

# ED11D-0755 Addressing Equity and Student Self-Efficacy through Student Research Symposia

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## Student Research Symposia (SRS)



Each year six regional research symposia are held in the U.S. between March and June. During these two-day symposia, students present GLOBE research to, and receive feedback from, scientist reviewers, community members and their peers; participate in science-related activities which vary by venue; and have the opportunity to interact with professional scientists to explore STEM careers.



### GLOBE Protocols

- The equipment needed for GLOBE protocol measurements are inexpensive.
- The protocols can be carried out on school grounds, lessening the financial burden.
- Onsite GLOBE protocol professional development takes place at the SRS for teacher participants.



### Funding

- A stipend, issued in advance to qualifying groups, allows teachers to pay for all meals during travel.
- Plane tickets and charter buses are paid for in advance.
- GLOBE Partners mentoring an eligible group(s) in their network receive travel support.



### Webinars and Science Practices Pages

- Monthly webinars and "office hours" center around techniques and resources to assist teachers in implementing student research in the classroom.
- All resources and links are posted to the GLOBE website and referred to frequently in "just-in-time" email newsletters.



### Teachers Helping Teachers

- The Teacher Hotline connects experienced SRS teachers with new participants.
- Blog Posts, written by SRS teachers, on how a particular science practice is supported in the classroom.
- New for 2019:** Virtual Teacher Watercooler Meet-ups where teachers share their promising practices.

## 2018 Highlights and Planning for 2019

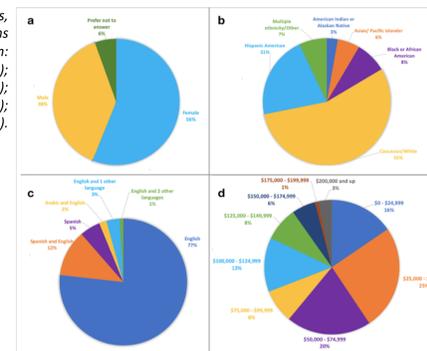
Students were administered a survey both before and after the SRS. Several items assessed their value for science, including "Being good at science is important," "I want to have a career in science someday" on a 6-point Likert type rating scale, where 1 = Strongly Disagree and 6 = Strongly Agree. In order to assess participant learners' self-efficacy for doing science-related tasks, several items asked participant learners to report how much they felt competent in five specific science practices.

- Students reported high levels of value for science before and after the SRS.
- For each of the science practices, the mean for self-efficacy increased significantly from pre-SRS to post-SRS.
- Preliminary data (N=212) suggest that student value for science was predicted by student self-efficacy for science practices but only after the SRS. This suggests that the SRS provided students with an efficacy-building mastery experience that does significantly predict their overall value for science.

Science Practice	Pre-SRS		Post-SRS	
	M	SD	M	SD
I am able to ask good questions to do science research.	5.01	0.73	5.19	0.804
I am able to analyze data to do science research.	5.18	0.74	5.30	0.71
I am able to interpret data in science research.	5.04	0.79	5.20	0.73
I am able to construct scientific arguments.	4.87	0.95	5.07	0.89
I am able to conduct peer review of other students' science research.	4.77	0.93	5.08	0.92



Demographic information for 2018 students, % indicates percentage of parents/guardians who answered the question:  
 a) Gender (89%);  
 b) Student Ethnicity (80%);  
 c) Language Spoken at Home (79%);  
 d) Household Income (46%).

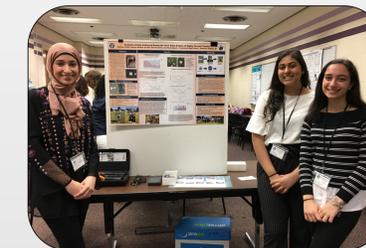
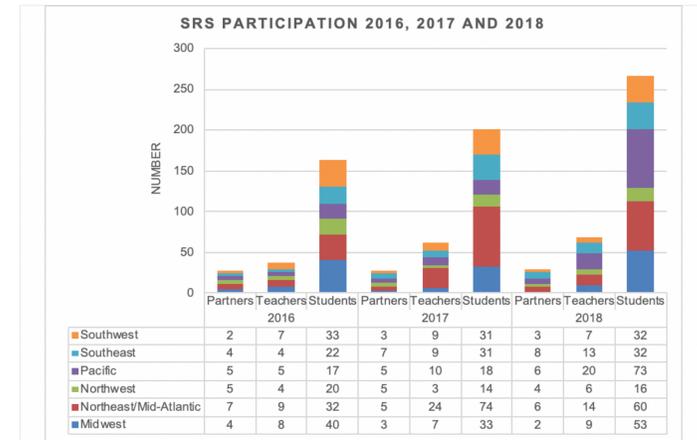


Region	2018 Locations	2019 Locations
Midwest	Wayne State University (MI)	University of Northern Iowa
Northeast & Mid-Atlantic	SUNY Fredonia (NY)	Boston University (MA)
Southeast	University of North Carolina Charlotte	Atlanta, GA
Southwest	University of Colorado Boulder	Mescalero, NM
Pacific	NASA Ames (CA)	NatureBridge Golden Gate (CA)
Northwest	Montana State University	Beach Camp at Sunset Bay (WA)

### Improvements for 2019

- Increase efforts to recruit more reviewers and keynote speakers from similar backgrounds.
- Provide more activities where students can interact positively and form collaborative friendships.
- Modify Open Office Hours to better meet teacher needs.

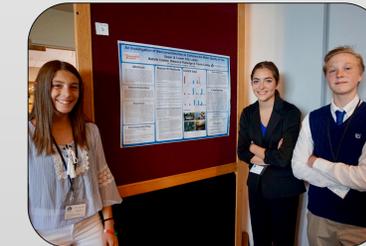
## SRS Growth in Participation



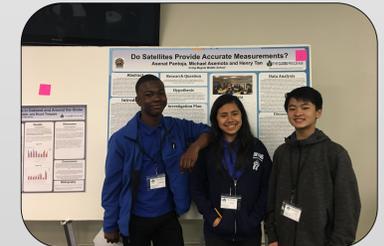
It is good to learn from other students that we don't already know and just meet and talk to people of different backgrounds.



These events were fun and allowed me to learn more and work on my presentation skills.



It truly showed me what science is, more than anything else.



I was able to share my ideas in a safe and non-judgmental environment.

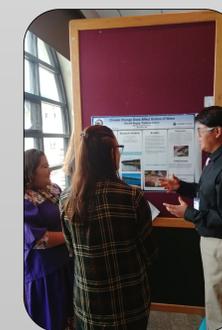
## International Virtual Science Symposia (IVSS)

For students and teams in the United States unable to travel to an in-person SRS event or for those wishing to join the international student research community of GLOBE, the IVSS provides this opportunity.

- Each student project submitted via the Student Research Report Upload Tool receives a virtual Student Research Badge with stars (0-4), depending on the quality of the project.
- Students can either submit a link to an uploaded video describing the research hosted on an online video sharing site (YouTube, Vimeo, etc.), a poster, a Prezi, or a narrated PowerPoint.
- Students can also receive one or more digital badges, which encourage scientist skills, in addition to the Research Badge.



International Region	2018 Reports
Africa	1
Asia and Pacific	27
Europe	13
Latin America & Caribbean	8
Near East & North Africa	31
North America	33
Total	113



I really enjoyed engaging with people who are successful in a field I hope to pursue in the future.



SRS encouraged the concept of sharing research information. It was beneficial for the students to understand that the symposium was not a competition, but an opportunity to share, revise, learn, and apply new ideas.