

2018 Washington Symposium and Poster Session



NATIONAL CENTER FOR
SCIENCE & CIVIC ENGAGEMENT



Stony Brook
University

March 15-16, 2018
Washington DC

#NCSCEDC2018

MARCH 15, 2018

The American Association for the Advancement of Science

1200 New York Ave NW

Revelle Meeting Room, Second Floor

Washington, DC 20005

1:00 P.M. – 2:00 P.M.

CHECK-IN

Staff will be outside of the Revelle Room on the 2nd floor. At check-in, you will receive your name tag and program materials.

2:00 P.M. – 2:15 P.M.

WELCOME AND INTRODUCTION

Eliza Reilly

National Center for Science and Civic Engagement

NCSCE Executive Director Eliza Reilly will provide an overview of the themes and goals for the meeting.

2:15 P.M. – 3:30 P.M.

SCIENCE COMPREHENSION WITHOUT CURIOSITY IS NO VIRTUE, AND CURIOSITY WITHOUT COMPREHENSION NO VICE

Dan Kahan

The Cultural Cognition Project at Yale Law School

It has been assumed for many years that the quality of enlightened self-government demands a science-literate citizen. Recent research, however, has shown that all manner of reasoning proficiency—from cognitive reflection to numeracy to actively open-minded thinking—magnifies politically motivated reasoning and hence political polarization on policy-relevant science. The one science-comprehension-related disposition that defies this pattern is science curiosity, which has been shown to make citizens more amenable to engaging with evidence that challenges their political predispositions. The presentation will review the relevant research and offer conjectures on their significance, both theoretical and practical.

3:30 P.M. – 3:45 P.M.

BREAK

3:45 P.M. – 5:00 P.M.

BUILDING CAPACITY FOR SCIENCE COMMUNICATION AND PUBLIC ENGAGEMENT

Emily Therese Cloyd

American Association for the Advancement of Science

Emily Therese Cloyd, project director for the American Association for the Advancement of Science's Center for Public Engagement with Science and Technology, will provide an overview of AAAS public engagement efforts, including training through workshops and fellowship programs, demonstration of public engagement through public events, and research on best practices for science communication and public engagement. Emily will also discuss the Center's efforts related to institutional change and building capacity for public engagement, and provide an overview of opportunities and challenges related to such efforts. Emily will also share opportunities for involvement with public engagement efforts, including the next cohort of AAAS Leshner Leadership Fellows and Communicating Science workshops for scientists.

5:00 P.M. – 6:30 P.M.

RECEPTION AND POSTER SESSION

We invite participants to use this time to learn about the work of other attendees. Hors d'oeuvres will be provided.

MARCH 16, 2018

The American Association for the Advancement of Science

1200 New York Ave NW

Revelle Meeting Room, Second Floor

Washington, DC 20005

9:00 A.M. – 10:00 A.M.

BREAKFAST

10:00 A.M. – 12:30 P.M.

PANEL PRESENTATION: THE NATIONAL PARK SERVICE AND HIGHER EDUCATION PARTNERSHIPS

Tim Watkins

National Park Service

Moderator

Dennis Taylor

Hiram College

“Creating Sustainable Educational Platforms Promoting Coastal Community Resiliency to Climate Change ”

Ingrid Schneider

University of Minnesota

“Minnesota Moments and Momentum: Enriching Student Learning and Civic Engagement through NPS and UMN Partnerships”

Katharine Ruskin

University of Maine

“Integrating Undergraduate Education, Stakeholder-driven Research, and Service through Ongoing Partnerships, the University of Maine and Acadia National Park”

Nicole Davi

William Paterson University

“Improving Geoscience Literacy Through Connections to the National Park Service and Community Partners ”

Scott Jiusto

Worcester Polytechnic Institute

“Advancing Citizen Science in Rock Creek National Park, with an assist from Worcester Polytechnic Institute”

12:30 P.M. – 1:30 P.M.

LUNCH

1:30 P.M. – 2:00 P.M.

PLACE-BASED UNDERGRADUATE RESEARCH EXPERIENCES INCREASE CAMPUS-COMMUNITY INTERACTIONS AND PROMOTE STUDENTS' CONCEPTUAL UNDERSTANDING, SCIENCE PROCESS SKILLS DEVELOPMENT, AND GRIT IN THE BIOLOGICAL SCIENCES

Jennifer Apodaca
Jeffrey Olimpo
The University of Texas at El Paso

Course-based undergraduate research experiences (CUREs) offer innovative avenues for engaging students in the process of scientific discovery. While prior studies have capitalized upon the impact of CUREs on students' professional growth and ability to "think like a scientist," little is known about the interactions that occur within CURE contexts and the broader impact of CUREs on student grit and science process skills development in the discipline. In an effort to address these concerns, a placed-based experience focused on health disparities in the border region was created and implemented in the Fall 2017 semester. In this session, facilitators will first describe the CURE and share mixed-methods data with respect to the aforementioned outcomes. Attendees will then have an opportunity to brainstorm and discuss strategies for creating sustainable campus-community partnerships that foster innovative educational practices as well as articulate measures for assessing student and stakeholder outcomes in such learning environments.

2:00 P.M. – 2:30 P.M.

SENCER AND INFORMAL SCIENCE EDUCATION

Marsha Semmel
Marsha Semmel Consulting

Dave Ucko
Museums+More LLC

In this session, Marsha Semmel and David Ucko, senior advisors to SENCER-Informal Science Education (SENCER-ISE), will provide a brief overview and update on SENCER projects involving partnerships between higher education institutions and informal science education organizations funded by the Noyce Foundation, the Institute for Museum and Library Sciences, and the National Endowment for the Humanities. What are the ingredients and indicators of success in higher education/informal science education organization partnerships, and how can such collaboration benefit both sectors? The session will also engage participants in a discussion of relevant trends, research, and impact studies in the ISE sector.

2:30 P.M. – 3:00 P.M.

THE AAAS DIALOGUE ON SCIENCE, ETHICS, AND RELIGION (DoSER) PROGRAM: LINKING SCIENCE AND TECHNOLOGY TO THE CULTURES, INTERESTS AND VALUES OF BROADER PUBLICS

Robert O'Malley
American Association for the Advancement of Science

An individual's worldview, including their religious beliefs and cultural background, informs their perceptions of research studies and the scientific enterprise as a whole. Decades of polling indicate that a majority of Americans identify as religious or spiritual, and that religion is an important dimension of most Americans' lives. Since 1995, the Dialogue on Science, Ethics, and Religion (DoSER) program of the American Association for the Advancement of Science (AAAS) has promoted constructive engagement between scientific and religious communities. Through a range of projects and activities, the DoSER program serves a core AAAS commitment to relate scientific knowledge and technological development to the interests and concerns of society at large.

Through the Perceptions project, the DoSER program co-sponsored surveys, a series of networking events, and a national symposium for scientists and religious leaders to break down stereotypes and misconceptions about each other. The Science for Seminaries project assists seminaries and theological schools, in consultation with scientists, to incorporate more science content into their core curricula. The Bringing Forefront Science to Religion Reporters awards support journalists who reach religious audiences and report on science and society topics with these audiences in mind. Finally, the Engaging Scientists project organizes events at academic society meetings and university campuses, is in the process of creating free online and print resources, and sponsors awards to support science engagement by scientists with broader (and particularly religious/spiritual) publics. The poster will summarize the impacts and outcomes of each project and highlight key insights for scientists, science communicators, students and other interested parties.

3:00 P.M. – 3:30 P.M.

CLOSING SESSION

Eliza Reilly

National Center for Science and Civic Engagement

INVITED POSTER PRESENTATIONS

The AAAS Dialogue on Science, Ethics, and Religion (DoSER) program: Linking science and technology to the cultures, interests and values of broader publics

American Association for the Advancement of Science

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Authors: Curtis Baxter, Elizabeth Crocker, Warren Dennis, Se Kim, Robert O'Malley, Christine Scheller, and Lilah Sloane

Science Communication from the Ground Up: Undergraduates Mentoring High School Students As Agents of Environmental Change

Hiram College

Undergraduates, in the role of Near Peer Mentors, served as effective role models fostering STEM literacy among high school students and their teachers. These Near Peers facilitated connections of civic environmental issues to democratic student-led collaborative investigations of local environments. Learning Streams International, a science education collaborative of five universities in Northeast Ohio and in Lahore, Pakistan is partnered with thirteen high schools in Pakistan and four high schools in Northeast Ohio, in summer STEM Institutes held at Forman Christian College in Lahore Pakistan, and New York City, Hiram College, Kelley's Island, and Kent State University. The program is structured in learning communities of high school students, one teacher and one undergraduate mentor. Mentors presented biomonitoring techniques, units in solar cooking and urban forestry to each of their learning communities by fostering collaborative investigations where all students had a voice and where teachers did not take an active role.

Learning communities then chose a legacy project to implement in their own schools or local communities using one or more of the protocols from the institute, with final reports due on April 11th. Preliminary results indicate that all ten of the Pakistani schools, from moderate to low socioeconomic backgrounds, implemented projects that impacted large cross sections of their schools and communities. These students and their projects demonstrated democratic engagement in solving real world issues related to water resources. The project was less effective in engaging participants in legacy projects in wealthier private schools in both countries. Successful collaborations promoting STEM literacy involved: effective training of undergraduates in science and in mentoring; selection of teachers and schools where legacy projects are viewed as central, and creation of a long term goal where learning communities can report their results.

Authors: Brian Corbin, Kerry Dombroski, Andrew Lisak, Colton Kinderknecht, and Abeera Mehmood

Development and Design of New Activities for Environmental Science Education

Middle Tennessee State University

This Undergraduate Research Experience and Creative Activity (URECA) project concentrates on how MTSU students learn introductory chemistry with a focus on skills needed for the STEM professional. It is comprised of four activities which include specific skills such as conversions, identification of patterns, and analysis of data. The Student Assessment of their Learning Gains (SALG) is being used to understand how students learn best and how students respond to civic engagement activities. SALG is an assessment recommended by SENCER, NCSCE's signature project that links science and civic engagement by teaching and applying unresolved civic issues to the basic sciences such as introductory chemistry. The SENCER philosophy is also one that is ideal for the MTSU MT Engage program.

Students complete a pre- and post-SALG for each activity throughout the semester. Data is collected from students both before they learn the content and after they complete the activity. The SALG also allows me to analyze the data once the survey is closed. SALG surveys are used in countless classes across the United States and can be tailored to a specific topic or class. Information about the SALG can be found at <http://sencer.net/assessment/#SALG>.

Data is being collected from four activities on the following topics: food and energy, recycling, water filtration, as well as an UV radiation activity. However, at this halfway point in the semester, my data will be focused on the food and energy and the recycling activities. Results will be posted and discussed.

Authors: Judith Iriarte-Gross and Rachel Marlin

Connecting Community with Science and Engineering at Seattle University

Seattle University

Seattle University launched an ambitious project in 2011 to unite the university and the wider Seattle community to develop successful youth, thriving communities and an engaged neighborhood. The Youth Initiative strives to strengthen education and support systems for neighborhood youth and their families while enhancing the university by providing service, learning and research experience to students, faculty, and staff.

This poster will highlight projects that connect with our community through science and engineering, and share insights from collective experiences. Our aim is to provide useful examples across a wide array of STEM disciplines, and to generate ideas for future project opportunities and potential collaborations.

Authors: Doug Latch, Kent Koth, Elizabeth O'Brien, Roshanak Roshande, and Lindsay Whitlow

Integrating Computational Thinking into Elementary Science Teacher Education through Citizen Science

University of Maryland

Computational thinking is gaining momentum as an important dimension of scientific literacy for everyone. The recent inclusion of computational thinking in the Next Generation Science Standards (NGSS) requires K-12 teachers of science to be able to integrate computational thinking into their instruction. To realize this goal, there is a need for innovation in preservice teacher education that equips new teachers with the requisite knowledge and instructional tools, including in the elementary grades.

Within the context of an undergraduate Elementary Science Methods course, this poster presents an exploration of the use of citizen science as an approach to infusing elementary science curricular content with computational thinking. Fifty-five undergraduate preservice elementary teachers engaged in a curricular module that introduced citizen science through observation of local bird populations. Participants explored how citizen science could support their curricular goals in life science, as well as foster student engagement in computational thinking, including through data practices, using models and simulations, problem solving, and systems thinking. An overview of the module, as well as insights gleaned from participant blog entries, drawings, and observations, will be presented. Results suggested that preservice teachers perceived citizen science as a promising tool for integrating computational thinking into science instruction. However, they focused primarily on the data collection dimension of citizen science, and less on other aspects of citizen science with the potential support computational thinking. Next steps for module development and research will be described.

Author: Emily Hestness

Improving Geoscience Literacy Through Connections to the National Park Service and Community Partners

William Paterson University

William Paterson environmental science undergraduate students have been working with the Paterson Great Falls National Historical Park (National Park Service), the Great Swamp Watershed Association in NJ, and the Paterson Museum to assist in park operations, outreach, and the development of on-site field trips and STEM curriculum for regional K-12 students. These programs focus on the regional ecology and natural geo-scientific processes that are occurring at the park and include a focus on the interconnectedness of the natural and human environment.

Undergraduate students are also assisting in the School Water Monitoring on the Passaic Program (SWAMP) program, which is a free program that provides hands-on, real world experience for regional high school and college students with water quality sampling, analysis and data interpretation. This project emphasizes the impacts of pollution and land use on water quality and the connection to human health and well-being.

We will also present a newly developed and publicly available website, Tree-Ring Expeditions (TRES), geared for undergraduate instructors and their students, that leverages the excitement of scientific field expeditions, and introduce students to impactful tree-ring studies with societal relevance. In Lab Three, Tree Rings and the Ancestral People of Pueblo Bonito: Uncovering the Past, students virtually travel to Pueblo Bonito, in Chaco Canyon Chaco Culture National Historical Park (National Park Service), where they search for wood samples that would be appropriate for sampling and follow the same procedures that scientists used in the 1920's to put exact calendar dates on the pueblo through tree-ring analysis.

Authors: Hazel England of the Great Swamp Watershed Association, Ilyse Goldman of Paterson Great Falls National Historical Park, Bruce Balistrieri of The Paterson Museum, and Nicole Davi of William Paterson University