caise | center for advancement of informal science education

2014 AISL PI Meeting

PROGRAM GUIDE

About CAISE

The Center for Advancement of Informal Science Education (CAISE) works in cooperation with the U.S. National Science Foundation (NSF) Advancing Informal STEM Learning (AISL) program to strengthen and advance the field of professional informal science education (ISE). We do so by convening forums, providing open access to online infrastructure, and building a repository of resources for designers of experiences and settings, social science researchers, evaluators, scientists, and STEM-based professionals.

CAISE's roles are to **characterize** what is current in the ISE field with regard to learning content, context, and approach; **connect** and **convene** professionals from across different sectors on important topics and issues; and to **communicate** to the broader informal STEM learning community what we are observing and learning in the process. The sectors that we serve and support include those working in: media (TV, radio, and film); science centers and museums; zoos and aquaria; botanical gardens and nature centers; cyberlearning and gaming; youth, community, and out-of-school-time programs; and in a variety of engagement activities conducted by scientists and their education and outreach staffs.

Established in 2007 with support from the NSF, CAISE operates as a collaboration between core staff at the Association of Science-Technology Centers (ASTC) in Washington, D.C. and co-principal investigators at informal science and academic institutions across the country. CAISE is housed at ASTC's Washington, D.C. office. ASTC is an international membership organization of science centers and museums dedicated to public engagement with science among increasingly diverse audiences.

CAISE manages *InformalScience.org,* a growing online community that strives to support knowledge-sharing, collaboration, and the dissemination of innovation among diverse professionals in the field of informal science education. The *InformalScience.org* repository contains nearly 9,000 resources that connect research, evaluations, and member profiles to a living collection of informal learning project descriptions. The site offers a Groups function with discussion forums to encourage dialogue and documentation of processes, and the site's member directory provides a valuable resource for networking and communication.

The 2014 AISL PI Meeting is the fourth biennial Principal Investigator (PI) Meeting or Summit that CAISE has convened. While each meeting has been unique, they have all provided a time for the field to come together and discuss current topics and trends, share successes and challenges, and broker new collaborations. For documentation of past PI Meetings, visit *InformalScience.org/about/about-caise/pi-meetings*.

It is with great sadness that the CAISE Co-PIs, staff, and advisors—both past and present—note the recent passing of Dr. Alan Friedman. An original founder and CAISE Co-Principal Investigator as President and Board Member of the Visitor Studies Association (VSA), Alan continued to serve the project as a trusted advisor. Alan played a key role in shaping and guiding the Center's purpose and direction, leading the Policy Advisory Inquiry Group in the writing of a frequently-cited white paper and commissioning articles that set high standards of quality for CAISE resources to aspire to. CAISE and the informal STEM education field honor his memory and timeless contributions.

CAISE Staff and Co-Principal Investigators

Jamie Bell, *PI and Project Director*
Kalie Sacco, *Program and Community Manager*
Grace Troxel, *Digital Librarian*

Kevin Crowley, *CAISE Co-PI, University of Pittsburgh Center for Learning in Out of School Environments*

Kirsten Ellenbogen, *CAISE Co-PI, Great Lakes Science Center*

John Falk, *CAISE Co-PI, Oregon State University Free-Choice Learning Program*

Sue Ellen McCann, *CAISE Co-PI, KQED Public Media*

CAISE Advisors

Dr. Alan Friedman
Dr. Nalini Nadkarni, *University of Utah*
Anthony "Bud" Rock, *Association of Science-Technology Centers*
Dr. Barry Van Deman, *North Carolina Museum of Life and Science*

Images courtesy of Risdon Photography from the 2012 ISE PI Meeting

August 20, 2014

Directorate for Education and Human Resources
U.S. National Science Foundation

Welcome to the 2014 Advancing Informal STEM Learning Program Principal Investigators Meeting.

This biennial gathering brings together practitioners, researchers, and evaluators actively working to improve informal STEM learning. Representing a wide range of organizations, you are a group of highly creative and dedicated professionals in the fields of broadcast media and film; science centers and museums; zoos and aquaria; botanical gardens and nature centers; libraries; digital media and gaming; youth, community, and after-school programs; science communications; and education research and evaluation. Some of you also have active science and engineering research careers. In addition, colleagues representing other federal and private funding agencies are participating. As with past AISL PI Meetings, our hope is that your activities over the next few days will continue to foster a stronger sense of identity and a more cohesive community that maximizes its innovative impacts by advancing shared knowledge-building, practice, and capacity.

Since the last PI Meeting, the staff and advisory committee of the Directorate for Education and Human Resources (EHR) have endeavored to provide a stronger rationale and coherence for EHR investments, with focused attention to three major areas of emphasis: Learning and Learning Environments, Broadening Participation, and Workforce Development. Much of your meeting agenda attends to these three strategic areas. I look forward to hearing more about your thoughts on how we can actualize these in informal STEM education practice, research, and evaluation. I am also particularly pleased that over the past two years—as a result of other CAISE initiatives and now at this PI Meeting—there continues to be a lively dialogue around the need to identify grand challenges, develop research agendas, and other ways of strengthening and connecting communities to maximize their impacts.

Special thanks for planning and hosting the PI Meeting go to Project Director Jamie Bell and the CAISE team, as well as the many others who have contributed, including Julie Johnson, the coordinator of the Lifelong Learning Cluster; Al DeSena, cognizant NSF Program Officer for CAISE; and all of the Lifelong Learning Cluster staff in our Division of Research on Learning in Formal and Informal Settings. I wish you the best for a great meeting.

Dr. Joan Ferrini-Mundy
Assistant Director
Directorate for Education and Human Resources
National Science Foundation

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The National Science Foundation Advancing Informal STEM Learning Program

Center for Advancement of Informal Science Education

Advancing Informal STEM Learning (AISL) Program
August 20–22
The Marriott Wardman Park Hotel
Washington, D.C.

Program Agenda

Day 1: August 20

12:00 pm – 5:00 pm

Registration *(Registration B)*
Poster Set-Up (*Exhibit Hall C*)

12:30 pm – 2:00 pm

Technical Assistance Session I (*Thurgood Marshall Ballroom*)
Common Guidelines for Education Research and Development: **Edith Gummer**, *Program Director, National Science Foundation*

2:30 pm – 4:00 pm

Technical Assistance Session II (*Thurgood Marshall Ballroom*)
Grant Management: **L. Rashawn Farrior,** *Grants & Agreement Specialist, National Science Foundation*

4:30 pm – 6:00 pm

Technical Assistance Session III (*Thurgood Marshall Ballroom*)
Evaluation in Informal STEM Education: **Kirsten Ellenbogen,** *CAISE Co-Principal Investigator*

Day 2: August 21

7:30 am – 12:00 pm

Registration *(Registration B)*

7:30 am – 9:00 am

Poster Set-Up (*Exhibit Hall C*)

8:30 am – 9:15 am

Breakfast (*Thurgood Marshall Ballroom*)

9:00 am – 9:15 am

Welcome

9:15 am – 10:15 am

Plenary Session (*Thurgood Marshall Ballroom*)

Dr. Joan Ferrini-Mundy, *Assistant Director, Education and Human Resources Directorate (EHR), National Science Foundation*

10:15 am – 10:30 am

Transition

10:30 am – 12:00 pm

Diving Deeper, Looking Forward Sessions

- **Broadening Participation in Informal STEM Education** (*Thurgood Marshall Ballroom*)
- **Connecting with Scientists: What are the Needs & Unexplored Opportunities?** (*Hoover*)
- **How is Technology Building New Audiences for ISE?** (*Thurgood Marshall Ballroom*)
- **ISE Contributions to the STEM Workforce** (*McKinley*)
- **ISE Networks, Infrastructure & Resource Centers** (*Harding*)
- **Learning & Learning Environments: Research, Design & Implementation** (*Coolidge*)
- **Measuring Learning Across ISE Projects** (*Madison B*)
- **Mining the Field: What are we Learning?** (*Madison A*)

12:00 pm – 12:30 pm

Transition and Pick Up Lunch

12:30 pm – 1:15 pm

Lunch and Panel (*Thurgood Marshall Ballroom*)

Federal Funding for ISE Research & Development

1:15 pm – 1:30 pm

Introduction to Poster Session Process

1:30 pm – 1:45 pm

Transition

1:45 pm – 2:45 pm

Poster Session I and Open Space Topic Nomination (*Exhibit Hall C*)

2:45 pm – 3:45 pm

Poster Session II and Open Space Topic Nomination (*Exhibit Hall C*)

3:45 pm – 4:15 pm

Break and Reception Set-Up

4:15 pm – 6:00 pm

Reception and Open Space Topic Voting (*Exhibit Hall C*)

6:00 pm

Poster Break-Down (*Exhibit Hall C*)

Day 3: August 22

7:30 am – 9:00 am

Poster Break-Down (*Exhibit Hall C*)

9:00 am – 10:00 am

Welcome and Open Space Session Announcements; Breakfast (*Thurgood Marshall Ballroom*)

10:00 am – 10:15 am

Transition

10:15 am – 11:45 am

Open Space Sessions (*Coolidge, Harding, Hoover, Madison A, Madison B, McKinley, Thurgood Marshall Ballroom*)

Topics to be determined at meeting

11:45 am – 12:15 pm

Transition and Pick Up Lunch

12:15 pm – 1:00 pm

Lunch and Panel (*Thurgood Marshall Ballroom*)

Panel on Field-Driven Agendas for Research and Development

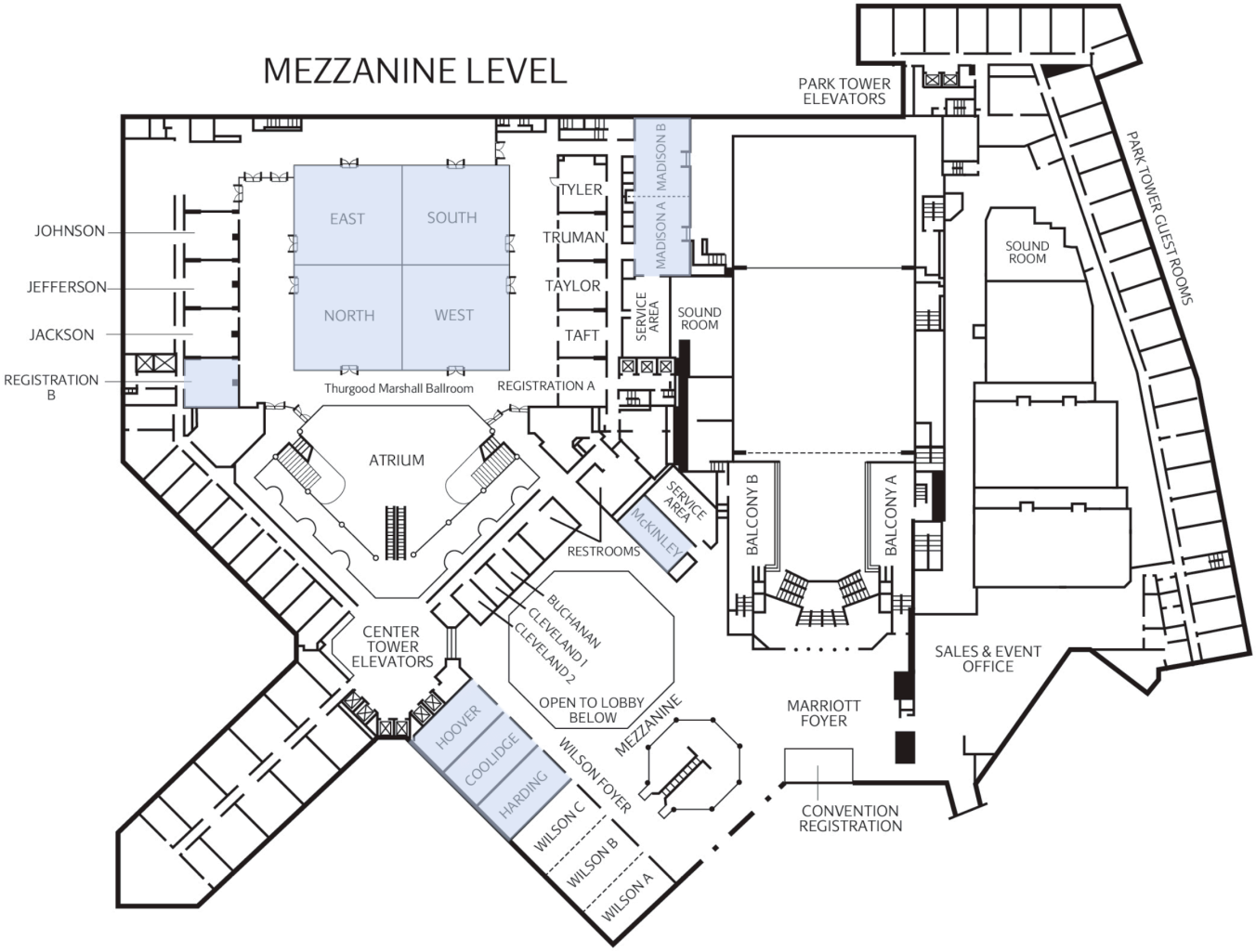
1:00 pm – 2:00 pm

Open Space Report-Out (*Thurgood Marshall Ballroom*)

2:00 pm – 3:00 pm

Wrap Up and Closing (*Thurgood Marshall Ballroom*)

Hotel Map



Poster sessions will take place on the Exhibition Level in Exhibit Hall C.

Woodley Park Neighborhood Guide

Transportation in Woodley Park

Metro
The Washington Metro Red line stop for Woodley Park-Zoo is located at the corner of Woodley Road and Connecticut Avenue NW.

To transfer to the Green and Yellow Metro lines, take the Red line toward Glenmont and transfer at Gallery Place-Chinatown (4 stops). To transfer to the Blue, Orange, or Silver Metro lines, take the Red line toward Glenmont and transfer at Metro Center (3 stops).

The L1 and L2 bus lines also stop at Woodley Road and Connecticut Avenue NW. These lines will take you to downtown Washington.

Visit *www.wmata.com/rider_tools/tripplanner* for exact times and routes using the Washington Metro system.

Circulator Bus
The Circulator shuttle bus runs between the Metro stops through the U Street Corridor and Adams Morgan neighborhoods. Visit *www.dccirculator.com* for a schedule and route map.

Nearby Restaurants & Coffee Shops

Firehook Bakery and Coffee House ($)
3411 Connecticut Ave. NW
(888) 580-0745
Bakery, Coffee & Tea

Starbucks ($)
3000 Connecticut Ave. NW
(202) 265-5382
Coffee & Tea

The Grill From Ipanema ($$)
1858 Columbia Rd. NW
(202) 986-0757
Brazilian

Lebanese Taverna ($$)
2461 Connecticut Ave. NW
(202) 265-8681
Middle Eastern

Open City ($$)
2331 Calvert St. NW
(202) 332-2331
Diner

Tryst ($$)
2459 18th St. NW
(202) 232-5500
Coffee & Tea, Bar
American (New)

Cashion's Eat Place ($$$)
1819 Columbia Rd. NW
(202) 797-1819
American (Traditional)

District Kitchen ($$$)
2606 Connecticut Ave. NW
(202) 238-9408
American (New)

Mintwood Place ($$$)
1813 Columbia Rd. NW
(202) 234-6732
American (New)

Open Space Process

On Friday, August 22, the PI Meeting agenda includes an adapted Open Space session event. These sessions allow meeting participants to nominate topics of currency and interest and invite others to discuss. Some attendees will arrive with topics in mind that aren't already addressed in the planned meeting agenda, while others may be inspired during the meeting in response to *Diving Deeper, Looking Forward* sessions, the Plenary Talk, or interactions with colleagues during the Poster Session.

Nominations and voting for Open Space topics will take place during the Poster Sessions and Reception on Thursday, August 21. You can nominate a session by posting a topic title on the Open Space Nomination board. We will provide stickers that you can use to vote for session topics. CAISE will announce the eight most popular session topics at breakfast on Friday, August 22, as well as the room assignments for those sessions.

Tips for participating in an Open Space discussion:

- You may nominate as many Open Space topics as you like, but please only vote for two.
- Your Open Space topic title should clearly state the content area, learning platform or strategy, or audience challenge.
- Although CAISE will assign a separate facilitator to each session, it's a good idea to for each nominator to have one or two provocative questions in mind to start the discussion.
- The session facilitator will appoint a scribe. Instructions for documentation will be provided at the meeting.
- Open Space discussions are truly "open." Feel free to move from one session to another.
- You may choose to break off and form a new discussion during the Open Space session time—if you choose to do this, please be sure to document your discussion.

All discussions will be documented in the 2014 AISL PI Meeting Group forum on *InformalScience.org* (see page 14 for instructions on how to access and use the Group). Participants are encouraged to continue the discussions and share their own notes after the end of the meeting.

Diving Deeper, Looking Forward

The Diving Deeper, Looking Forward session topics emerged from a pre-meeting survey of AISL-funded Principal Investigators; discussions with PIs and others who have participated in CAISE convenings over the past two years; and input from CAISE staff, co-PIs, and NSF Program Officers. These sessions are intended to stimulate discussions about cross-sector topics and issues that can continue beyond the meeting and generate new ideas for future projects and collaborations.

Broadening Participation in Informal STEM Education

Thurgood Marshall Ballroom

NSF counts "broadening participation" as a part of its strategic plan, meaning that the agency funds projects that are designed to involve under-represented groups and diverse institutions. For many ISE organizations, it is a priority to develop projects and programs that engage and retain the participation of specific audiences. In this session, discuss what is being learned about providing access for lifelong learning to underrepresented groups and discover practical strategies for projects to broaden participation.

Connecting with Scientists: What are the Needs & Unexplored Opportunities for ISE?

Hoover Room

The ISE field has a rich range of strategies for engaging the public with scientific research and its broader impacts. Increasingly, ISE professionals and science researchers recognize that there is an overlapping problem space with areas for potential synergy and collaboration. In this session, discuss what's being learned about current activities, what the unexplored opportunities might be, and the role ISE can play within the broader science communication landscape.

How is Technology Building New Audiences for ISE?

Thurgood Marshall Ballroom

Technology is expanding our ability to reach specifically targeted, as well as broader audiences. What are some of the promising trends? How is ISE developing new audiences through technology use? How are designers of learning experiences and settings deciding which technologies are the best match for their project goals? Which evaluation and measurement strategies are being used to assess engagement and learning goals? Share your experiences and learn what is working for others from a variety of ISE sectors in this session.

ISE Contributions to the STEM Workforce

McKinley Room

From stimulating interest and a sense of (STEM) identity for young people to enhancing research, education, and communication skills in undergraduates and graduate students, ISE is currently contributing to the development of the STEM workforce. Some examples

of this kind of work include providing access to and information about STEM higher education, connecting learners of all ages to STEM role models, and offering STEM career pathways to opportunities in workforce sectors like industry and government. This session will explore the variety of ways that ISE projects, programs, and organizations can impact the STEM workforce and stimulate innovation.

ISE Networks, Infrastructure & Resource Centers

Harding Room

Over the last decade, NSF has made significant investments in networks, resource centers, and infrastructure that have connected and facilitated the work of ISE projects and people as a strategy for achieving learning, audience, and professional development goals. What are project leaders learning and what opportunities do they see for the future? What has been the motivation for individuals and projects to participate in existing networks or to instigate them? What kinds of evaluation and measurement strategies have projects been using to assess their impact and/or success? In this session, engage in discussion with others who have started, led, or participated in informal STEM education-related networks to explore what these types of projects have meant for the larger field.

Learning & Learning Environments: Research, Design & Implementation

Coolidge Room

This session highlights trends in learning sciences research that have particular implications for informal STEM learning. What are key trends in the learning sciences, such as taking a cross setting or ecosystems approach? Which trends are being influenced by ISE practice? What practices and literature should the larger community be aware of? In this session, these questions and others will be discussed. Researchers and practitioners who are interested in working together are encouraged to attend.

Measuring Learning Across ISE Projects

Madison B Room

The ISE field faces an ongoing challenge to improve the quality of our work, measure our outcomes, and share our evidence. Last December, a group of research projects that are developing tools for measuring informal STEM learning convened to discuss their goals and share their work. In this session, join learning researchers from those projects to explore what can be improved by sharing measurements across the field and how to access and use the latest tools and products for measuring quality and learning outcomes.

Mining the Field: What are we Learning?

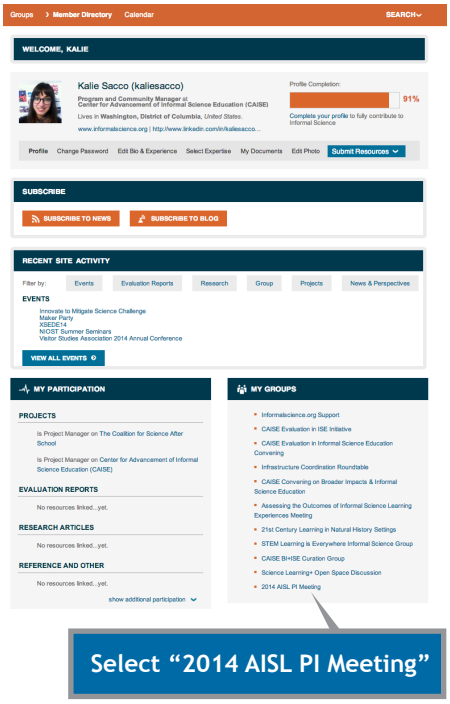
Madison A Room

Over the past several years, there have been multiple efforts to collect data from ISE professionals about the field. Some of these efforts have included the NSF Online Project Monitoring System (OPMS), the NSF ISE program evaluation, and the Building Informal Science Education (BISE) project. This session will discuss what these projects have learned through their data collection, as well as what we still do not know, and provide an update on the status of these projects.

Documenting the PI Meeting on *InformalScience.org*

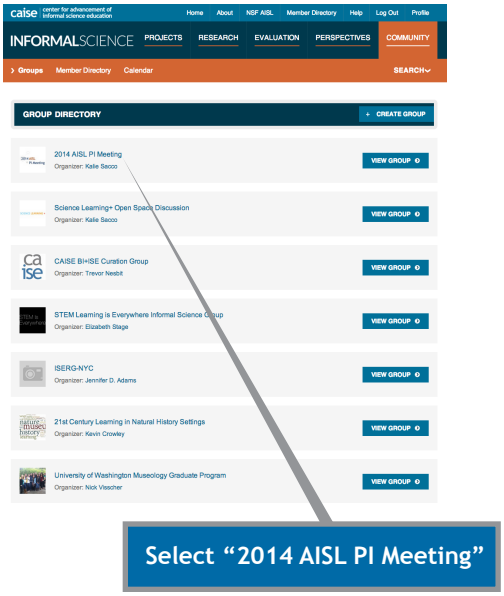
We are using the Groups function on InformalScience.org *to document the content of the PI Meeting. The 2014 AISL PI Meeting Group will be your access point for all notes and shared resources from the meeting sessions as well as the place for you to contribute comments and continue discussions when the meeting has concluded.*

Accessing the Group



All attendees at the PI Meeting have been added to the Group.
To access it:

- Log in to *www.informalscience.org*
- Scroll down to the “My Groups” section of your profile
- Select “2014 AISL PI Meeting” from the list



You can also reach the Group through the Community tab of the site:

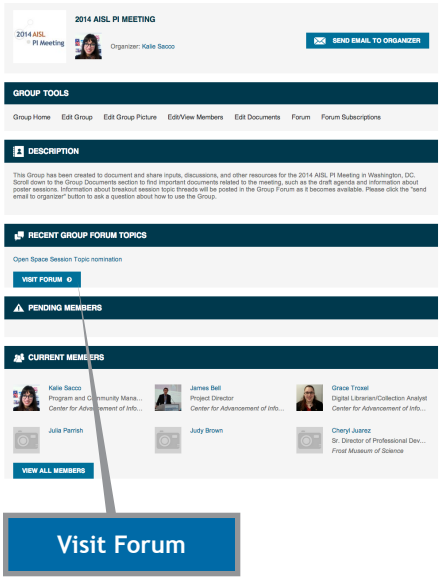
- Log in to *www.informalscience.org*
- From anywhere on the site, click on the Community tab in the dark blue bar across the top of the page
- Click on the Groups tab in the orange bar across the top of the page
- Select “2014 AISL PI Meeting” from the list

Using the Group

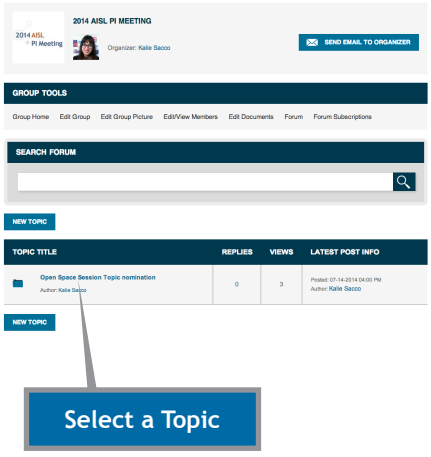
From the **Group Home** page, you can do several things:

- View and contribute to discussions and documentation in the **Forum**.
- View **Members** of the Group.
- View **Group Documents**, such as the PI Meeting program.
- Manage **Forum Subscriptions**—you will automatically receive emails when someone adds a new **topic** thread to the Group forum or replies to an existing topic thread. You can change those settings in the "Forum Subscriptions" section of the Group.
- Email caise@informalscience.org with any questions about how to use the Group.

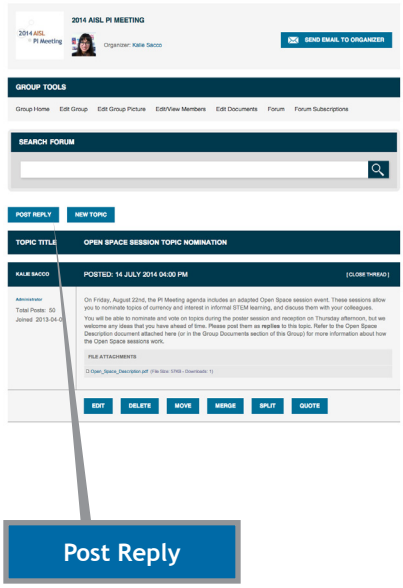
Participating in Discussions and Viewing Documentation



Once you are in the Group, click on the blue "Visit Forum" button.



Each session will have a topic thread in the Group forum.



You can post replies to topic threads throughout the meeting and after the meeting closes.

Participant List

Visit the InformalScience.org *member directory to contact participants and learn more about their work.*

Eleanor Abrams
Contextualizing Science Learning and Motivation in Rural and Indigenous Adolescents through Mapping Sustainable Practices
University of New Hampshire

Jennifer Adams
ILETES: Informal Learning Environments in Teacher Education for STEM
CUNY Brooklyn College

Elizabeth Aguilar
Chemistry at the Space-Time Limit
Boys & Girls Club of Santa Ana

Leslie Allee
Broad Implementation of the Lost Ladybug Project: Integrating New Places and New Faces into a National Lifelong Learning Opportunity
Cornell University

Ethan Allen
Water for Life: Community Education for Water Conservation and Rainwater Harvesting in the United States Affiliated Pacific Islands
Pacific Resources for Education and Learning

Louise Allen
iSWOOP—Interpreters and Scientists Working On-Site at Our Parks
Winston-Salem State University

Marni Anbar
Kyrene School District

Tamara Ball
Apprenticeships in Sustainability Science and Engineering Design (ASCEND)
SEED

Melissa Ballard
Afterschool Alliance

Michael Barnett
Seeding the Future: Growing STEM Learning and Interest through Hydroponic Food Production
Boston College

Tony Beck
National Institutes of Health

Andy Bedingfield
Center for Sustainable Materials Chemistry
Oregon State University

Janet Beissinger
The Cryptoclub: Cryptography and Mathematics Afterschool and Online
University of Illinois at Chicago

James Bell
Center for Advancement of Informal Science Education Renewal
Association of Science-Technology Centers

Lawrence Bell
Nanoscale Informal Science Education Network
Museum of Science, Boston

Marcie Benne
Researching the Value of Educator Actions for Learning (REVEAL)
Oregon Museum of Science and Industry

Marjorie Bequette
Making Connections: Exploring Culturally-Relevant Maker Experiences through an Iterative, Cross-Institutional Approach
Science Museum of Minnesota

Christine Berven
Project SOS: Making Connections Using the Science of Sustainability
University of Idaho

Bronwyn Bevan
Relating Research to Practice: A Web Resource for ISE Professionals
Exploratorium

Marta Biarnes
Creating Communities of Learners for Informal Cognitive Science Education
Museum of Science, Boston

Jennifer Borland
Rockman et al

Carol Bossert
CB Services

Jeanne Braha
American Association for the Advancement of Science

Jason Brenneman-Black
QUEST Beyond Local
KQED

Noel Broadbent
Time Team America and the Science of Archaeology
National Museum of Natural History, Smithsonian Institution

Michael Brody
Informal Science Learning in Ecological Contexts: Science Learning and Native Language Use in Contrasting USA and Russia Mountain Systems
Montana State University

Judy Brown
Children Investigating Science with Parents and Afterschool (CHISPA)
Patricia and Phillip Frost Museum of Science

Nancy Bunt
Peg + Cat: Early Learning of Math through Media
Allegheny Intermediate Unit

William Burns
Shaping an Infrastructure for the Partnership of Informal Science Education and Higher Education
National Center for Science and Civic Engagement

Eva Caldera
National Endowment for the Humanities

Manuel Calderon de la Barca Sanchez
Secrets of the Universe
University of California, Davis

Marcelo Caplan
Scientists for Tomorrow
Columbia College

Becky Carroll
Center for Advancement of Informal Science Education Renewal
Inverness Research

Timothy Carter
Indianapolis as a Living Laboratory: Science Learning for Resilient Cities
Butler University

Hailey Chenevert
Shaping an Infrastructure for the Partnership of Informal Science Education and Higher Education
National Center for Science and Civic Engagement

Teresa Chin
NEXT: The Youth Radio Innovation Lab
Youth Radio

Miyoko Chu
Crowd ID: Collaborative Tools Connecting People to Biodiversity through Social Networks and Machine Learning
Cornell University

Victoria Coats
Generations of Knowledge: Traditional Ecological Knowledge and Environmental Science
Oregon Museum of Science and Industry

Sarah Cohn
Nanoscale Informal Science Education Network
Science Museum of Minnesota

Laura Conner
Project STEAM: Integrating Art with Science to Build Science Identities Among Girls
University of Alaska Fairbanks

Robert Coulter
Informal Community Science Investigators (iCSI): Next Generation Engagement for Informal Science Institutions
Missouri Botanical Garden

Rhiannon Crain
The YardMap Network: Social Networking for Community Science
Cornell University

Kevin Crowley
Center for Advancement of Informal Science Education Renewal
Building Informal Science Education: Supporting Evaluation of Exhibitions and Programs with an informalscience.org *Research Network*
University of Pittsburgh

Toni Dancu
Exhibit Designs for Girls' Engagement (EDGE)
Exploratorium

Kristy Daniel
OUTSIDE: Over Under and Through—Students Informally Discover the Environment
University of Southern Mississippi

Patrick Daubenmire
Families, Organizations, and Classrooms Understanding Science, Sustainability, and Service (FOCUSSS)
Loyola University of Chicago

P. Thompson Davis
Enhancing Climate Change Communication Between Broadcast Meteorologists and Viewing Audiences
Bentley College

Katherine Dawes
Project SOS: Making Connections Using the Science of Sustainability
Palouse Discovery Science Center

Lisa-Anne DeGregoria Kelly
Supporting a Community's Information Education Needs: Confidence and Empowerment in STEM (SCIENCES) Program
Chicago Zoological Society

Al DeSena
National Science Foundation

Arlene de Strulle
National Science Foundation

Robert Diaz de Villegas
In the Grass, On the Reef: Understanding Linkages Between Coastal Ecology and Valued Ecosystem Services
WFSU-TV

Janis Dickinson
The YardMap Network: Social Networking for Community Science
Cornell University

Benjamin Dickow
CCI Solar
Westside Science Club

Lynn Dierking
Oregon State University

Lisa Doner
Enhancing Climate Change Communication Between Broadcast Meteorologists and Viewing Audiences
Plymouth State University

Claire Duggan
Northeastern University

Johanna Duncan-Poitier
SUNY/NYAS STEM Mentoring Program Statewide Scale-Up Project
State University of New York

Paul Dusenbery
STAR Library Education Network: A Hands-on Learning Program for Libraries and Their Communities
Space Science Institute

Daniel Edelson
National Geographic FieldScope
National Geographic Society

Elyse Eidman-Aadahl
Building Informal Science Education and Literacy Partnerships: A Collaborative Project of the National Writing Project and the Association of Science-Technology Centers
National Writing Project

Karen Elinich
ARIEL: Augmented Reality for Interpretive and Experiential Learning
Franklin Institute Science Museum

Kirsten Ellenbogen
Center for Advancement of Informal Science Education Renewal
Great Lakes Science Center

Glenn Ellis
Using Narrative in a Digital Learning Evironment to Engage Children and Teens in Engineering
Smith College

Avelina Espinosa
Roger Williams University—NESP

Jessica Evans
Association of Science-Technology Centers

John Falk
Center for Advancement of Informal Science Education Renewal
Zoo and Aquarium Action Research Collaborative (ZAARC)
Oregon State University

Michael Feder
National Research Council Board on Science Education

Cathy Ferree
Prairie Science: Integrating Informal Science and History Learning through Family Dialogue
Conner Prairie Museum

Susan Flowers
Making Natural Connections: An Authentic Field Research Collaboration
Washington University

Knatokie Ford
White House Office of Science and Technology Policy

Mary Ford
National Geographic FieldScope
National Geographic Society

John Fraser
Indianapolis as a Living Laboratory: Science Learning for Resilient Cities
New Knowledge Organization

Jennifer Frazier
Living Liquid: Creating Interactive Visualization Tools to Explore Ocean Datasets
Exploratorium

Beth Gamse
Abt Associates

Karen Gareis
Goodman Research Group, Inc.

Cecilia Garibay
Garibay Group

Sarah Garlick
Forest Science Dialogues
Hubbard Brook Research Foundation

Victoria Garvin
Association of Children's Museums

Olivia Georgia
Indianapolis as a Living Laboratory: Science Learning for Resilient Cities
City as a Living Lab

Margaret Glass
Association of Science-Technology Centers

Alan Goldman
Center for Enabling New Technologies through Catalysis
Rutgers University

Lindsay Goodwin
Developing a Citizen Science Program Model to Engage Underrepresented Minority Groups
Ocean Discovery Institute

Leslie Goodyear
Education Development Center

Yogani Govender
Efficacy of Informal Science Education (ISE) Practices to Develop Hispanic Citizen Scientists in the Watershed of the Rio Grande of Manati, Puerto Rico
The Conservation Trust of Puerto Rico

Amy Grack Nelson
Building Informal Science Education: Supporting Evaluation of Exhibitions and Programs with an informalscience.org *Research Network*
Science Museum of Minnesota

Alejandro Grajal
Supporting a Community's Information Education Needs: Confidence and Empowerment in STEM (SCIENCES) Program
Chicago Zoological Society

Meghan Groome
SUNY/NYAS STEM Mentoring Program Statewide Scale Up Project
New York Academy of Sciences

Dean Grosshandler
Supporting a Community's Information Education Needs: Confidence and Empowerment in STEM (SCIENCES) Program
University of Illinois at Chicago

Martha Grover
Center for Chemical Evolution
Georgia Tech

Suzanne Gurton
My Sky Tonight: Early Childhood Pathways to Astronomy
Astronomical Society of the Pacific

Joshua Gutwill
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Sue Ann Heatherly
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Notes


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