The NISE Net is a national community of researchers and informal science educators dedicated to fostering public awareness, engagement, and understanding of nanoscale science, engineering, and technology.
Year 6-10 Focus

Years 1-5: (2005-2010)
• Building the network

Years 6-10: (2010-2015)
• Engaging the public through the network
NISE Network: Goals

**Network community:** increase capacity in the field
- Support partners in engaging the public in nanoscale science, engineering, and technology
- Form partnerships among ISE institutions and research centers

**Educational products:** engage the public
- Develop and distribute educational products
- Raise public awareness and understanding of nano

**Knowledge:** inform the field and future projects
- Generate and document learning through evaluation and research
- Communicate broadly in ISE and research fields
Network Structure in Years 6-10

Community
- Hubs
  - Regional & Children’s Museums Hubs
- RISE Steering

Educational Products
- Public Engagement Steering
  - Content
  - Inclusive Audiences
- Educational Programs
- NanoDays
- Exhibits

Project Management
- Administration
- Evaluation
- Research
- Website
NISE Net Structure

Educational Products
- Project Management
  - Admin
  - Research
  - Evaluation
- Educational Products
  - Website
  - Nano Days
  - Content
  - Inclusive audiences
  - Exhibits
  - Programs

Network Community
- Mid-Atlantic
- North east
- South east
- South
- South west
- West
- Children’s Museum Hub
- RISE Partnerships

International partners

NISE Net Structure

NISE network
Core Partners

• Association of Science-Technology Centers (ASTC)
• Children’s Museum of Houston, Houston, TX
• Exploratorium, San Francisco, CA
• The Franklin Institute, Philadelphia, PA
• Lawrence Hall of Science, Berkeley, CA
• Materials Research Society (MRS)
• Museum of Life and Science, Durham, NC
• Museum of Science, Boston, MA
• New York Hall of Science, Queens, NY
• Oregon Museum of Science and Industry, Portland, OR
• Sciencenter, Ithaca, NY
• Science Museum of Minnesota, Saint Paul, MN
• SRI, Stanford, CA
• University of Wisconsin - Madison, Madison, WI
Network Community Strategy

Core Partners
Tier 1
~14

Nano-Infused Partners
Tier 2
>100

Broad-Reach Partners
Tier 3
>300
NanoDays Participants (225 in 2012)
Evaluation

• 114 evaluation reports posted on nisenet.org

• Team based inquiry: building working groups' capacity to gather and use the information when it’s needed to improve educational products and practices.
Catalog on nisenet.org

Explore by topic
- Art and nature (47)
- Information Technology (29)
- Bio and medicine (48)
- Materials, tools, and applications (110)
- Energy and environment (31)
- Society, policy, and economics (39)
- Fundamentals (106)

This online catalog is a compilation of educational products designed for use in informal education settings to engage the public in nano science, engineering, and technology.

Support
Contact products@nisenet.org about items in the Catalog.

Activity
The catalog features a variety of educational programs and activities, media, exhibits, evaluation reports, and tools and guides for professional educators.

Keyword search
Update
Year 7
New in the Catalog

Would you buy that?
Public program

Nano consumer products
Public program

Summer camp and afterschool Group programs

Worries and Wonders of Nanotechnology Video

More info: nisenet.org/catalog

113 videos: http://vimeo.com/channels/nisenet
Inclusive Audiences Tools

Universal Design Guidelines for programs

Universal Design Guidelines for exhibits

Partnership Pilot Project with Boys & Girls Clubs of America

Translation Process Guide

More info: nisenet.org/inclusive_audiences
Scientist - Museum Collaboration Tools

**RISE Partner Guide:** Small Steps; Big Impact for museums, how to start a collaboration with researchers

**Bringing Nano to the Public** for scientists, why to collaborate with museums

**Inquiry Education Practices for Researchers** (from Portal to the Public)

**Sharing Science Graduate student workshop and practicum**

**Mastering Science and Public Presentations Video** for scientists

**REU (Research Experiences for Undergraduates) science communication workshops**

More info: nisenet.org/RISE
New in the Catalog

More info: nisenet.org/catalog

NanoVenture
Board game

NanoSchoolBox
Experiments/demos

EarthSky
Podcasts

It’s a Nano World
Traveling exhibition

Amazing Nano
Brothers Show

NanoSense
Curriculum

NanoZone
Website and exhibit

Strange Matter
Traveling exhibition
- collaboration with 1-12 class on Nanoparticle stained glass
- Theatre School Program
- pencils and writing with graphite - *Forms of Carbon*

**National Chemistry Week** (October)

- Sweet Self-Assembly
- Exploring Size - Scented Balloons
- Exploring Materials - Liquid Crystals

**Metric Day** (October 10th)

- How Small is Nano? book and poster
- How Small is Nano? video
- Scale Ladder Diagrams
- Sizing Things Down
- Exploring Size - Measure Yourself

**Halloween** (October 31)

- Nano Dreams and Nano Nightmares
- Attack of the nanoscientist
- *Intro to Nano* video for costume ideas

**Thanksgiving** (November)
Cleaning Our Water with Nanotechnology

“Cleaning Our Water with Nanotechnology” is a public presentation about our drinking water and how we can make contaminated water safe to drink using a variety of technologies.

Photolithography

This activity is designed for high school students. In this experiment students use UV light to transfer a pattern (either a network of very small metal wires or self-drawn patterns) onto a surface.

High School Nanoscience Program - Self Assembly

Hands on activity that uses magnets to demonstrate forces responsible for self-assembly.

NNIN Outreach Demonstration Guide - encapsulation

Demonstrations that the NNIN Education Office at Georgia Institute of Technology uses with visiting groups. A demo that introduces encapsulation, diffusion and osmosis is on page 17.
Mini-Exhibition
Mini-Exhibition

- Application available in January 2012
- Fabricating up to 50 copies for distribution in 2013
Scientist - Museum Collaborations

RISE: Research Center – Informal Science Education Partnerships

Encouragement, knowledge, and tools to support collaborations

Small one-time collaborations such as a guest lecture or NanoDays event can lead to much more:

- Student internships at a museum
- Scientists serve on museum board or advisory group
- Joint proposals to fund outreach
- Collaborate on topics beyond nano education

More info: nisenet.org/RISE
Communicating Science

Professional Development for Science Students (and Scientists)
Partners

Carol Lynn Alpert, Karine Thate and other staff

Northeastern University and UMass-Lowell

Museum of Science

Harvard University

University of Wisconsin - Madison
REU Science Communication Workshop

Goals:

• Encourage students to explore the broader context of their research
• Guide them in developing professional science communication skills
• Enhance their confidence in pursuing careers in science and in speaking about science in a variety of settings
Two 4-hr sessions, one near the beginning and one near the end:

1. Basic concepts, skills practice, tips on presentations and giving feedback
2. Practice presentations in small groups and get feedback
"Communication of research is highly important and seldom discussed in undergraduate programs."

"The most useful thing was to be able to practice our presentation skills and to have the opportunity to receive feedback from other students and experienced people."

"More than anything, it is important that scientists understand how to communicate their work."

"It helped me find the best way to communicate scientific concepts to non-scientists."
RESEARCH EXPERIENCE FOR UNDERGRADUATES

Science Communication Workshop

A NISE NETWORK PROFESSIONAL DEVELOPMENT GUIDE

www.nisenet.org/catalog/tools_guides/reu_science_communication_workshop
SHARING SCIENCE:
Communication, Education and Outreach
A WORKSHOP & PRACTICUM
FOR EARLY-CAREER RESEARCHERS

A NISE NETWORK PROFESSIONAL DEVELOPMENT GUIDE
Scheduling Option One

- Half-day Workshop
  - Sharing Science with Words
  - Sharing Science with Hands-on Demonstrations
- Half-day Practicum
  - Practice with Visitors
- NanoDays
  - or other Outreach Event
- Further E&O Opportunities

Scheduling Option Two

- Full-day Workshop and Practicum
  - Sharing Science with Words
  - Sharing Science with Hands-on Demonstrations & Practice with Visitors
- NanoDays
  - or other Outreach Event
- Further E&O Opportunities
“It was nice to work with such young audiences, even though it was a bit challenging.”

“It made me think about my research from a different perspective.”
It increased my confidence and made me more relaxed. I had to go for an interview that evening and the workshop experience gave me an idea of communicating better with professionals and nonprofessionals in daily life.”

“I feel like getting involved with the education and outreach program. To intrigue kids’ interest in science has great significance.”
Many more guides of various kinds in the catalog on www.nisenet.org
Professional Conference Workshops: Mastering Science and Public Presentations
Scientists make presentations too
Portal to the Public
Pacific Science Center

Public Programs

These events bring scientists and public audiences together in face-to-face interactions and are facilitated by scientists who have participated in professional development. Learn More

Professional Development

Develop, evaluate and disseminate modular professional development elements that ISE staff can facilitate to prepare scientist volunteers to work with public audiences. Elements include workshop activities, resources for one-on-one support and written documents.
Most Americans Can’t Name A Living Scientist

Can you name a living scientist? (total mentions n=278)

Source: Your Congress—Your Health Survey, June 2009
Charlton Research Company for Research!America
Let’s enable the scientist communicators of tomorrow

- Workshop for researcher - ISE partners on how to implement science communication pd for early career scientists - lbell@mos.org
- Capitalize on NanoDays opportunity
- Partner with an ISE organization
- Build it into REU programs
- Build it into professional conferences
- Use resources available at www.nisenet.org
This presentation is based on work supported by the National Science Foundation under Grant No. 0940143.

Any opinions, findings, and conclusions or recommendations expressed in this presentation are those of the author(s) and do not necessarily reflect the views of the Foundation.