school actually works; How for profit businesses can partner with science for social causes
- How to apply for graduate school
- How to apply for graduate school
- How to apply to iREUs
- How to be confident in dealing with others
- How to become more adventurous; Learned the true meaning of research
- How to build a strong resume, CV as well as how to prepare for a job interview
- How to connect with faculty mentors and how to be a successful person in the field(?)
- How to deal with stress; Finding a good mentor; How to be successful in workplace
- How to do an effective resume; How to develop an effective poster and poster presentation
- How to effectively deliver oral presentation in ten minutes; Networking skills
- How to find a mentor
- How to fund grad school; How to be a strong leader in science; Everyone is interested in learning
- How to fund graduate education; How this conference can benefit ??? Others; Why STEM is important
- How to have confidence in my career and research project
- How to keep your audience attention; How to take critique from other people about your research
- How to make a great timeline; How to make a good personal statement; MD/PhD programs
- How to make connections; How to improve resumes; How obtain PhD for free
- How to manage finances during grad school; Everyone has a different path, it depends on focus; presenting/talking about science is a very engaging and I enjoy it a lot.
- How to network and focus on career goals
- How to network with faculty, peers, and others
- How to network; Graduate school opportunities; How to budget
- How to patent ideas
- How to pitch a business idea in order to get funding!; How to accurately describe results for poster presentation
- How to prepare for a poster presentation; How to review our resume; How people's experience influence their future decisions
- How to present research, oral presentations, graduate schools to look into
- How to put my intelligence into use
- How to speak effectively in science
- How to start a business
- How to start a business and propose a business plan

- How to stay focused on your career
- How to successfully give a talk and also how to network with other students
- How to write better resume; Network skills; Presentation skills
- I actually learned more ways to go about my own project; Understood more of what it takes to be a scientist/math; student bodies and the work that it takes to set up an opportunity for students
- I am so grateful to have been afforded the opportunity to come to this. Although I was not able to see and attend everything I wanted to, I still will have walked away with a lot more knowledge about STEM and the industries therein.
- I as a freshman Truman student learned how to network, how to try and behave like a professional, and learned some skills needed for research on my own. I also learned how to step out of my comfort zone and meet new people
- I delivered my first oral and watched other undergraduates participate
- I did not know so many undergrad schools have summer research programs
- I enjoyed learning about how I can fund my education
- I feel as though I may have found a career path; Great to see such diversity
- I have attended ERN for 3 years, but had never been to the HBCU Showcase. I loved the showcase and sessions for faculty on how to support students with tech transfer. I hope to participate in 2021.
- I have learned much from the panelist, example Throne. I enjoy also the networking with diverse students.
- I have learned to not feel doubtful and keep working on doing whatever you can to succeed
- I learned new important information on patenting; I am going to file a patent based on the information I learned yesterday; I also learned the important of attending such forums
- I learned a bit from some of the other presenters their research is amazing
- I learned a little bit on
- I learned a lot about AAMC and things that I could use during med-school applications
- I learned a lot about different graduate schools and internships that are available
- I learned a lot about graduate school opportunities; Mentorship; How to advocate for myself
- I learned a lot about graduate schools and the opportunities they offer to prospective students, like sponsored trips and tours and meeting with faculty, and application fee waivers just for attendees of ERN
- I learned a lot about how to build a strong application and become a competitive applicant for Graduate/Professional school, especially at the PhD or MD/PhD workshop
- I learned a lot about how to improve my presentation
- I learned a lot about maintenance of passion in STEM
- I learned a lot about making myself stand out and being confident in my own genius; I also learned that it can be lonely when pursuing higher academics in STEM fields. However, I am prepared for that road and want to continue to be an innovator and future scientists.
- I learned a lot about my field and what it's like to go to college, in general and for my field; I learned what makes a presentation good and what keeps it from being good; I learned how to network; I learned how to act friendly for extended periods of time, and what questions to ask presenters (both about college and their research); I learned to walk up to a presenter, read their poster title, and say "I'd love to hear more about *relevant words of poster title*"; I learned that being one of the few high schoolers makes me very memorable and that going way out of my comfort zone (walking up to exhibits for grad school to ask for undergrad info) was an ??? good idea; I learned what ecologists and students do all day and so much else.

- I learned a lot by crashing the courses
- I learned a lot fo people have my best interests in mind and I should consider grad school
- I learned a lot from presentations I attended
- I learned a lot of information about graduate programs and obtaining a PhD in chemistry
- I learned a lot of information about graduate schools
- I learned a lot of resources that will benefit me after undergrad especially post-bac programs; I learned that experience is key
- I learned a valuable amount of information about science communication and resume building
- I learned about a lot of new schools and programs
- I learned about different research going on around the country, internship opportunities, and the importance of preparedness
- I learned about different types of funding, grants, and fellowships
- I learned about encouragement towards graduate school and further development as a professional; A lot about SCIENCE; What is being done towards social justice
- I learned about graduate school opportunities that are available to me. I also learned about how to prepare and go about doing research.
- I learned about how many diverse options there are within my field and beyond
- I learned about how MP programs at University of Southern California believe students
- I learned about how scientists are using their research to help bring change to social justice
- I learned about many opportunities for graduate programs and internships
- I learned about many opportunities to progress in my career, specifically post-doctoral options. This was not the intended purpose of the conference but I appreciate that several exhibitors could share their advice with me
- I learned about mathematics and about migrating cells
- I learned about more summer opportunities and how to better network
- I learned about new information regarding graduate school opportunities
- I learned about new internships
- I learned about other graduate schools I could consider; The workshops give me new information that is really useful for my future.
- I learned about PhD programs and how to better prepare to apply to them
- I learned about quantum computing
- I learned about research been carried out in other institutions and I obtained new insights about career options in science
- I learned about the importance of personal branding an communication skills for researchers; I learned the value of "storytelling" in research; The conference panelists made me aware of useful social/environmental problems that are being solved through STEM
- I learned about the important elements of entrepreneurship and what it takes to properly identify and establish business ventures
- I learned about the interview process as well; How to apply to the AMCAS for medical school
- I learned about the intricacies motion-tracking software
- I learned about the poster research and where I need to improve for my poster
- I learned about the steps of applying to medical school. I also learned about the new innovations that were happening in third-world countries
- I learned about the various ways that STEM research can be applied to solve social problems
- I learned about topics spoken about in posters; How to be a STEM leader and how to fund graduate research

- I learned about UC San Diego's fee waiver
- I learned about; ??? Top 10 universities application
- I learned about: the gas sensing properties of ZnO thin films; The electronic band structure of topological insulators
- I learned and gained both networking and scientific skills during this conference
- I learned different graduate programs that existed such as data sciences
- I learned how effective networking can be. This was truly an amazing experience
- I learned how Math is applied to the field of technology
- I learned how people did research and social justice
- I learned how to improve my research and networking skills. I also learned how to improve myself to become a researcher
- I learned how to manage my time
- I learned how to network and about different areas of research
- I learned how to properly communicate my pitch as well as how to continuously make myself uncomfortable to advance myself
- I learned how to relay my research to a broad audience and to people that may not be in my same field but are interested.
- I learned how to sell myself to recruiters for jobs/internships
- I learned information about how to apply for medical school, for to afford medical school, and how to fund medical school
- I learned information about how to get funding for graduate school and ways to earn scholarships, internships, and fellowships
- I learned interesting studies involving agriculture as well as physiology
- I learned just because you're an athlete doesn't mean you're dumb
- I learned more about biological research; I also learned more about further ??? To use for my own research
- I learned more about graduate school and the many opportunities that I can pursue in chemistry
- I learned more about medical school applications
- I learned more information regarding my poster presentation
- I learned more about graduate programs
- I learned of different new innovations from speakers
- I learned of more summer research opportunities at different institutions
- I learned quite a bit just watching the oral presentations
- I learned saving/investing for my goals/dreams.
- I learned some new terminology in my field
- I learned some things about the graduate student process and about funding options, post-bac programs, and details about specific programs of interest.
- I learned that ants and a particular plant in Costa Rica may have a symbiotic relationship. I learned that a beehive plant in Costa Rica may have an invading characteristic
- I learned that any career path you choose has a bit of science pertaining to it
- I learned that as a grad student, I can have more than one fellowship
- I learned that experience is key, and about more resources that will benefit me after graduating
- I learned that I am unique
- I learned that in order to achieve what you want you must work hard and not let others set you behind; I also learned that we all have different stories and backgrounds that define who we are

and what we prioritize; How we can develop and socialize and connect with others in order to expand on opportunities

- I learned that it is okay not to know everything and to meet yourself where you are at.
- I learned that it's always people willing to help and never put your eggs in one basket
- I learned that no matter the amount of discouragement or bad advice you get you should always persevere and do what your gut tells you to do; I learned to persevere through the rough patches and to always challenge yourself and not take the easy way out; I learned to follow your passions and to try new things because exploration always is essential; I also learned that you may not have a straight path into what you want to do or to where you end up but always stick with it.
- I learned that poster presentations are really fun and exciting; I learned about different and new ??? Of STEM related jobs, not just the ordinary and traditional ones
- I learned that the field I am in is very broad, and the options are limitless
- I learned that there are so many different ways in which you can use a STEM career and here are so many people who are rooting for you, even if you do not know who they are.
- I learned that you can't stack fellowships for grad schools, you can stagger the awards but can't get more than one a year
- I learned that your path as a scientist does not have to be traditional because Crystal and John were great speakers who created their own path in STEM
- I learned there are HBCUs that have bridging programs in STEM
- I learned tips for networking including exchanging contact information. I also learned: tips for picking a mentor; how to get better with oral presentations
- I learned to be uncomfortable to get comfortable. I also learned good presentation skills
- I learned to do networking with many colleagues; The poster session were so vary that I got interested in some new research
- I learned valuable lessons about how to network and what graduate school programs are available to me
- I learned valuable resources on how to conserve and save money/funding while in school/college; I demonstrated school integrity and ??? While working for the Board of Trustee at SP College; Even though academic provided non-functional provide resource regardless
- I made new contacts and a different way of explaining my research
- I met a lot of people that I would not have otherwise; I was able to get help with job opportunities as well as that that was very beneficial
- I met inspiring people who are resilient
- I realized how important is this conference for undergraduate and graduate students
- I really loved the social justice panel!!!
- I walked away with the following lessons: networking is easier than you think if you're confident; it is okay to be "alone in the room" in some way; take charge of your own education; Always work on your narrative / have your elevator pitch ready for anyone
- I was able to connect with a mentor during her poster session and got useful info for an MD/PhD
- I was able to learn additional opportunities that weren't MD/PHD or just MD, but in fact other pathways pertaining to my major
- I was feeling very discouraged when I came here, just personally in my degree choice and my capabilities because I hit a wall in my mind just believing that I can't succeed and it makes no sense for me to try. But, hearing the speakers talk about their struggles and overcoming that. Tips and tricks they learned over the years gave me hope that maybe my future isn't doomed

because I went through a lot and my grades started to reflect that, but I won't be judged completely on what happened to me, but what I'm doing now.

- I was informed about postdoctoral offerings that I've never heard of.
- I was very motivated and inspired
- I've learned that there are so many different areas of research and I hope to be able to do an independent project for next year.
- I've never attended this conference before. I am excited to know about this resource for other students
- Info about grad school
- Info on networking (very useful); What to expect at a conference (to use next time); Many things I Have written down...
- Information about graduate programs, summer research opportunities, experience in scientific presentation
- Information from various oral presentations attended.
- Innovations in social justice; Funding and fellowships opportunities; Importance of networking
- Intellectual property protection
- Intellectual property rights
- Intellectual property; Entrepreneurship; Communication skills
- Intern, grad opportunities
- Internship opportunities, oral and poster presentations
- Internship, postdoctoral opportunities for grad students; How to tailor my resume to science policy internship
- Internships and PhD opportunities; Job opportunities; Advancements in Mg-alloy preparation techniques
- Internships, grad schools, research
- Internships; Universities options
- IP; Panel discussion with successful entrepreneurs
- It is important to find mentors who will selflessly support you but also challenge you
- It is okay to share your story
- It's not much of a new information but an information that must remain constant that we need to remember that there are times when things get a bit more complicated and we must always remember that it will all get better and that we'll get through it; That when you're in a dinner interview, if you need time to think about the question given, take a sip of water to give yourself more time to think
- iThrone
- John Urschel's talk and personal story
- Keep motivate myself
- Knowledge is not limited to the information exchanged in the classrooms, it must be obtained through hard work
- Leadership skills; Shaping your own destiny
- Learned a great deal about the translation of STEM into solving critical problems of human society
- Learned a lot about grad school opportunities
- Learned about a lot of possible career opportunities that I never thought about before; Learned about importance of diversity and inclusion in STEM through awesome speakers / role models; Many graduate and internship programs to look into

- Learned about many grants to fund undergrad and graduate program; Learn about purifying water for Haiti (poster presentation); How the future needs leaders
- Learned about MIT summer research opportunities and the strong desire to increase the diversity of participants and recruit more URMs; Learned a number of things in science and engineering from listening to poster presentations
- Learned about new technology (IPee); Learned about science based humanitarian work
- Learned about presenting format
- Learned about social environmental discrimination; Learned about resilience
- Learned about the variety of graduate school fellowships that are available; Heard a lot more about using science for social justice / to benefit communities more directly; Got to network with representatives from grad schools I've applied to and learned more about the research opportunities they offer.
- Learned about various people's experiences with grad schools; Learned about various opportunities; Learned how to prepare and present a poster
- Learned how present; Learned more about grad school
- Learned more about AAAS and NSF programs like CREST and HBCU-UP
- Learned more about graduate school
- Learned more about engineering
- Learned some more about graduate opportunities and different ways that I can apply my manufacturing engineering degree
- Learned that graduate school should not be paid out of pocket, there are many reasons
- Learned that there are people out there that really care about the environment and social justice; Information from undergraduate poster presentations
- Learned to take ownership of my own educational career. Learned not to limit my career path.
- Lots about internships and career opportunities
- Loved learning about a lot of different career paths I can take with research and engineering
- Made a few good connections with professionals for down the road
- Many technical pieces of information from the various oral presentations
- Many things
- Marine biology and coral; Geometric sequences; Water purification
- Math
- MD/PhD is free in some universities with stipend
- Meeting new colleagues; Learning about the different opportunities that can come out of STEM
- Met new contacts for future REUs; Clarified programs of interest; New ways to innovate in terms of environmental justice
- Met new people
- Modern slavery initiative and all of the information contained in her presentation
- More about different research projects
- More about REUs and graduate programs
- More internship opportunities
- More schools and opportunities
- Most graduate schools are fully funded
- Most oral/poster presentations were new info
- Motivational to continue on!; We have the power to impact science and make our fields more diverse and inclusive
- My dreams are viable and should not be waived by others

- My ethnic group's professional society! Importance of organized labor/student workers unions in dismantling systems of oppression and bias
- Navigating mentorship, internships, and the hardships faced in academia
- Networking
- Networking
- Networking and how to elevate your research into a real life situation
- Networking and making connections at this event more invaluable; new collaborations and partnerships made as a result of this event.
- Networking and mentoring is a key component for success
- Networking and strategies that would help me throughout academia and as I further into my career
- Networking information was really good; Mentor/mentee conversations helped me realize difference in ??? From both sides
- Networking is far more useful than the knowledge one holds
- Networking skills; Communication skills; Presentation skills
- Networking, how to be confident in yourself, how to sell yourself
- Networking; Funding STEM careers
- Networking; Inspiration and motivation; Different fields of study
- Never give up; Professionalism
- New graduate programs
- New graduate programs; Summer internship programs; Information about PhD/MD programs
- New innovations
- New opportunities of conference and university
- New possibilities for grad schools
- New research and how antibodies are conjugated(?)
- New research opportunities
- NIH research experiences session was very good
- NIST post-doc opportunities; Government jobs
- No matter the hardship, we'll succeed with hard work; Better presentation skills; Mentorship and networking are valuable
- None
- Not new info, but I loved to see the wide range of topics presented at STEM; Entrepreneurship opportunities in STEM
- Not really had a good internship would have help.
- Not to be afraid to talk and speak up
- NSF Grant
- Offer options and opportunities after undergraduate studies
- Opportunities at schools, cancer
- Other conference, SACNAS(?)
- Other PhD programs for computer science
- Patent, trademark; How to start a business; STEM; SDG 17 goals
- Patenting
- Pathways to Science and other databases for finding research opportunities; Books to read and authors to follow; How to give better technical talks to various audiences; Other conferences I can present and attend
- Personal values and development

- Post docs and Job opportunities
- Post-bac programs and MD/PhD programs
- Poster presentation etiquette; resume building
- Potential virtual mentorship partnership opportunities
- Presentation ideas
- Presidents Fellowship program
- Professional societies info
- Quantum computing
- Received a lot of motivational insight from all speakers as well as graduate school program information
- Research opportunities, internships, historical context on Washington, D.C.
- Resume skills; Importance to knowing who you are to start your own business; importance of networking
- Resume tips; Fellowship and graduate school funding opportunities
- Resume writing and tips - job tips; making connections is important
- Roadmap to becoming a doctor was excellent as a pre-med STEM student...learned info about admissions, MCAT, financial aid, etc.
- Science is beautiful at its core. It gave me hope. Thank you.
- So much! My main focus for this conference was to learn more about potential grad schools and funding grad school. So I was able to receive a lot of info on potential programs, and learned a lot about fellowships and similar funding opportunities
- Social justice integration with STEM!
- Some facts and interests in electromagnetics and machine learning
- Some government organizations to apply to; How to just reach out to people
- Some info about grad school, and some universities that I am interested in
- Some of previous ERN
- Student research topics were full of interesting information
- Summer internship to apply to
- Summer research opportunities
- Summer research opportunities and way to get involved
- Talking to researchers in my field and gaining insight was good.
- Taylor your presentation towards your audience; Learn how to communicate research to people outside my field
- Techniques for presenting; How to travel alone; How STEM conferences work
- That conference allows for students to develop their talents and knowledge to people from around the world
- That I am valuable. I may not be the best now but I am growing and will be supported as a minority in STEM
- That I can do ANYTHING!!
- That I want to get my PhD and take up some research
- That it is held every year and more about STEM
- That many grad schools actually have my program
- That networking is so 2019. The new idea and concept is that we must collaborate
- That there is so much amazing research being done by students all over
- That this year was the tenth anniversary

- That worm's brains are similar to human brain and they can use that to locate and possibly cure diseases; Getting uncomfortable means and growth; Drones are being used to locate areas that is affected by global warming and the cities that has objects that absorbs the heat which is why cities are hotter
- That you can apply STEM to almost anything; Small advancements in science have huge impacts
- The availability of fellowships; Fully understanding the importance of networking/mentors
- The benefits of AAAS
- The diversity of the scientific community and the resources available
- The ERN app
- The fact that this conference exists and what it's about; Different types of people out there (diversity); STEM with disabilities workshop was phenomenal!!!
- The helpfulness of all the other colleges in offering research opportunities for the summer
- The hidden world of Forensic internships and that networking is an essential tool, such as LinkedIn, especially when you have no clue where to go or what to do.
- The human touch of science that is needed more often
- The importance of LinkedIn!
- The importance of the GRE as an African American man
- The keynote speakers and panelists are always amazing! I really enjoyed this year's selection. I took something away from each speaker.
- The level of degrees and the variety of what can be accomplished in science
- The love of STEM through educators, students, and speakers; Building a business through innovation and technology; Gaining different aspects of leadership
- The Maxwell DISC Method; Qualities of a good leader; Good website for scholarships; Other Pharm D. programs in the US; Summer research opportunities
- The national mentor session was good and informative.
- The number of black people in STEM is higher than I thought
- The number of STEM leaders in the academic and practical arena in the fields who are "minorities" and "women."
- The only things that should limit you are a lack of talent, a lack of worth ethic, and just plain bad luck
- The percentage and success rate of minorities in the sciences; The usage of a normally web-based programming language, to control a robot's movements; The amount of resources available to internationals in the sciences
- The plenary sessions were helpful; I learned about jobs in ??? Sector such as with DoE and NOAA
- The professional societies meeting was a great opportunity!
- The speakers were good; The panels were good
- The value of a team; Personal value
- There are many opportunities for students ungrad and graduate students; The many summer research opportunities; Job search and application process; What to do during interviews phone, Skype, and phone
- There are many talented and diverse students all over this country. ERN Conference brings many of these researchers to a place where they can develop and improve their skills
- There are more opportunities than I thought for minority students
- There exists grad schools specific towards industry work
- There exists iREU
- There is a lot of opportunities out there

- There is a science side to social justice issues. I think that was a beneficial panel.
- Things
- This is my first time attending ERN and I learned that this conference aligns well with the pre-college work I manage with students; I also learned that the skills I am teaching students, (i.e., science and engineering skills) are relevant and needed for kids and young adults.
- Tips for getting financial support (NSF GRFP); Networking tips
- Tips on being a better student and networking skills
- Tire management
- Tons of info about post-graduate options and programs working for government agencies; I got to meet a variety of people who used their major/degree not just in academia
- Too much to list; especially from student oral and poster presentations
- Travel awards should/can be listed on your resume
- Types of fellowships; Ways to fund my education through fellowships; How to prep for medical school
- Understood more about the importance of diversity in the medical field
- University of Nebraska does not have a kinesiology program
- Value propositions; Travel to research abroad
- Various fellowships programs
- Very motivating and inspiring. Got me excited to go home and start working on achieving my own goals.
- Water quality monitoring techniques
- Ways in which you can build a strong CV or resume; Exhibits ??? Where I had the opportunity to meet representatives
- Ways to improve as a person; Public speaking
- Ways to improve upon my knowledge in my field
- What is needed(?) in a resume
- Where/How to find external funding for HBCU students
- Which grants are applicable to me and how to apply for them
- XSEDE; NSF Endowment grant
- You power a fan with pee

Next ERN

- A reserved time for receiving feedback from judges or a online resource to view scoring sheets
- A section on the 4th industrial revolution; session on building a sense of belonging for underrepresented minorities in STEM
- A talent show
- About international internships
- Activities involving our discipline prior to presentation
- Add women in STEM workshops for more interactive group sessions
- All of the panelist from this year. Add a few more black women; Dr. Charles Colen; Dr. Anissa Buckner
- All the keynote speakers and the panelists were awesome. The organizers seem to be able to bring in excellent speakers each year. For over five years now I have never been disappointed. I look forward to the selections each year. Thank you all so much for making this conference always worthwhile.

- An activity that I would like to see would be more exhibits. I would also like to see Crystal Emery.
- An industry exhibit
- Analytical chemistry; How to choose the right graduate school
- Another social justice panel; small group discussions
- Anything cool
- As of now, I don't have any recommendations to improve the ERN conference
- Being a minority in STEM
- Biochem topics! Like the water topic about the dehydrator and toilets. More biotech
- Biology
- Biomedical field in sickle cell anemia; African scientists
- Biotech plant science
- Black women in engineering
- Black women in STEM speakers
- Business startup speakers/topics; Another "Road to become a doctor" topic
- Comedy, it's important to learn a good lesson through a laugh
- Communication sciences topics; animal sciences topics; Funding for undergraduates; Funding for undergraduates - not REUs
- Continue disability working group!
- Continue the disabilities workshop. I feel like a lot of ground was covered but this is a conversation that should be more widespread, and missing from other general research conferences.
- Continue to see speakers that are anomalies in their field
- Crystal
- Crystal Emery
- Crystal Emery
- Crystal Emery, John Urschel
- Crystal Emery, speakers in general were great.
- Crystal Emery; Davina Durgana; Sacoby Wilson; Huda El Assad
- Crystal Emery; Veterinarian topics; Communication and speech topics; funding for undergraduates (besides REUs)
- Crystal Emery's motivational speech; I would like to see more of a diversified academic research topics and research being done on not only STEM fields but also in the art fields
- Crystal for sure; Networking
- Crystal was fantastic; Panels were amazing and should be repeated!
- Crystal, John
- dance
- Data science is becoming more important for biologists, psychologists, etc. A workshop on R or python or Perl would be awesome. Doesn't need to be crazy, just a simple follow on program sesh :)
- Data science in material science; Machine learning
- Defining career pathways
- Definitely keep the Science for Social Justice panel! Also if the networking workshop occurred more than once that would be great because I missed it due to presenting.
- Definitely more physics based presentations
- Diane Yousef was excellent
- Differentiating between interests, talents, and passion

- DoE or other industries; There were a lot of educators, I would love to hear from some more industry personnel on panels
- Dr. Manu Platt
- Dr. Sylvester Gates - Physics professor at University of Maryland
- Dr. Yousef; Dr. Wilson; (Soon to be) Dr. Urschel; Ms. Emery
- Dr. Yusef (Dianne); Mr. John Urschel
- Entrepreneurship
- Entrepreneurship and IP should be highlighted more; Build a job (entrepreneurship), not rent a job (employment)
- Entrepreneurship information/advice
- Essay writing workshops for applications specifically.
- Ethics and integrity
- Even though this is a research conference, maybe include more MD opportunities and or student panels rather than adults. I think we would better relate to student panels.
- Everything the same
- Everything was great
- Everything was perfect
- Exhibits
- Exhibits; Resume workshop; Poster presentation; John Urschel speech; HBCU Showcase
- Expectations of what to expect as a grad student; Navigating grad school, imposter syndrome; Writing workshop
- Female medical doctor/doctor in osteopathic medicine; LGBTQIA Stories; Hispanic Women speakers
- Feminist, Latinas and other minority groups in STEM
- Financial Assistance for Community College Students; Internship opportunities for undergraduate students
- First gen talk
- Forensic science, astrophysics, chemical engineering
- Forensics and other niche sectors of science
- Frameworks that are useful for doing social justice in academic spaces
- Funding for grad school; Director of LSAMP USF Bernard Batson - he made me think of other options for grad school like USF; All the poster/oral presentations helped on prepping for future conferences
- Getting over being an introverted scientist; Imposter syndrome, perfectionism
- Grad students networking, employment opportunities/career fair, more opportunities (jobs) for grad/PhD students
- Graduate schools with different research focus because I thought it was all biomedical science focus
- Grants
- Great space and event overall!
- Have more workshops, exhibits, etc. geared towards grad students and grad students about ready to graduate
- HBCU Making and Innovation Showcase session where MK Harley spoke; And the session where Crystal Emery spoke
- HBCU Making and Innovation Showcase was very interactive and entertaining
- HBCU Making Event should always be done

- HBCU STEM students or professors
- Help with career decisions with speakers who gives you advice about choosing a career
- How to deal with racism in the STEM
- How to gain better talking skills for the events such as poster presentation
- How to help global warming
- How to maneuver from undergrad to next phase of life
- How to network with other students at different institutions
- How to pay for grad school
- How to prepare a poster, public networking, and how to present a poster.
- How to stand out
- How to succeed being an immigrant in the United States
- Humanitarian works (but you guys already have that)
- I always enjoy the panel discussions. It helps students to broaden their horizons
- I believe you all covered everything
- I came as an exhibitor, so I didn't really attend the sessions, other than the breakfast, lunch, and dinner.
- I don't know - I wouldn't have thought I would get anything from hearing John Urschel, but his talk was so great I nearly cried. You guys are great and did a great job!
- I enjoyed hearing how other people got through grad school. Their stories encourage me to continue with my degree
- I enjoyed the conference how it is.
- I enjoyed the speakers the most. Very inspiring and beautiful people; I love to see people in science doing excellent in all platforms
- I liked going around learning the different inventions
- I missed the session about professional organizations, I would like to see them set up like the schools instead of a workshop
- I really enjoyed the social justice panel because I do not usually see how social justice and science impact one another. I also enjoyed how there were sessions on all aspects of the future you could have were presented on either through workshops or panels or session
- I think that more topics on agriculture would be interesting
- I think the open session should have a dynamic speaker and not a panel discussion
- I would just love more motivational talk and how each person operated under oppression coming from people around them or their own mind defeating lies and fear tips.
- I would like the students to be exposed to areas of biology, basic biology research, environment, and conservation biology. Too much emphasis on areas where most minority students are being siphoned to.
- I would like the topic of minority scientist to be expanded on with more scientist in my field. Speakers about their impact and experience.
- I would like there to be specialized travel awardee events and things
- I would like to hear from minorities in Professional fields (i.e. doctor, dentist, etc.) in addition to the STEM speakers; I think a social event for both the faculty and students would be nice such as a bowling event or a tour around the city especially in a STEM related place such as the NIH, etc.
- I would like to implement gap year opportunities, not everyone wants to go through research or graduate school
- I would like to know more about making STEM appealing to folks that have experienced or been affected by incarceration and helping more folks of color who are released from prisons be

comfortable in themselves to try a STEM path instead of the usual (social work / psychology / counseling / what for drugs/etc.)

- I would like to see a few law programs that specialize in patent law
- I would like to see a Hispanic/Latino representation at the plenary sessions
- I would like to see a session dedicated to research advising for PI sponsoring students
- I would like to see a session on how to navigate passions with STEM career and how to be successful while dealing with imposter syndrome.
- I would like to see an NSF GRFP table at the exhibit.
- I would like to see Crystal Emery come back
- I would like to see more doctors that are related to students future occupation. Ex: I would like to have a neonatologist come and talk to the students. I would like to become a neonatologist.
- I would like to see more Latinx representation and have more sessions geared for students
- I would like to see more organizations at the exhibit hall.
- I would like to see more people in the forensic sciences and the biological social sciences - example: biomedical anthropology
- I would like to see more posters about the environmental science and ecology areas
- I would like to see more space research
- I would like to see more speakers and activities geared toward students who are interested in becoming doctors. To my knowledge there was only one session on that topic during this weekend.
- I would like to see more speakers like showcased
- I would like to see more veterinary topics included in the next conference; I feel like it is a STEM major that is often neglected
- I would like to see more workshop sessions
- I would like to see more workshops on how to transition from graduating working industry and then how to get back into school.
- I would like to see more workshops rather than dinner plenary sessions; Rather than talking about their lives alone, I'd like to know about their current research
- I would like to see similar speakers and activities at the next ERN conference in order to truly impact them (the future attendees) the way I was.
- I would like to see/hear Crystal Emery again
- I would like to spend more time interacting with other attendees
- I would like you to include next year a section which allows for presentation of ideas. I loved showcasing prototypes. However, there are many brilliant ideas that have not been developed to protocol levels. If we have such forums, you will be amazed at what we have to offer.
- I would love to see more pre-health topics during this conference rather than so engineering oriented. If doctors could come in and speak that would be very good for pre-health individuals. Also, if current medical school students could come. There could also be medical school to come in and table.
- I would not change, keep providing (AAAS); Speakers should veteran as well as Big John!
- Ice breakers; More athletic based graduate info
- IDK any notable names
- Inclusion of or bridging the gap of STEM with other majors
- Industry career fair
- Innovative research topics and development; Latino speakers; ??? Activities that allows us to work with our fellow peers.

- Instrumentation for imaging (TEM, SEM, etc.)
- Integrative scientists, scientists that combine multiple disciplines to solve their question
- Internships/graduate school - how to prepare
- Intersection of STEM and public policy
- Interview workshop; Direct networking event with recruiters
- Inventing jobs for a job fair
- It would be great to have more exhibitors from the West Coast universities as well as government organizations and non-profits
- It would be great to see something about how politics play into sciences
- It would be interesting to see something about science in politics
- It would be nice to continue having a social justice plenary session since most of this problematic influences or affects the majority of minority attendees
- iToilet; A follow-up on some/most of panelists from this year
- John Urschel
- John Urschel
- John Urschel
- John Urschel
- John Urschel (Again)
- John Urschel AGAIN!!; More partnerships with industry. Although this is focused on academic research, most people who start in academic end up in industry and it's important to help people navigate this.
- John Urschel should come again; Workshops that focus more on soft skills
- John Urschel was a fantastic speaker. I would love to hear from him again.
- John Urschel was a phenomenal speaker with an outstanding story and message. John resonates with all in attendance. His story is priceless!
- John Urschel was incredible and absolutely inspiring. He truly moved me with his story and his advice
- John Urschel was the best speaker at the conference. Strongly consider bringing him back (especially after he finishes his PhD).
- John Urschel; Crystal Emery
- John Urschel; Exhibits; Forensic sciences
- John Urschel; Social Justice
- John Urschel; The lady with the itom device; Resume workshops
- John Urschel's talk again
- Keep talking about social justice; Talk about the impact of plastic in the world
- Lakeisha Greenwade
- Lakeisha Greenwade (Coach L.); Issac McCoy; MK Haley; Van Freeman; Crystal Emery
- Lakeisha Greenwade did an amazing job!!!! I loved her presentation.
- Lakiesha Greenwade's Topic/Speaker - needs to be longer
- Lakisha Greenwade
- LaKisha Greenwade was a great host of the "Understanding the Business of Entrepreneurship" and I feel it was the best session for young people and scientists. I would love to see her here again.
- Latin representation at plenaries; Conference app promotion
- Linguistics; Speech pathology; Economics/Finance; Computer Science/IT
- Longer STEM and Social Justice session

- Major/interest specific workshops such as: genetics, coding, etc.; More networking events (maybe organized in a way so people with the same backgrounds can meet easier).
- Math. Education Studies
- Maybe have the jobs (companies) and/or schools actually accept students into an internship, or a graduate program. Taking info without much follow-up isn't as important; Better way to submit scores. Appreciate the app, but with so many students it becomes time consuming if you're doing anymore than one or two sessions
- Maybe more engineering speakers and topics; Career fair
- Maybe more events geared towards high schoolers even though majority of participants are undergrads and grad students. Some events I went to really didn't pertain or give any advice on where I was at this point.
- Maybe more on the computer science topics
- MD/PhD
- MD/PhD applications; PhD applications; How to deal with racism and sexism in STEM
- MDs!!! I know research is mostly PhD based but MDs do research too and a good portion of students are interested in that route.
- Medical references if possible. I know the NSF doesn't really work with medical though
- Medical research and how to get into medical school
- Medical school process and not only Master, PhD, MBA
- Medical school students, MCAT Prep, medical school financial aid
- Medical school; MD/MPH
- Medicinal chemistry
- Mentorship, Leadership, Advocacy
- MK Haley; Isacc McCoy; Lakeisha G.
- Mock interview prep session for job; On-site job interview
- More about comparing graduate school to PhD programs and how to know which is best for you.
- More about jobs
- More activities about STEM education, MCAT Prep, resume building. Science Projects activities. STEM Fashion show.
- More activities for high school students (poster session, a talk or two for students about things to consider to get into college)
- More activities that can bring ERN attendees even closer to each other
- More agriculture science events/activities, topics, and speakers
- More biotech representatives
- More career options besides furthering education; ways in getting into particular fields of careers
- More career options in science. It would be nice for students to understand how a degree in science could be applied to certain career fairs. My suggestion would be to bring in a professional who could identify fields for each division in science
- More chemistry; Crystal Emery
- More college booths!
- More discussion/talk at separate times
- More diverse and interesting seminars and workshops

- More diversity in exhibits and more opportunities for undergraduates (first years!!); More majors represented in exhibits; Exhibitors more knowledgeable in fields/programs outside of their advertised exhibition
- More diversity panels/workshops
- More doctors / people in medical field
- More ecological events and talks; Less overlap with poster presentations and conference talks
- More engaging network or panel vents during the day.
- More engineer events make the talk more required than the talk
- More engineering focus, i.e. internships, scholarships, speakers, etc.
- More engineering focus, i.e. internships, scholarships, speakers, etc.
- More ethnomedicine
- More exhibitors focused on environmental sciences; resume workshop later in the conference (I couldn't make it because I had to fly far); speakers more specifically addressing gender inequality in STEM
- More exhibits and departments; More networking opportunities for undergraduates
- More exhibits and speakers!
- More exhibits would be nice. There were a lot of exhibits, but many were field specific (engineering department, biomedical department, etc.), so when I liked the university, I was only able to get a small amount of info from it.
- More food options
- More fun activities for the students other than the karaoke
- More genetics
- More geology or environment
- More government agencies at the exhibit hall.
- More government agencies; More exhibits, specifically with summer programs
- More grad student oriented sessions: career development, company activity(?); student mixer/icebreaker
- More graduate schools at the exhibitions
- More guest speakers that can help guide those in similar paths
- More hands-on activities that unite ERN attendees together
- More hands-on sessions
- More HBCU-focused sessions
- More healthcare related information
- More industry at the exhibit
- More informal networking at the beginning like a talent show
- More information about career opportunities; I wish that the exhibition didn't just mostly include biology/medical biology programs
- More information for late stage grad students
- More information specific to undergrads
- More innovative speakers (i.e. Crystal Emery)
- More interactive; Maybe a comedian
- More internship opportunity
- More John Urschel
- More keynote/plenary speakers to motivate our students
- More leadership activities
- More like Mr. Urschel!

- More Marine Biology opportunities
- More math-based exhibits for Math majors
- More MD/PhD and MD things
- More medical application
- More medical schools coming to talk about their programs
- More motivational or success stories
- More networking events for research opportunities; Veterinary medicine options; Diversified speakers
- More networking for the EFRI/REM students before posters
- More NIH representation; More FDA representation; Consulting practice / quick lessons / tools; How to make a student organization successful
- More on choosing careers
- More on computer science/machine engineering
- More on disabilities
- More on post-bac opportunities and what to do between grad school and undergrad
- More on semester internship/co-ops; More on doing research abroad; Fullbright
- More on the move of Data Science and Analytics
- More opportunities for graduating senior in the southern region
- More opportunities for international students; More resources on employment opportunities
- More opportunities for students to mingle / have fun
- More Pacific Islander inclusion; Dr. Rosie Alegado and/or Dr. Kiana Frank on their work with native Hawaiian educators.
- More people like John
- More people like John and Crystal who are doing innovative things in STEM
- More people who are involved in medical field or research
- More personalized mentorship and networking opportunities; More interactive workshops instead of "sit and listen" for hours
- More physics topics; workshops/activities for graduating seniors who don't need info about grad school
- More post-doc opportunities
- More preparation session like how to get into graduate/medical school
- More readily available information in grad funding, mathematics programs, etc.
- More relatable experiences. Not everyone comes from advantaged families or knows what they want from life, so I believe it is beneficial to have some "regular" people speak so that everything is not so far removed.
- More research focused on social justice
- More schools at the exhibits; Crystal Emery should definitely be here next year!
- More social justice and environmental justice speakers
- More social justice in STEM
- More social justice initiatives
- More speakers who have achieved in STEM who are representative of the conference participants (not to say that that didn't happen at this conference)
- More speeches by inventors
- More STEM related speakers
- More stories of overcoming adversity for success
- More students are plenary speakers

- More technology aspects
- More things for freshmen, sophomores; More ecology / less biomedical stuff
- More topics about career options outside academia, and to develop other personal skills such as time management, writing. Also more topics involving Latino community in science
- More topics about medical school information and funding from NSF, and financial aid for further STEM education
- More topics concerning black students in STEM
- More topics on small business related research like SBIR and STTR
- More topics regarding gender and individuals who had a nontraditional education pathway
- More topics talking about diversity in science
- More topics/sessions including health/medical fields and disparities
- More undergrad workshops
- More undergraduate opportunities especially in the exhibits (schools) mostly will help community college students; More biology
- More undergraduate things; How to properly build your resume
- More women of color in social science
- More workshops/networking opportunities with the other students.
- Morgan DeBaun - Blavity and Afrotech
- Motivation speakers like John Urschel
- Motivational speakers that speak about their journey to grad school
- Ms. Crystal Emery (again); More pathways to research; More programs for the summer; workshop about professionalism
- N/A - They are doing a great job.
- Native American presenters on climate change
- Natural physics: astronomy, astrophysics, and planetary science
- Networking in your field
- Networking, fellowship, research
- New bio/cell/molecular techniques or Nobel prize winners
- New particles; Increasing possibilities of acceptance in internships
- New science
- New technology advancements
- Next year, they can host some sort of interactive event for all of the students to meet each other and network, like a party. We could as a group tour areas in D.C.
- No comment. I am interested in being a speaker at next year's conference. Have devoted 23 unpaid years to this education/advocacy.
- Not sure; more computer science activities or speakers
- Not sure...; Speakers from various industry positions were good. I feel that exposure to many different kinds of professionals is the most important.
- Nuclear engineering
- One of the issues I came across with this conference is that most if not all exhibits, workshops, and sessions were geared towards undergrads. As a grad student, I enjoy attending conference to network and gain information about postdoc or jobs after grad school.
- Opportunities in medical science jobs; Research workshops
- Orlando; Speech; Crystal - very inspiring
- Other conferences other than ERN we could attend

- Panel on STEM social justice was by far most enjoyable planetary session. Environmental racism was perfectly executed and delivered. There should be time for attendees to meet panelist speakers
- Panels; Ms. Emery; Dr. Wilson
- Partnership with National Labs
- Patent; Machine learning
- Perhaps a workshop on what is available to internationals in terms of schooling and opportunities
- Pharmaceutical engineers; Industry after PhD
- PhD topics
- Plant science
- Please have more speakers that talk about social justice identity, and STEM! That panel was AMAZING!! I would also like to see more race/cultural and STEM identity workshops for students to develop professional skills; How to network. I might have missed this.
- Please include Dr. Tapia and math presentations and speakers
- Please include some directions for proper "decorum" for judges. I was dismayed to hear that some students reported that their ??? Judge (in Biology #1 oral, grad student) was "very mean," tearing apart their research during the session.
- Plenary sessions 2 and 4 were great, I was ???; I appreciated the diversity of careers the panelists had. Would love if they could have a doctor on a panel next year.
- Plenary speaker at the Friday luncheon and the Saturday night speaker. The morning session on social justice was also interesting
- Possible mentoring events
- Poster and oral presentation tips
- Private sector connected to life after graduate school; How to pay for graduate school; How to fund conferences
- problems in STEM
- Professional development
- Provide possible STEM scavenger hunt for scholars to use to explore the area; Excellent opportunities for faculty/scholars
- Psychology and psychoanalysis
- Public health
- Public health and STEM/Science combo; Since the two partner together
- Random assigned seating to promote conversations with strangers.
- Resources/workshops/information for LGBTQ people in STEM. The little research that exists suggests that queer people feel unsafe in STEM workplaces (especially in fields that lack diversity). Some way to identify other LGBTQ people or allies (like ribbons under the nametags) may seem like a really small thing but it is very encouraging and helpful to build solidarity; Resources/workshops geared towards helping people who have disabilities/chronic pain/chronic illness/mental illness in STEM. Pursuing a STEM degree is already extremely difficult and time-consuming, but if you have a disability it can take even more time and energy to keep up; Additional issues can be affording healthcare/insurance when you can't work as much as others, having access to specific medications and finding accommodations on campus. I only recently met a few other students who have disabilities (ADHD, bipolar disorder, and chronic illness) and it was one of the most empowering and encouraging moments for me. It helps to know you aren't the only person who has to deal with these types of challenges in STEM, and that it is

okay if your disability or illness made you have to take time off school, or take longer than others, or made you take a nontraditional academic path

- Resume Building; Mock interview
- Roadmap to becoming Doctor; Crystal Emery
- RZA or Rah Digga to be speakers for next conference
- Saturday plenary speaker was amazing!
- Science and AAS
- Scholarship and Foundation awareness; Oral presentation descriptive; Way to go USF my school of choice for my baccalaureate degree
- Science talks
- Seminars about Chemistry
- Similar, perhaps computational background speakers
- Smooth transition between school and work
- Social justice panel
- Social justice panel
- Social justice speakers
- Something about marine sciences
- Speaker from Smithsonian
- Speakers in biology
- Speakers in biology or with interests in the arts
- STEAM
- STEM Policy, Advocacy and communication (plenary session)
- Student mixer or a pure non-academic activity; Career fair
- Subjects of alternative medicine and doctors. Such as herbalist and naturopathic
- Team builders
- That
- The college/university recruitment booths; Maybe some opportunities to tour a local school
- The current ones are good
- The electrochemistry session was 3 presenters from the same school and group in a hotel room refitted to be a presentation space; More e-chem please
- The ERN Alumni (probably a different set of people) to learn more about people's lives and experiences and apply to mine
- The ERN Conference was GREAT! This year
- The importance of working with people from other mayors that are not science.
- The imposter syndrome; MD/PhDs; John Urschel
- The large plenary sessions are best left to a single keynote. The panels were not effective. Hard to follow
- The mathematics football player help more by talking in my field so having speakers from many fields
- The opening speaker/panel should always set the tone for the conference. I don't believe the panel engaged the students as they needed for the opening session.
- The plenary speakers from session 2 were EXCELLENT; STEM for social justice is a good topic for future conferences!
- The social justice one
- The speaker was great.

- The speakers on social topics! Also, I hope to get more exposure to graduate programs that appeal to more than just biology majors!
- The topic of what "comes next" after graduation with the desired degree
- Though the ERN conference's aim is to promote research, we understand that some students join REUs but opt to join industry. It would be great to have workshops that cut across both academia/grad school and professional life. E.g. Leadership, emotional intelligence and the like
- Time management; How to network; Testing skills
- Tips for applying to /preparing for graduate school
- To see places such as dental schools and medical schools to be included in the internships area: to also possible add them as a possible career recruitment
- Topics geared towards post-doc opportunities
- Touch on things for students who are planning to stop at their master's
- Transportation
- Twitter contest, entrepreneur
- Twitter is a good idea. However, other more than twitter will be good.
- Urschel, John
- Urschel. Go Ravens.
- Validated parking for presenters vs. expense reporting
- Variety in conference seminars
- Vet medicine/school
- Vet schools
- Veterinary schools / veterinary medicine
- Well, ecology was wonderful but I found it underrepresented - but perhaps proportionate? I don't know enough. But I'd love to see Dr. May Berenbaum of UIUC. She is a white woman - I think - I know she's at least a woman.
- What is it like to be an MD/PhD
- Where they shared their experience and techniques
- Why it is NEVER TOO LATE to get a degree in any STEM field
- Wine, cheese, and networking event
- Workforce development and employability = skills, knowledge, abilities for industry and employment
- Workshops about relevant skills required for engineers and skills they should have for interdisciplinary applications
- Workshops are good ideas
- Would like increased participation of engineers and engineering research
- Would like to see karaoke again; Would've liked to see ERN-specific ribbons to add to badges
- Would like to see more employment opportunities

Comments

- A more clear schedule of exactly what is offered at the conference
- Add breakfast for each day
- Add innovation showcase to the conference agenda
- Amazing opportunity! Thank you for everything!
- Amazing!
- An amazing experience! I hope to attend again in the future!

- App glitched on iPhone and was difficult to use for judging
- As a senior STEM professional was amazed to see so many aspiring new STEM professional
- As usual, a great conference. My students have enjoyed it.
- Audio for back of conference needs help for future and panelists had difficulty hearing students questions
- Award ceremony was decent
- awesome
- Awesome!!
- Be in sessions with similar topics; Online schedule instead of booklet; Be mindful about people's dietary restrictions; Be mindful about people's pronouns
- Better food options for vegan/veg.
- Better food; Please have steak all the way cook. We don't like blood in our food.
- Breakfast should be served each morning
- Breakfast should be served each morning
- Breakfast should be served everyday
- Breakfast should be served everyday, especially days of presentations
- Conference to make it better
- Do a better job of your speaker system [layout diagram]
- Don't forget social aspects. Giving minorities money to do research does not help minority communities. Thank you!
- Dr. Shirley Malcom has, no doubt, contributed enormously to this conference. Her strength, though, is not in public speaking.
- Enjoyed my first time here; Hope to be here again
- ERN was great.
- ERN was really beneficial to me in continuing to absorb and learn things about science and what STEM looks like in all forms.
- Excellent conference
- Excellent conference once again!!
- Excellent facilities and location; Good timing and food
- Focus a bit more on graduate students in terms of attendee numbers, workshops, and exhibit recruiters. It is highly disproportionate!!!
- For rooms where both graduate and undergraduate students are presenting, list that as an addendum, on the addendum page; List preferred attire for events; Be more clear with five minute late rule for oral presentations; Return feedback to oral/poster presenters; Provide pens with evaluations
- Give time slots for presentation, I could have seen more students if I knew when they would present; A session early for people to network early in the 2 1/2 days
- Good
- Good conference, needs more activities
- Good event
- Great and much needed conference!!!
- Great conference
- Great conference
- Great conference
- Great conference overall
- Great conference!

- Great conference!
- Great conference!
- Great conference! Happy to celebrate ten years with ERN.
- Great conference! Look forward to the next year.
- Great experience. Would love to be back here again! I learned much more than I expected to.
- Great first experience for not only this conference, but conferences all together!
- Great job
- Great networking experiences; Really liked all the speakers, got very motivated and inspired.
- Great, I hope to come again and present research
- Had a great time!
- Have electronic documents to save on paper, and provide writing utensils.
- Honored to serve; Lots of fun; As always, impressive students! This is critical for national security. There is a talent shortage and lack of diversity of perspectives. This begins to address both
- Hope to attend again!
- How do I present a project next year
- I do believe speakers during dinner is nice, but most of the time a lot of noise was made due to plates and side comments.
- I enjoyed my time here
- I enjoyed this conference very much!
- I had fun.
- I had great discussions with fellow judges
- I like the solo plenary speakers much more than the panels
- I love the strong presence of minorities here
- I loved that the judges for the poster presentation were not the types of people to ask questions just to make us feel stupid but I loved that they asked questions to challenge us and also teach us if we didn't know the answers. I also loved that they gave tips on how to improve on to do a better presentation for next judges.
- I noticed that quite a bit of the plenary speeches were motivational. Too motivational. It's my hope that Black students will eventually see themselves as valuable and worthy, and won't need to be told so in plenary talks. They will need the confidence to compete with others in the workplace and their careers. We're black. We're not less than. We need to believe that. Now. Neil Thompson teachthegeek.com
- I really enjoyed Crystal R. Emery; Additionally, as an undergraduate researcher of color I've enjoyed the sense of community and support
- I really enjoyed the conference and felt inspired by the variety of backgrounds and interests represented.
- I really liked the plenary sessions
- I really liked the speakers
- I think it was confusing to locate the oral presentations. They should have been more organized. It became difficult to even plan my topics because people presented / were late / didn't show.
- I think overall the conference has been excellent. I do think it would be more beneficial to have session schedules for the day as opposed to the entire weekend. I found it very difficult to understand the schedule and which sessions would happen at which time and on which day.

- I think we need to be able to give honorable mention awards (even if no monetary prize is awarded with the honorable mention). We want all of the students who have do great work to be recognized even if we can't offer them a monetary prize.
- I think you all do a great job.
- I thought that the panels and group discussions helped provide real world and different relatable points of views. I just wish that there was more discussion on the issues we need to address in society, research and STEM fields.
- I truly enjoyed the morning panel on Friday morning, and even gained a mentor
- I very much enjoyed this conference. It was the first one IO have had the opportunity to attend, and it has inspired me to attend many more.
- I will do everything in my power to attend ERN next year (except, admittedly, for continuing with the program that got me here. Wild horses couldn't drag me back - But I'll try to create a project I care about. I loved this conference. Also I wish people saw me as a young woman rather than as a boy.
- I wish that the list of oral presentation were organized by session # and room and the list of order of presenters
- I would've liked to be more engaged in the how to present a poster workshops
- I'm glad I was given the opportunity to attend!
- I've been to the past five conferences. This was the best!!!
- Improve app so that the comment allows for editing
- Improve setup on computer programs to be able to display the presentations. I was not able to play my video throughout my time presenting, and it affects how strong my presentation would it be with actual prototype results.
- Inspired
- Invitation only excludes my students at times. My students cannot attend sessions they desire to because they are presenting. And there are some very good topics.
- It took me too many time in the poster session that I did not make it on time for the workshops. I really wanted to go; I will like that ERN make a session for practice your presentation
- It was a wonderful experience
- It was amazing. Along with opening a whole world of opportunities for me.
- It would be great if this conference happen January or November before the deadlines of graduate school admission
- John was an A+ speaker
- Keep up the good work.
- Keep up the great work!
- Keywords I loved: Giving, We need you, They want you to succeed, We want you to succeed; This was an amazing experience! I came for the research, I left with goals and plans. Thank you!
- Lack of enthusiasm and friendliness of presenters for poster/oral presentations; The list of presenters should be organized by session # and or table #. It was not useful to have it alphabetized by presenter's last name. What was the purpose of this?; More organization with program
- Louder speakers for panels
- Love ERN! Best ever! #ERN2020; No, thank you!
- Loved John Urschel's talk! Thanks for bringing him.
- Loved the last meal. Steak should've been medium well.

- Lovely, Amazing conference; I would like to thank all the speakers. Especially, Dr. Durgana who spent over 45 minutes personally speaking with me and other minority race girls about life and science; Stephanie Toledo
- Make this form online that we can do on our phones; Also publicize the app more because I did not know it existed.
- Make this form online; Publicize the app; Add a notes section in the handbook
- Many of these students are high performing and plugged in, therefore work hard to make the sessions/workshops truly beneficial
- More
- More dynamic; Simpler food
- More engaging activities for students
- More food
- More food options; More amount of travel award
- More information on the app; Specific time slot for oral presentation
- More sessions during the day; Just few more sessions to over to students
- More variety in the food
- Mr. Urschel is a wonderful speaker.
- My poster session was in the conservatory pavilion at zoological ????. I felt a little isolated from the rest of the poster session. It would be nice if all can be together. Some of the people that I met here in the conference wants to check my poster presentation, they could not because they did not know how to get there.
- Never heard of the conference app. Making the app known to participants can eliminate the printing cost of the program brochures.
- Next year, I think it would be better to serve breakfast, lunch (not bag lunches), and dinner every day while people are at the conference. Also, it may be useful to book people from the same school on the same flight to the same airport at the same time.
- Nice conference
- No, Thank you!
- Not catered for graduate students
- Number of judges and awards for each people and subject should be more equal
- One of the best conferences I've attended! ERN 2020 was such a great experience!
- Overall, excellent conference. It was very organized and the speakers were amazing.
- Overall, I enjoyed the conference
- Panelists for social justice change were amazing and I truly enjoyed; I understand ERN is research based, but is it possible for y'all to bring in more med, dental, pharmacy schools etc and have that since a lot of attendees do research as a supplement with their end goal in health care.
- Please limit judges questions during the oral presentations.
- Please make more allowances for food allergies
- Please make sure that allergies are taken into account when preparing the food menu. We did have some allergic reactions to take place at the dinner, for the banquet after speaking several times with the servers. That was the only dissatisfying portion of the conference.
- Please provide 2-3 pens at the table for the survey; Please email us our pre-registration details fore better planning; Please provide a more detailed oral presentation schedule so that we can attend several presentations in different rooms during the same block.
- Please provide pens if you give out paper applications; I didn't even KNOW there was an app.

- Poor banquet speaker; Showcase was poorly ???
- Presentation preparation seminars are very useful
- Presenters all have amazing energy; Outstanding info; Inspiring
- Program the conference app to search projects by category and streamline the text feature in the app. It's difficult to type and edit comments.
- Put big signs of the location we have go; The book maps were not helpful to address where we were moving; It will be helpful if similar activities will be set up in the same room.
- Should ask if anyone have any food allergy
- Some events were cancelled without notification as the speakers or presenters were not present. Please let attendees know if an event has been rescheduled.
- Some of the programs offered by various schools in the first exhibit expired.
- Speakers at plenary session 4 were hard to hear in back of ballroom. Audio needed to be turned up and participants should have been asked to be quiet and pay attention -- audio was turned up towards end of speaker Q&A; Recommend handouts be put in ERN bags before participants pick them up to speed up this process and avoid long line; Some students who presented posters were put in locations that were isolated without other posters nearby - reducing the number of visitors they got; Overall, very good conference and excellent food!
- STEM Societies panel (Plenary session 2); John Urschel
- Talks during plenary sessions shouldn't be so long.
- Thank you
- Thank you
- Thank you all for your support and dedication to a successful conference! Thank you for providing travel awards!
- Thank you all!
- Thank you for having me and my university!
- Thank you for the well-prepared event!
- Thank you for your organization.
- Thank you!
- Thank you!
- Thank you!
- Thank you!
- Thank you! Keep on doing this you help us so much!
- Thank you! Wonderful research by young people!
- Thank you!!
- Thanks
- Thanks!
- The agenda/itinerary was a bit confusing. The poster presentations were laid out poorly - more open, it was very narrow and crammed despite a lot fo empty spaces
- The app for judges did not work. It was difficult to negotiate and the Wi-Fi in the hotel did not have sufficient bandwidth
- The conference app, especially the judging section is improving, however, it is still difficult to rely upon entirely because Wi-Fi traffic causes it to freeze on occasion. Also, it is easier to judge the posters with the paper form because it's easier to jot notes and keep track of which posters one has actually seen because it's easier to shuffle the paper forms instead of going back and forth within the app.

- The conference overall was very informative and helpful. As a staff member, the exhibit hall was one of the best entities at the conference because I was able to network and obtain valuable information for my students.
- The descriptions in the program could be expanded. Include "TITLES" of talks - also please consider a different type of schedule - color coded / at-a-glance / EXCEL style where participants can see what's happening at the same time. Model SACNAS or ABRCMS for templates.
- The evaluation can be performed online
- The event was excellent; Thank you for all of the hard work!
- The food and timing (?) were great!
- The forum was excellent and very interactive. KUDOS for the organizer. I also appreciate the quick responses during applications. Ms. Neela was very helpful.
- The organization was a bit lax. Lots of people did not show up for oral presentations because I was not given time slots for specific people I may have missed presentations I would want to hear.
- The schedule before hand to be able to plan what will be done throughout the three days.
- The social justice panel was seriously the best thing I've ever seen at a conference. So empowering and inspiring and game changing.
- The speaker was a little quiet
- The undergraduate mentoring event was during my poster presentation, alternative/additional times for important events like this would be significant; Thanks for putting on this event!
- There should be a web interface for the app/ERN conference
- There's one judge who very critical how I pronounced a word but it just another way of pronouncing a word, and I feel that he paying more attention to pronunciation than my research.
- This been so much fun and informative
- This conference feels more geared toward undergrads, not exceptionally helpful for grad students
- This conference is great. It continues to get better. Maybe use digital surveys next time to make it easier to do and easier for you to collect the information. Also include more digital activities throughout the conference.
- This conference is very informative and essential for researchers in STEM and other disciplines. Keep up the good work!
- This conference really encouraged me to go ahead and follow my passion instead of taking the easy way out or the path others told me to choose.
- This conference really is an outstanding venue for upcoming scientist.
- This conference taught me some interesting stuff, but mostly it felt redundant and somewhat patronizing.
- This conference was an amazing opportunity and a wakeup call that no matter how difficult the obstacle is the journey will make it worthwhile
- This conference was fantastic! I hoped to see more west coast colleges at the exhibit booths.
- This event is very empowering and well arranged. It inspires me to continue my STEM journey.
- This experience was amazing
- This has been an amazing experience
- This is my second year at ERN and what I found is that Colgate is the only company that is here for hire. Also they provide post-bacs
- This should be online, it would save paper and time - the survey should be online
- This was a great conference

- This was a great opportunity, and I am very grateful!
- This was an amazing conference, and I'll try to get more people from my university to come! (I was the only one this year); Also, it would be nice if you let us know there was a conference app. I didn't know it existed.
- This was my first ERN conference, and I am very grateful that I was able to attend. I hope to attend future ERN conferences.
- This was the Best conference ever!!!!; For dinner and other meals have cards for everyone that indicates what their dietary restrictions are for the dining staff. -vegan -vegetarian -gluten free (cards could be yellow or purple). Cards can go in the badge name behind the tags!
- Try to provide estimated times for oral presentation
- Ultimately, a lot of the conference seemed geared toward undergraduates. Also, it seemed like the conference cared more about inclusion and diversity than the actual scientific research. Furthermore, I did not appreciate the judge in my session telling me that I shouldn't be promoting my qualitative preliminary research. It was EXTRAORDINARILY unprofessional to be told that my data was invalid by someone who CLEARLY does not understand my field.
- Varying the showcase sessions more each year would be appreciated
- Vegetarian dinner options; Email conference goers to bring water bottles and Tupperware's for leftovers; Panels were very impactful
- Very good and important conference
- Very good networking opportunity
- Where's the WiFi???
- Wonderful conference! I can't wait to see it grow and develop more in the future.
- Wonderful orchestration however, less overlap of events during student orals
- Wonderful, collegial feeling! Welcoming atmosphere
- Y'all always bring GREAT speakers!
- You really need to re-evaluate your use of Poster boards - Gross waste of money by not utilizing the same boards for each session
- You're very welcome :)