

## Welcome NISE Network Partners !

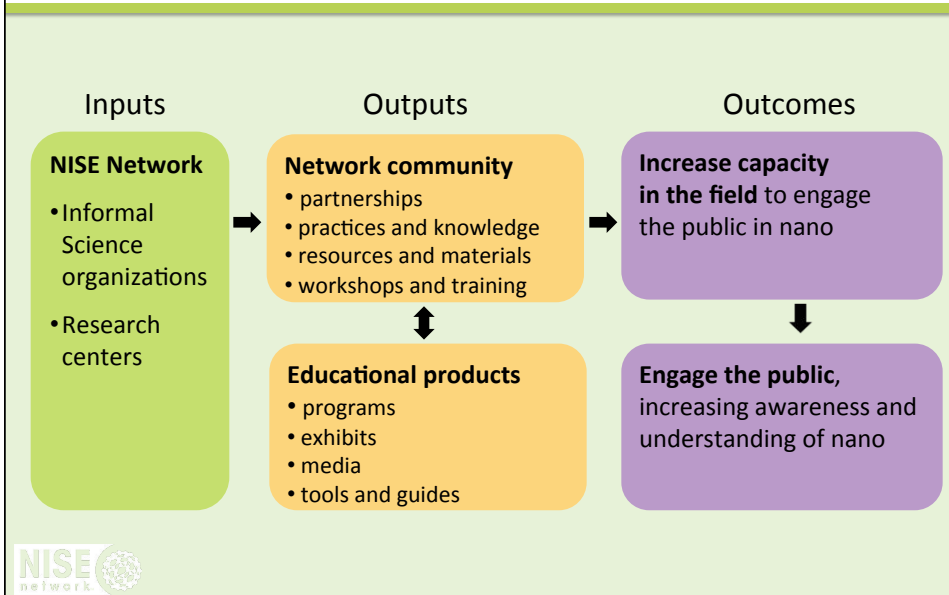


**NISE** network  
NANOSCALE INFORMAL SCIENCE EDUCATION



[www.nisenet.org](http://www.nisenet.org)

## NISE Network: Strategy



## Nanoscale Informal Science Education Network

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.



## At Cornell Physical Sciences Building Tomorrow!

245 East Avenue, Room 401



## Alice in Nanoland



## Welcome NISE Network Partners !



# NISE Network Regional Meeting

Northeast Hub, Fall 2013



**NISE**network  
NANOSCALE INFORMAL SCIENCE EDUCATION



[www.nisenet.org](http://www.nisenet.org)

## Regional Meeting Goals



1. Nurture and deepen **relationships** with existing partners in the NISE Network.
2. Provide valuable **networking opportunities** among workshop attendees, focusing on museum educators and outreach coordinators.
3. Create **opportunities for sharing** experiences with using NISE Net products.
4. Discuss ways to **sustain the benefits** of the NISE Network **after Year 10**.
5. Present an **update of NISE Net's resources**, including new programs, tools and guides, mini-exhibition, and mini-grants.

**NISE**network  
NANOSCALE INFORMAL SCIENCE EDUCATION



## Regional Meeting Agenda – Day 1

- 8:30 *Breakfast*
- 9:00 Welcome and introductions
- 9:15 Improv Activity : *I Say Hi*
- 9:45 NISE Network update
- 10:30 *Break*
- 10:45 Mini-Grants: New Ideas for Doing Nano
- 12:00 *Tour of Wilson Synchrotron Laboratory & Lunch*
- 3:00 *Nano Around the World*
- 3:30 Nano & Society Conversations
- 4:30 Making the Most of Your NanoDays Kit
- 5:30 *Break*
- 6:30 Bus Departs Hotel for Treman SP
- 7:00 Group Picnic & Waterfall Walk
- 8:30 Bus Departs Treman SP for Hotel



## Regional Meeting Agenda – Day 2

- 8:30 Breakfast at the Sciencenter
- 9:00 Improv Activity #3: *Red Ball*
- 9:15 Getting Nano into your Building  
(exhibitions, signage, partnerships)
- 10:00 IA Workshop Presentations
- 11:00 Beyond Year 10 Discussion
- 1:00 Lunch and Meeting Wrap Up



## Regional Meeting Welcome



### Introductions

### Logistics

- restrooms
- handouts
- getting a copy of slides
- reimbursement forms
- luggage
- airport rides
- dinner tonight
- meeting location tomorrow

### Swap Table

#### Meeting Website:

[nisenet.org/community/events/other/  
regional\\_meetings\\_2013](http://nisenet.org/community/events/other/regional_meetings_2013)

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## Improv Exercise – *I Say Hi!*



More info: [nisenet.org/catalog/tools\\_guides/improv\\_exercises](http://nisenet.org/catalog/tools_guides/improv_exercises)

## Why implement improv exercises ?



Incorporating improv exercises into staff and volunteer training helps create a supportive and upbeat environment for educators to practice and strengthen essential skills.

- **Warm up skills** required for interacting with visitors
- **Encourage conversations:** with visitors (rather than reciting scripts)
- **Be better listeners:** think on your feet and respond in the moment
- **Be responsive:** better tailor content to visitors responses and integrate visitor feedback
- **Be positioned as equals** with visitors not “the expert”
- **Foster teamwork & creativity:** create a fun, supportive, positive work environment to practice skills

More info: [nisenet.org/catalog/tools\\_guides/improv\\_exercises](http://nisenet.org/catalog/tools_guides/improv_exercises)

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Where can you  
**find nano?**



## NISE Network Overview

- Introduction
- Network Community
- Educational Products
- Professional Tools and Guides
- Upcoming Opportunities






# NISE Network

## Nanoscale Informal Science Education Network

The NISE Network is a national community of researchers and informal science educators dedicated to fostering public awareness, engagement, and understanding of nanoscale science, engineering, and technology.



## What is Nano?



- 1. Nano is small and different**  
 Nanometer-sized things are very small, and often behave differently than larger things do.
- 2. Nano is studying and making tiny things**  
 Scientists and engineers have formed the interdisciplinary field of nanotechnology by investigating properties and manipulating matter at the nanoscale.
- 3. Nano is new technologies**  
 Nanoscience, nanotechnology, and nanoengineering lead to new knowledge and innovations that weren't possible before.
- 4. Nano is part of our society and our future**  
 Nanotechnologies—and their costs, utility, risks, and benefits—are closely interconnected with society and with our values.

## 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 Informal Science Education institutions and research centers

### **Educational products:** engage the public

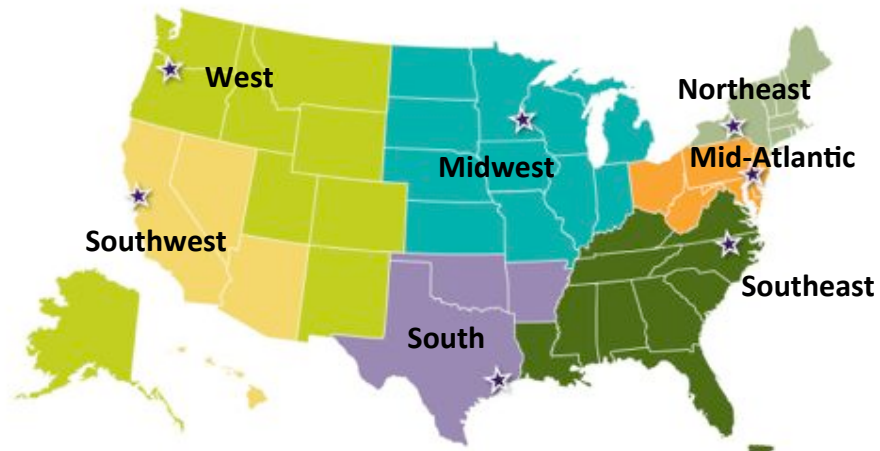
- Develop and distribute educational products
- Raise public awareness and understanding of nano

### **Knowledge:** inform the field and future projects

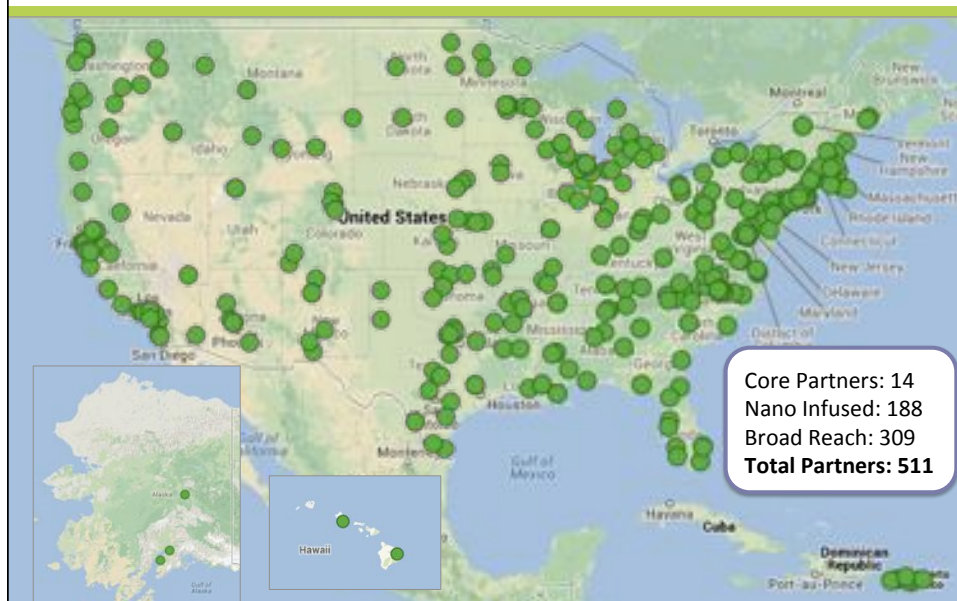
- Generate and document learning through evaluation and research
- Communicate broadly in ISE and research fields



## NISE Net Regional Hub Structure



## Partner Reach



## Educational Products

- Product Development Process
- Website
- DIY Nano App
- *Nano* mini-exhibition
- New in catalog



## Product Development Process



### Iterative, collaborative development process:

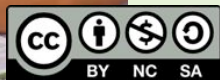
- ✓ Scientist review
- ✓ Peer review
- ✓ Visitor evaluation

### Audiences and Content

- Content Map as a guide
- Inclusive audience approach

### Designed for sharing

- Easily edited and adapted
- Creative Commons license



More info: [/nisenet.org/programs](http://nisenet.org/programs)

## Content Map



More info: [/nisenet.org/catalog/tools\\_guides/content\\_map](http://nisenet.org/catalog/tools_guides/content_map)

## Inclusive Audiences Approach



### Spanish Bilingual materials:

- NanoDays materials and exhibits are available in both English and Spanish

### Tools and Guides:

- Universal Design guidelines for programs and exhibits
- Bilingual graphic design
- Translation process guide



More info: [/nisenet.org/inclusive\\_audiences](http://nisenet.org/inclusive_audiences)

## Website for educators - nisenet.org



**nisenet.org**

- Catalog of educational products
- News and events
- Member directory
- Social networking links



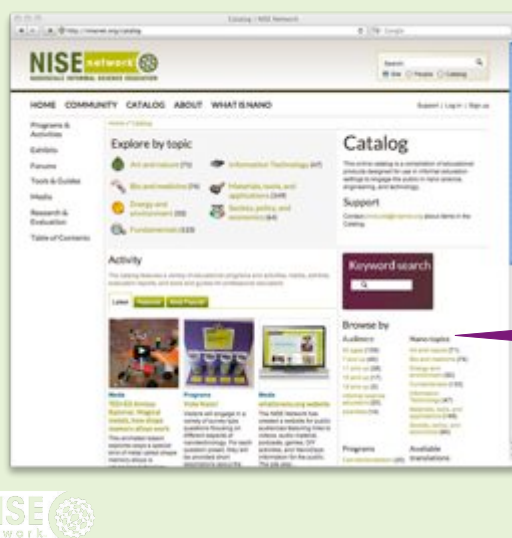
## Website for educators - nisenet.org



### Catalog

- Programs
- Exhibits
- Tools and guides
- Media
- Image Gallery
- Evaluation & Research

## Search the Catalog



### Search the catalog by audience, topic, or season

#### Browse by

**Audience**  
All ages (109)  
7 and up (29)  
11 and up (38)  
15 and up (17)  
19 and up (3)  
Informal science education (25)  
Scientists (14)

**Nano topics**  
Art and nature (71)  
Bio and medicine (73)  
Energy and environment (50)  
Fundamentals (132)  
Information Technology (47)  
Materials, tools, and applications (148)  
Society, policy, and economics (64)

#### Programs

Cart demonstration (25)  
Classroom activity (25)  
Display (2)  
Facilitated activity (45)  
Game (4)  
Museum theater (4)  
Stage presentation (16)

#### Available translations

Spanish (61)

Nano throughout the year  
Browse products by season.

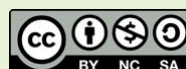
Select NISE Network educational products are now available in Spanish!  
Find answers to your questions about the catalog on our FAQ page.

## Products in Catalog

### NISE NET PRODUCT

#### NISE Net Products

- Created with NISE Network funding
- Development process:
  - scientist review, peer review, & visitor evaluation
  - content map as a guide
  - inclusive audiences approach
- Designed to be easily edited and adapted under a Creative Commons license



### LINKED RESOURCE ►

#### Linked resources

- Created with other funding
- Different vetting process
- Different rights ownership/attribution



## Website for the Public



- Videos, podcasts, activities, links
- NanoDays locations
- List of mini-exhibition locations
- Audio Description in English and Spanish

**whatisnano.org**



## DIY Nano App for iPhone and iPad






**More info:** [whatsnano.org/diy-nano-app](http://whatsnano.org/diy-nano-app)  
[nisenet.org/catalog/media/diy\\_nano](http://nisenet.org/catalog/media/diy_nano)

**NISE network**

## Nano Mini-exhibition



- Comprehensive content
- Small footprint: 400 square feet
- Flexible configurations, modular
- Bilingual – English & Spanish, accessible
- Making > 90 copies
  - Batch 1 = 49 copies (shipped in 2012-2013)
  - Batch 2 = 21 copies (will ship April – August 2014)
  - Batch 3 = 23 copies invitation process (ship 2015)

Waiting list for used copies  
and possible sharing

**NISE network** **More info:** [nisenet.org/catalog/exhibits/nano\\_mini-exhibition](http://nisenet.org/catalog/exhibits/nano_mini-exhibition)

## Nano Mini-Exhibition Reach



## Mini-exhibition around the country



Buffalo Museum of Science  
Buffalo, NY



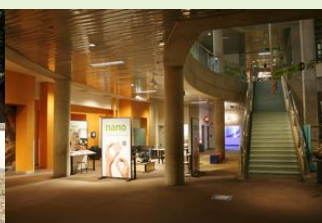
National Museum of Nuclear Science  
and History, Albuquerque, NM



Da Vinci Science Center  
Allentown, PA



Miami Science Center  
Miami, FL



Saint Louis Science Center  
Saint Louis, MO



Children's Museum of Houston  
Houston, TX

## Nano Mini-exhibition Public Impact



### Summative Study Findings:

1. Reach is sizable and broad
2. Successful in:
  - Engaging visitors
  - Promoting learning
3. Successful for:
  - Different types of institutions
  - Small sample of Spanish-speaking visitors
  - Small sample of visitors with disabilities
4. Catalyzing new and enhanced programming

More info: [nisenet.org/catalog/exhibits/nano\\_mini-exhibition](http://nisenet.org/catalog/exhibits/nano_mini-exhibition)

## Nano Mini-exhibition Partner Impact



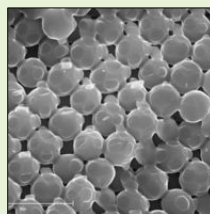
- 87% implementing new or expanded **public programming**
- 62% reported new and expanded **partnerships**
- Almost all partners have implemented new or expanded **staff and/or volunteer training**
- All plan to keep or share Nano **beyond the one-year commitment**, 52% said indefinitely
- Wide range of **impacts** described on visitors, staff, collaborations, and organizational

More info: [nisenet.org/catalog/exhibits/nano\\_mini-exhibition](http://nisenet.org/catalog/exhibits/nano_mini-exhibition)

## Programs - New in the Catalog



**Liquid Body Armor**  
Cart demo



**Colors at the NanoScale: Butterflies, Beetles, and Opals**  
program



**Making Molecular Movies with QSTORM**  
Public presentation



**More coming soon – watch the Nano Bite**



**More info:** [nisenet.org/catalog](http://nisenet.org/catalog)

## Media – for the public in the Catalog



**Mr. O video – A Little bit of Sunshine**



**Invisibility Cloak**



**Mr. O video– Liquid Armor**



**What's Nano about that series (coming soon)**



**More info:** [nisenet.org/catalog](http://nisenet.org/catalog)



## Media – tools for educators



**NanoDays  
Training Videos  
2013**



**America's Next  
Top Presenter**  
(coming soon)



**NanoDays  
Training Videos  
2014**  
(coming soon)



**Speed-Ucate  
Visitor  
Conversations  
Video**  
(coming soon)



**More info:** [nisenet.org/catalog](http://nisenet.org/catalog)



## Professional Tools and Guides

- Museum-Scientist Collaborations
- Team Based Inquiry

**Later on agenda:**

- Inclusive Audiences
  - Bilingual Audiences
  - Universal Design
- Nano and Society

**More info:** [nisenet.org/category/catalog/tools](http://nisenet.org/category/catalog/tools)



## Museum-Scientist Collaboration Tools



### RISE: Research Center – Informal Science Education Partnerships

Encouragement, knowledge, and tools to support collaborations

#### Why Collaborate?

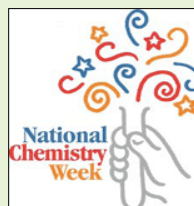
- Bring current science to museum audiences
- Connect scientists and students with the public
- Share resources and tools
- Mutual learning between scientists, museum educators, and the public

More info: [nisenet.org/rise](http://nisenet.org/rise)

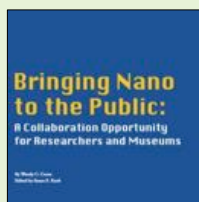
## Museum-Scientist Collaboration Tools



**Guide to Building Partnerships between Science Museums and University-Based Research Centers**



**National Chemistry Week collaborations**  
Oct 20-26, 2013

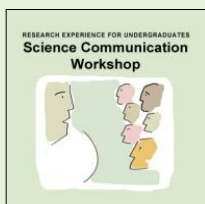


**Bringing Nano to the Public**  
collaboration introduction

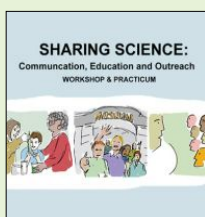


More info: [nisenet.org/rise](http://nisenet.org/rise)

## Science Communication Tools for scientists



**Science Communication Workshop**  
designed for Research Experiences for Undergraduates (REU) programs



**Sharing Science Workshop and Practicum**  
designed for scientists and students



**Creating Stunning Scientific Posters Seminar**



**Making the Most of Broadcast Media Workshop**



**Mastering Science and Public Presentations Video**



More info: [nisenet.org/rise](http://nisenet.org/rise)



## Upcoming Opportunities

- NanoDays
- Mini-grants
- Team-Based Inquiry Training
- Annual Partner Surveys
- And more!



## NanoDays

NanoDays Applications  
due **December 1, 2013**

- Annual event introducing the public to nanoscale science, engineering, and technology
- Involves hundreds of museums and universities over one week



## NanoDays Reach and Impact



### Reach:

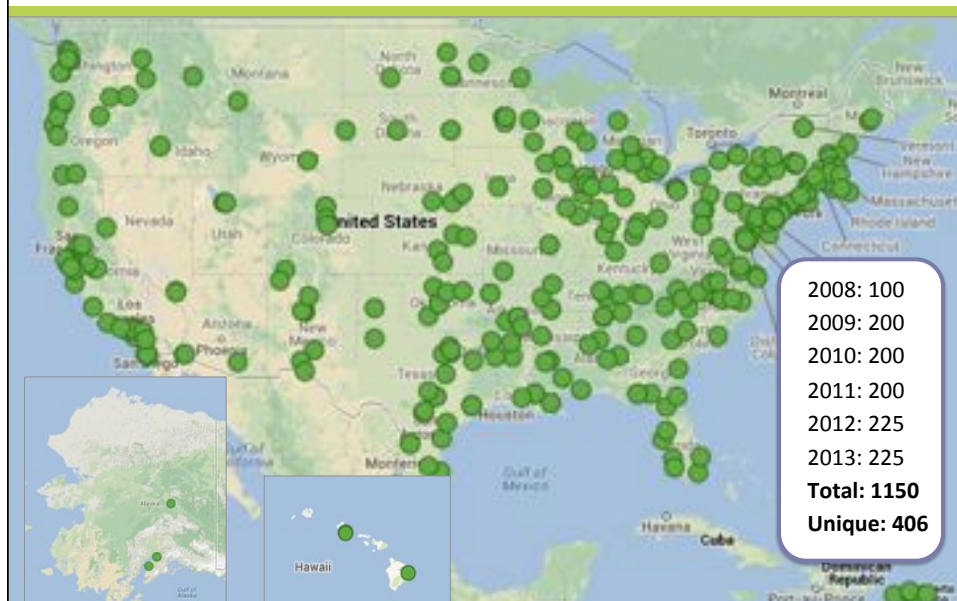
- 225 physical kits in 2013
- 250 kits in 2014 and 2015
- Digital kit and materials available free online

### Impacts:

- Local collaborations: over 60%
- Year round use of kits: 100%
- Audience: nearly 100% family audiences

**More info:** [nisenet.org/nanodays](http://nisenet.org/nanodays)

## NanoDays Reach



## NanoDays 2014 kit

Applications are due  
**December 1, 2013**



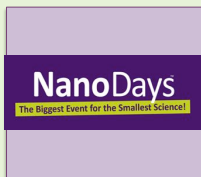
### Training Videos for visitors & staff

- for each activity
- visitor conversations

**NanoDays**  
 The Biggest Event for the Smallest Science!

### Volunteer Survey

We'll be inviting all NanoDays volunteers across the nation to participate in a short online survey to learn about their volunteer experience



### New activities

- Capillary Action
  - Oobleck
  - Piezoelectricity
  - Electroplating
- New Videos**
- Invisibility Cloak
  - more!



### Online Brown-Bags

- What's Coming in the NanoDays kit
- Hosting a Bilingual NanoDays
- Science Behind NanoDays



More info: [nisenet.org/nanodays](http://nisenet.org/nanodays)

## NanoDays after 2015



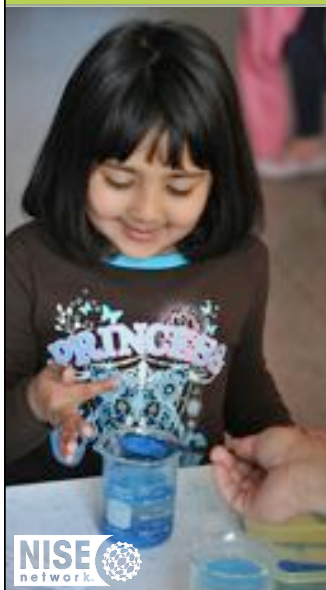
### Sustainability Plans

- Planning to create and distribute a compendium of all NanoDays activities (hard copy and digital)
- Continue to make NanoDays materials available online

More info: [nisenet.org/nanodays](http://nisenet.org/nanodays)

## Mini-Grants

Applications are due  
**November 1, 2013**

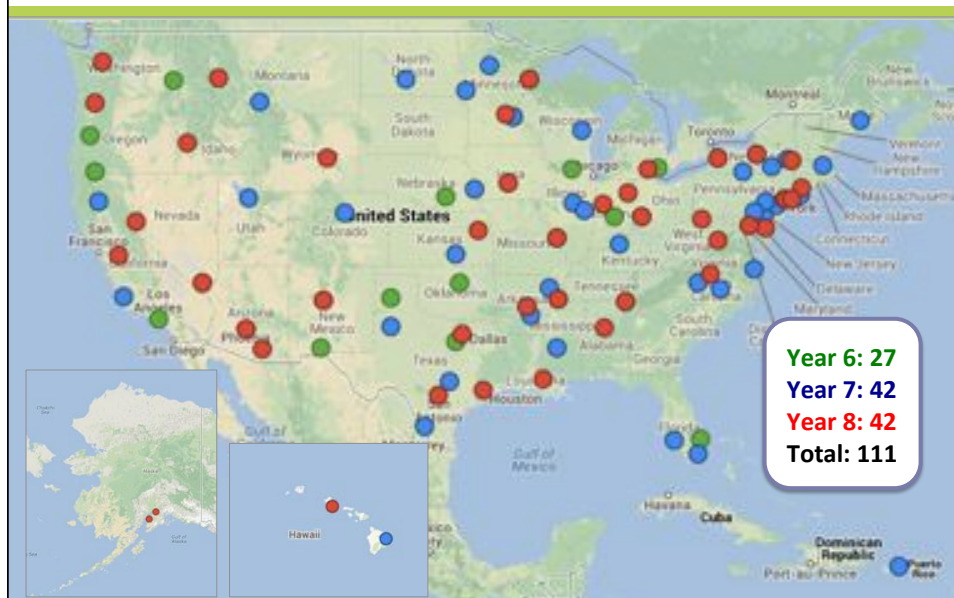


- 27 awards in 2011, 42 in 2012, 42 in 2013 anticipate 40 in 2014
- \$3,000 maximum
- Eligible activities:
  1. New efforts to integrate nano into existing programming
  2. New efforts to reach new audiences with nano programming (including traditionally under-served or under-represented audiences)
  3. New partnerships between museums and nano researchers, community--based organizations, or diversity serving organizations

More info: [nisenet.org/community/mini-grants](http://nisenet.org/community/mini-grants)

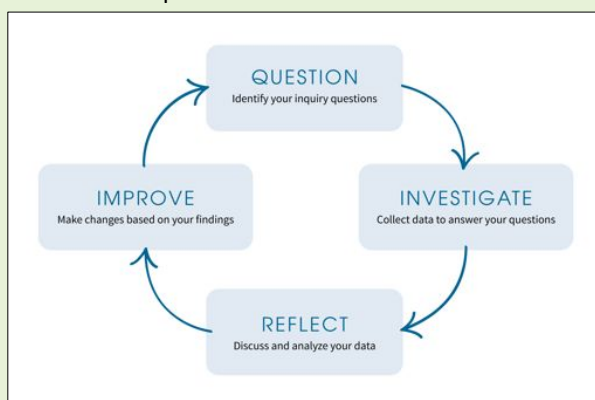


## Mini-Grants Reach



## Team-Based Inquiry

TBI is an approach to empowering professionals to get the data they need, when they need it, in order to improve their products and practices and create successful educational experiences.



## Team-Based Inquiry Tools



**Team-Based Inquiry Guide** includes:

- Templates
- Observation forms
- Interview forms
- Worksheets
- Concrete examples

The guide will be included in the NanoDays 2014 physical kit



More info: [nisenet.org/catalog/tools\\_guides/team-based\\_inquiry\\_guide](http://nisenet.org/catalog/tools_guides/team-based_inquiry_guide)

## Team-Based Inquiry Professional Development



### New Professional Development Opportunity

*What?* NISE Network is inviting a small number of partner institutions to participate in an intensive, seven-month professional development experience focused on team-based inquiry (TBI).



## Team-Based Inquiry Professional Development



### New Professional Development Opportunity

*Why?* The professional development will help institutions use TBI to incorporate evaluation and data-based decision-making into their nano education work.

## Team-Based Inquiry Professional Development

**The experience is offered at no charge but will require significant time from two staff January-July 2014:**

- 1.5 hour phone call every two weeks
- 2 to 4 hours per month on professional development
- One-day workshop in Portland, OR, April 2014 (travel, lodging, & food covered by the NISE Net)

**Participating will also impact the timeline of your mini-grant project:**

- January-March 2014, participants learn about TBI and prepare for shared inquiry experience during NanoDays 2014
- April-July 2014, participants work on TBI studies at their own institutions specific to their mini-grant projects

*Participation will **NOT** affect selection process for mini-grant applications!*



**More info:** [nisenet.org/community/mini-grants](http://nisenet.org/community/mini-grants)

## Team-Based Inquiry Professional Development

### How do I apply?

- Participants will be recruited through the **mini-grant application**.
- Indicate your organization's interest at the end of the application.
- Invitation e-mails will be sent out in January.

This opportunity is described in more detail in the **2014 Mini-Grants Program Overview**. Before indicating below if your organization is interested in participating, please read more about the opportunity and consider the timeline and required staff time commitment.

**12. Would your organization like to be considered for this team-based inquiry professional development opportunity?** Your response to this question will **NOT** affect the selection and review process of your mini-grant application. \*

☐ Yes

☐ No

Participation will **NOT** affect selection process for mini-grant applications!

Mini-grant application due **November 1, 2013**



## Evaluation and Research



**Evaluation** measures professional learning and practice, public learning, and Network growth.

- Professional Impacts
- Public impacts

**Research studies** provide the field with new knowledge and understanding

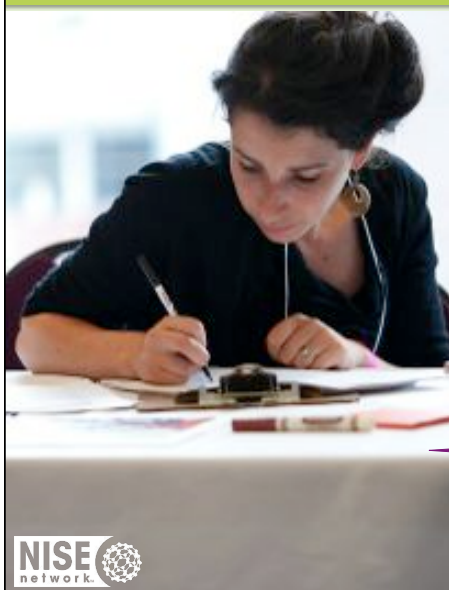
- Public Decision Making and Learning
- Organizational Change
- Museum – Scientist Partnerships
- Nano in Traditional and Social media
- Find out what we have learned so far by visiting [nisenet.org](http://nisenet.org)

**More info:** [nisenet.org/evaluation](http://nisenet.org/evaluation)

**More info:** [nisenet.org/research](http://nisenet.org/research)



## Help Us Learn – Annual Partner Survey



Help us to advance NISE Network and the field by participating in the Annual Partner Survey

Please fill out the survey when you receive an invitation

- even if you filled it out last year
- even if more than one person at your institution is filling out the survey

Survey invitation  
via email in  
October 2013

## Professional Development Opportunities



- **ASTC (Association of Science-Technology Centers)**  
October 2013 in Albuquerque  
Sessions, booth, breakfast  
pre-conference workshop on Team-Based Inquiry
- **Association of Children's Museums (ACM)**  
May 2013 in Phoenix - sessions, booth
- **Materials Research Society (MRS)**  
November 2013 in Boston & April 2014 in San Francisco
- **Online Brown-Bag conversations**  
All year round, averaging one a month  
Recorded and available to view online

**More info:** [nisenet.org/community/events](http://nisenet.org/community/events)



## Online Brown-Bag Conversations



*All past brown-bags are recorded and available online.*

### This Fall:

- Nano for School Groups – October 1
- Universal Design Program Workshop Follow-up – October 28
- Nano in Food – November 13

### Coming Up Winter/Spring 2014:

- For NanoDays:
  - What's Coming in the NanoDays kit
  - Hosting a Bilingual NanoDays
  - Science Behind NanoDays
- Nano for Summer Camps
- Nano and Society



**More info:** [nisenet.org/community/events](http://nisenet.org/community/events)

## Stay in Touch

### Website networking tools



- Update your profile on the website  
[nisenet.org/faq](http://nisenet.org/faq)
- Sign up for the monthly *Nano Bite* newsletter  
[nisenet.org/community/nanobite](http://nisenet.org/community/nanobite)
- Join our social networking sites  
[nisenet.org/community](http://nisenet.org/community)



# Thank you!

To all our partners - we could not do this work without you!

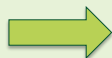


This presentation is based on work supported by the National Science Foundation under Grant No. 0940143. Any opinions, findings, and conclusions or recommendations expressed in this presentation are those of the authors and do not necessarily reflect the views of the Foundation.

## Questions & Discussion



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## Mini-Grant Presenters

- Betty Jones, Syracuse Museum of Science and Technology
- Doug Borzynski, Buffalo Museum of Science
- Stacy Lee, Long Island Children's Museum
- Heather Edgecombe, CRISP
- Sarah Clowe, CNSE Children's Museum of Science and Technology

Applications are due  
**November 1, 2013**



More info: [nisenet.org/community/mini-grants](http://nisenet.org/community/mini-grants)



- NISEnet member since 2009.
- LICM has held:
  - Annual NanoDay events
  - Free drop-in programs and live demonstrations
  - Theater programming:  
*The Amazing Nano Brothers Juggling Show.*
- Recipient of 2011 + 2013 NISEnet mini-grants.



## NISEnet 2011 Mini-grant Project



## NISEnet 2011 Mini-grant Project

### Programming Objectives

- Reach older audiences, ages 7 and up.  
(Most of our nano programs have targeted 5-6 year olds.)
- **Expand on concepts introduced through previous nano programs.**
- Engage in more in-depth, hands-on demonstrations.
- Introduce potential costs/benefits/risks of nanoscience & technology.
- Encourage participants to think critically about nano.





\*Funded by NSF and the Massachusetts Technology Collaborative.



- Performance by Dan Foley & Joel Harris.
- Introduced visitors to the *nano* and the concept of scale.
- 94 families with children of all ages.
- 50% of workshop participants had attended the Theater program.



## *The Magic of Nano*

- 12 families in workshop studio.
- Groups represented diverse cultural and economic populations.
- Received more adult participation.
- 4 stations with various experiments supporting key concepts: *size/shape of nano*, *behavior of nano molecules*, and *detecting nano*.
- Expanded on themes introduced in Theater program: *Macro*, *micro*, and *nano* scale.



## *The Magic of Nano*

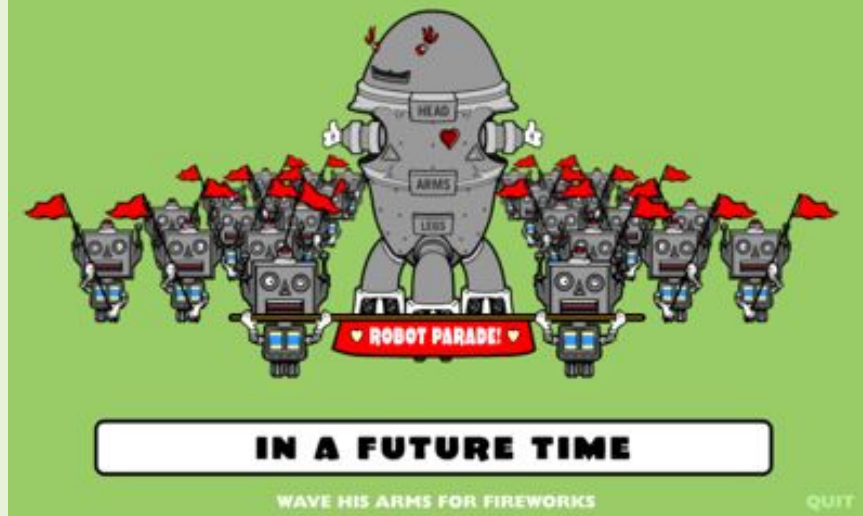



## NISEnet 2013 Mini-grant Project

- **Science of the Small Outreach:**
  - “Calling all scientists!”
  - “Science doesn’t have to be boring!”
  - 6 Nassau County Libraries in underserved communities throughout Long Island and Queens.
  - Primarily Hispanic population: ages 6-13.
  - **Expand on concepts introduced through previous nano programs.**



- Applications of nano in technology and medicine.





# NISE NETWORK MINI GRANT PRESENTATION

## Heather Edgecumbe

Education & Outreach Coordinator, CRISP

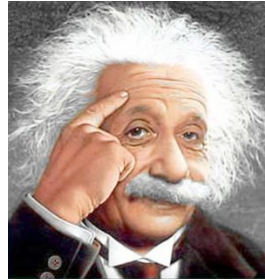
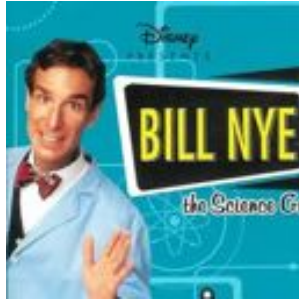
CRISP an NSF-funded Materials Research Science  
Engineering Center (MRSEC) at Yale /SCSU  
[www.crisp.yale.edu](http://www.crisp.yale.edu)

## TRAVELING CAREER KIT

- ◉ “Now Hiring: Materials Scientists, Engineers, and Technicians”
  - Materials Science and Engineering (MSE) careers, including nanotechnology.

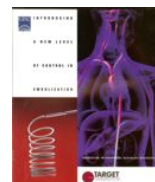


## WHAT DOES A SCIENTIST LOOK LIKE?



## OBJECTIVE

- ◉ Audiences will gain contextual insight into how materials scientists, engineers, and technicians design and manufacture everyday products, including nano products.
  - From real-life examples, audiences will be able to envision a career in this field.
  - Designed to travel to informal science settings impacting urban districts

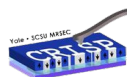




## KIT DEVELOPMENT

### ◉ New Haven Manufacturing Association

- New partnership formed



### ◉ Common Goals

- ◉ To connect science educators to practicing engineers
- ◉ To improve educators' understanding of MSE careers and how STEM is used in today's manufacturing plants

### ◉ Result

- *Three-day Summer Workshop: "How Things are Made - Networking with Local Industry to Bring Ideas Back to Your Classroom", July 2013*
  - ◉ *24 educators, 10 engineers, 3 manufacturing plants*

## KIT DEVELOPMENT - BASED ON EDUCATOR PD WORKSHOP



## CAREER KIT ACTIVITIES



- ◉ Demonstrate the science and engineering behind everyday products
- ◉ Demonstrate the connection between “properties of materials” and “product design”
- ◉ Demonstrate the engineer’s role in making these products a reality.

Exploring Properties / Exploring Products

## CAREER KIT ACTIVITIES

- ◉ Exploring Products (everyday/real-life)
  - “Thermoplastics Beads to Schick Razor Handles”
  - “Form and Function of a Sargent Lockset”
  - “Surviving a Stroke -Platinum will Help”
  - “Nano Products are Among Us! Nano Fabrics and Sunblock”
- ◉ Exploring Properties
  - “How Warm is It? Thermal Conductivity of Materials”
  - Failure Analysis - It’s Corrosiontacular!”

Exploring Properties / Exploring Products

## CAREER KIT ACTIVITIES

### Exploring Products

#### “Thermoplastics Beads to Schick Razor Handles”

- Mold your own product using thermoplastic polymer beads like those used for razor handles



#### “Form and Function of a Sargent Lockset”

- Disassemble a lockset to discover how form is related to function



## CAREER KIT ACTIVITIES

### Exploring Products

#### “Surviving a Stroke -Platinum will Help”

- Examine a medical device used to treat brain aneurysms and the form and function of each component



#### “Nano Products are Among Us! Nano Fabrics and Sunblock”

- Discover science and engineering at the nanoscale!



## CAREER KIT ACTIVITIES

### Exploring Properties

- **“How Warm is It? Thermal Conductivity of Materials”**
  - Test the thermal conductivity of numerous materials
    - Demonstrates how product design may be related to one form of heat transfer, conduction, a material property.
- **“Failure Analysis - It’s Corrosionacular!”**
  - Perform an experiment to see how various metals corrode in copper sulfate ( $\text{CuSO}_4$ )
    - Demonstrates how scientists and engineers must consider potential failures modes when designing products



## FUTURE KIT USE

- Organizations serving under-represented groups (60 - 80% under-represented minorities)
  - Peabody museum in New Haven, CT
  - Bridgeport Discovery Museum in Bridgeport, CT
  - Yale SCHOLARS program, New Haven
  - Family Science Night organization, New Haven
- Career kit will be presented at another EO workshop in summer of 2014.



## Nano Tech – What's the Big Idea? Podcast Series



## CNSE CMOST Mini Grant Goals:

- To further engage some of our older visitors who are typically a little less interested in science in a new and interesting technology, nanoscience!
- We are aiming to excite them not only about nanotechnology itself, but also the future of nano in this local area as we have a lot of great things happening right here in their back yard.



## CNSE CMOST Project Partners

- CNSE CMOST Education Staff
- The College of Nanoscale Science and Engineering
  - Coordinate with the Assistant Vice President for Public Outreach
- CNSE Faculty Members

## CNSE CMOST – What We Did

- Museum staff worked within the structure of our existing two weeks of Nano Camp summer programs.
- Museum staff developed new curriculum that would help the campers to design an interview for the professionals they were interviewing.
- Museum staff also integrated new curriculum on podcasting how to's.

## CNSE CMOST – What We Did

- Introduced our campers to various nanotechnology fundamentals through the use of different nano related programming that is currently being offered in The Museum.
- Worked with students to develop interview questions and also to learn how to make a podcast.
- Facilitated conversations between tweens and nanotechnology experts.
- The conversations were memorialized as podcasts.
- These conversations will answer questions about nano, its future and why they should be interested!



Hans Bethe and Boyce McDaniel bicycling in the Wilson Synchrotron, 1968.

[http://www.chess.cornell.edu/  
Outreach/video/  
synchrotronTour.html](http://www.chess.cornell.edu/Outreach/video/synchrotronTour.html)

## Regional Meeting Agenda – Day 1

- 8:30 *Breakfast*
- 9:00 Welcome and introductions
- 9:15 Improv Activity 1: *I Say Hi*
- 9:45 NISE Network update
- 10:30 *Break*
- 10:45 Mini-Grants: New Ideas for Doing Nano



- 12:00 *Tour of Wilson Synchrotron Laboratory & Lunch*

- 3:00 *Nano Around the World*
- 3:30 Nano & Society Conversations
- 4:30 Making the Most of Your NanoDays Kit
- 5:30 *Break*

- 6:30 Bus Departs Hotel for Treman SP
- 7:00 Group Picnic & Waterfall Walk
- 8:30 Bus Departs Treman SP for Hotel



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## Game – *Nano Around the World*

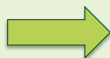


### More info:

[nisenet.org/catalog/programs/nano\\_around\\_world](http://nisenet.org/catalog/programs/nano_around_world)

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## Nano & Society Workshops

Set of four workshops in Fall 2012 focused on preparing museum educators to engage the public in conversations about the relationship between nanotechnology and society.



### Nano & Society Three Big Ideas:

- Values shape technologies
- Technologies affect social relationships.
- Technologies work because they are part of larger systems.

### Methods and practices for engaging The public:

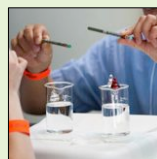
- Conversational techniques for facilitating interactions with visitors.
- Team-based inquiry approaches to improving and learning from professional practice.

**More info:** [www.nisenet.org/catalog/tools\\_guides/nano\\_society\\_training\\_materials](http://www.nisenet.org/catalog/tools_guides/nano_society_training_materials)

## Nano & Society Activities



**Nano Around the World**  
card game



**Exploring Nano & Society –**  
Invisibility Cloak



**Exploring Nano & Society –**  
Flying Cars



**Exploring Nano & Society –**  
Space Elevator



**Exploring Nano & Society – Tippy**  
Table

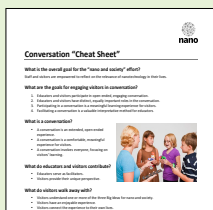


**Exploring Nano & Society –**  
You Decide!

**More info:** [www.nisenet.org/catalog/tools\\_guides/nano\\_society\\_training\\_materials](http://www.nisenet.org/catalog/tools_guides/nano_society_training_materials)



## Nano & Society Tools



### Nano & Society training materials

- slideshows
- videos
- tip sheets
- team-based inquiry sheets



### Technology & Society Guide

(coming in NanoDays 2014 kit)



### Improv Exercises for staff and volunteers

**More info:** [www.nisenet.org/catalog/tools\\_guides/nano\\_society\\_training\\_materials](http://www.nisenet.org/catalog/tools_guides/nano_society_training_materials)

## More Nano & Society Programs & Activities



### Would you buy that? Public program



### Societal and Ethical Implications Posters



### Wonders and Worries of Nanotechnology Video episodes



### Forums:

- Nanomedicine
- Energy
- Privacy
- Who Decides?
- Cognitive Enhancement



**More info:** [nisenet.org/catalog](http://nisenet.org/catalog)

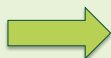
## Nano & Society Workshops - Share-outs

- Joelle Adolfi, Rochester Museum and Science Center
- Liz Leahey, Discovery Museums
- Doug Borzynski, Buffalo Museum of Science
- Nina Nolan & Clare Mulrey, Museum of Science



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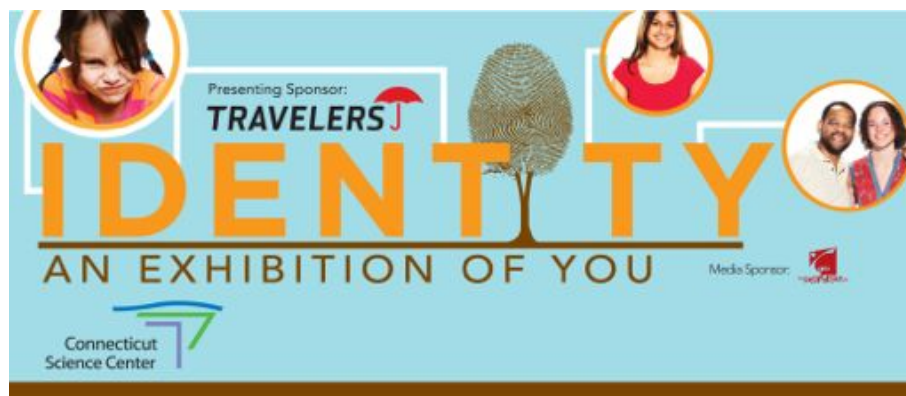
## Making the most of your NanoDays Kit - Share-outs

- Lauren Killea & Melissa Akin, Connecticut Science Center
- Megan Dominguez, Schenectady Museum of Innovation and Science
- Brian Levine, American Museum of Natural History



NanoDays Applications  
due **December 1, 2013**





**Identity – An Exhibition of You** by the Franklin Institute came to the Connecticut Science Center in the Spring of 2013 and included a lab space. Our scientists helped visitors explore DNA and nanoscale science with several hands-on activities.

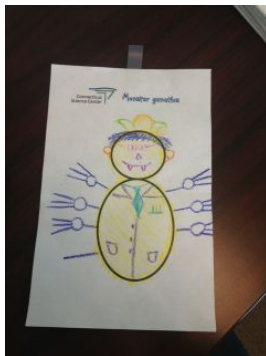
## Exploring Structures - DNA



Extract wheat germ DNA to make DNA necklaces.



## Building off of Nano...



**Monst  
er  
Geneti**



**DNA  
Code  
Bracelets**





In the Fall of 2012, CSC hosted Strange Matter, an exhibit focusing on the nanoscience and the expansive world of material science and engineering.



### Exploring Products – Nano Fabrics and “Magic Sand”



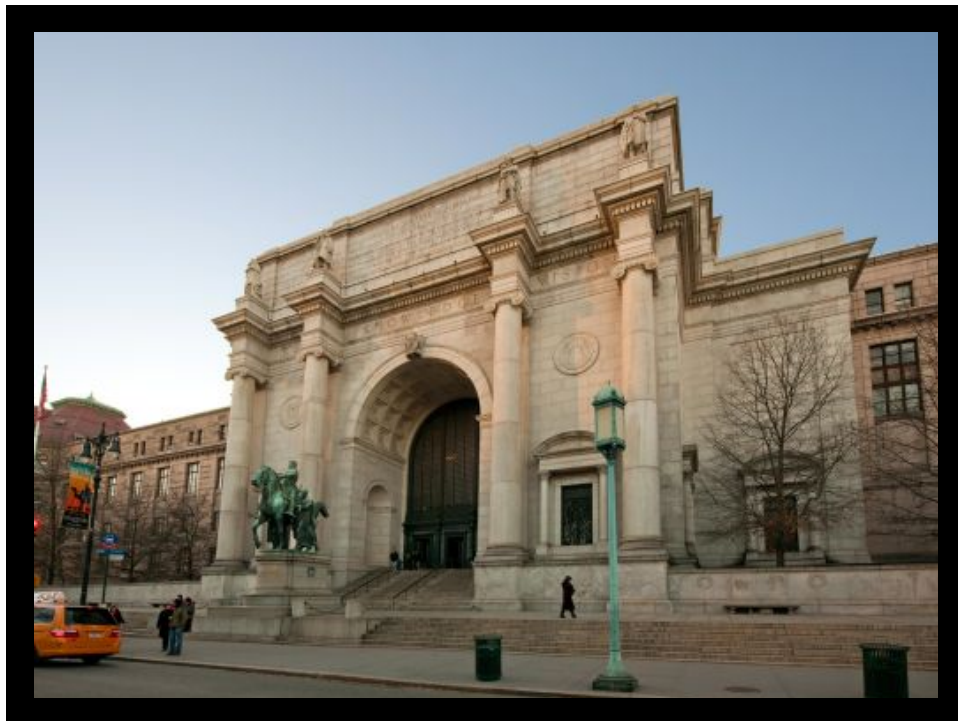
Materials Science students from Yale University visited the Science Center to teach visitors about waterproof materials and how this nanotechnology is changing our world.



## NanoDays kits at AMNH

Brian Levine  
Manager of Youth Programs/  
Astrophysics Educator

NISENet Regional Meeting, Ithaca ScienCenter, Sept 2013

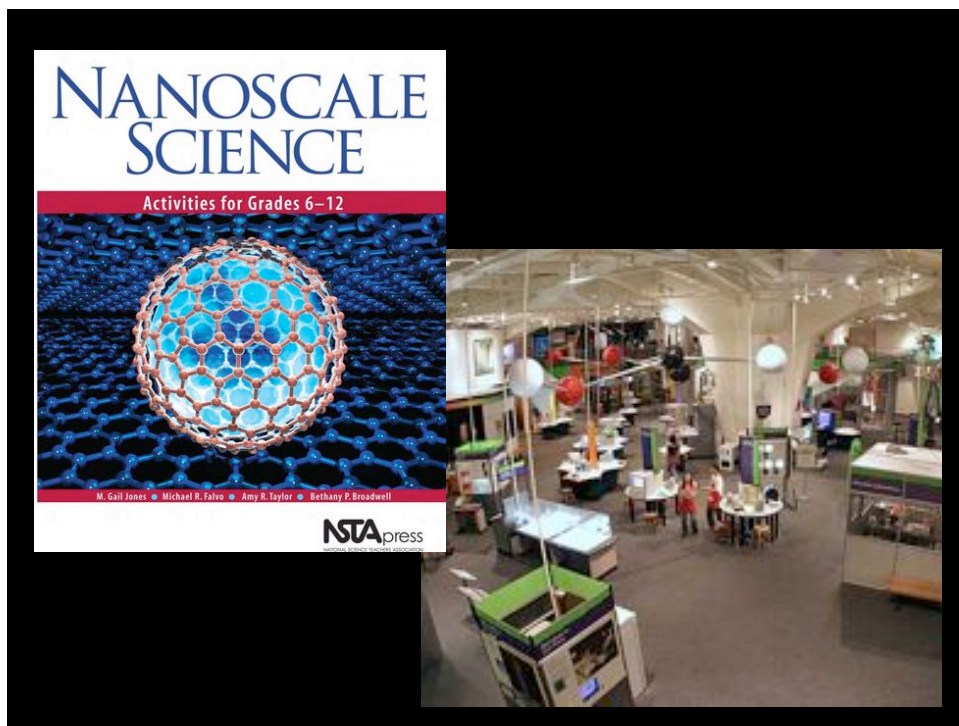




## Nanoscience Course Lang Science Program











## NanoDays Activities Discovery Room







## On “I Spy Nano” in the DR

Mom with 2 boys (ages ~ 8 and 10) came across the game during the end of one session and came back to play the game specifically. They went through most of the cards and played it for nearly 30 minutes. The boys were visibly disappointed when their mom found an item first but had a good competitive spirit.

It's a great interactive because it does not require heavy facilitation. In our space, that's what we need since we have so many moving pieces all of the time. The kids intuitively figure out the rules of the game and parents can join in too as a player rather than an instructor.

## NanoDays Collaborations

- Teamed with Brain Awareness Day
  - School “Drop-in” Event
  - Staffed by Teaching Volunteers and Museum staff



## Brains and Nano

AMNH Microscopy and Imaging Facility



## Brains and Nano

Columbia Neuroscience Outreach





AMERICAN MUSEUM OF NATURAL HISTORY

Brian Levine  
blevine@amnh.org

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- 7:00 Group Picnic & Waterfall Walk
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## At the Sciencenter Tomorrow!



**Reminder: Swap Table!**

## Evening Event: Group Picnic & Waterfall Walk



Robert H. Treman State Park, Upper Falls Pavilion

6:30 Bus Departs Hotel for Treman Park

7:00 Group Picnic & Waterfall Walk

8:30 Bus Departs Treman Park for Hotel

Please wear comfortable shoes and clothes to enjoy the park and picnic!

Ali's Cell: 802-338-0061  
Kevin's Cell: 607-229-0722



## Regional Meeting Agenda – Day 2



- 8:30 Breakfast at the Sciencenter
- 9:00 Improv Activity: *Red Ball*
- 9:15 Getting Nano into your Building  
(exhibitions, signage, partnerships)
- 10:00 IA Workshop Presentations
- 11:00 Beyond Year 10 Discussion
- 1:00 Lunch and Meeting Wrap Up



## Improv Exercise – *Red Ball*



**More info:** [nisenet.org/catalog/tools\\_guides/improv\\_exercises](http://nisenet.org/catalog/tools_guides/improv_exercises)



## Why implement improv exercises ?



Incorporating improv exercises into staff and volunteer training helps create a supportive and upbeat environment for educators to practice and strengthen essential skills.

- **Warm up skills** required for interacting with visitors
- **Encourage conversations:** with visitors (rather than reciting scripts)
- **Be better listeners:** think on your feet and respond in the moment
- **Be responsive:** better tailor content to visitors responses and integrate visitor feedback
- **Be positioned as equals** with visitors not “the expert”
- **Foster teamwork & creativity:** create a fun, supportive, positive work environment to practice skills

**More info:** [nisenet.org/catalog/tools\\_guides/improv\\_exercises](http://nisenet.org/catalog/tools_guides/improv_exercises)

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## Getting Nano in Your Building – Share-outs

- Lauren Hubbard, Maritime Explorium & Jackie Grennon Brooks, Hofstra University
- Nina Nolan & Clare Mulrey, Boston Museum of Science
- Trudi Plummer, Maine Discovery Museum
- Linda Bowden, ECHO & Luke Donforth, University of Vermont



### ***Nano in the Building***



Exhibits and Programs:

Challenge-based with multiple levels of engagement

Partnership: Really a Collaborative



[www.nisenet.org](http://www.nisenet.org)



***The Maritime Explorium is a lighthouse learning center for all ages – one that launches authentic science learning within a celebration of the unique maritime history of Long Island.***



**Housed in the historic Chandlery Building on Port Jefferson Harbor, the Explorium offers children and families an array of interactive exhibits.**



[www.nisenet.org](http://www.nisenet.org)



[www.nisenet.org](http://www.nisenet.org)

[www.nisenet.org](http://www.nisenet.org)

### Sample of Field Trip: **Clean It Up!**

[www.nisenet.org](http://www.nisenet.org)



## Teacher Professional Development



[www.nisenet.org](http://www.nisenet.org)



## Summer Program Ages 9-12 A Big Week of Small Science

Lotus leaf effect	UV Beads
Nano in nature	Size and scale
Liquid crystal displays	Magic sand
Computer hard drives	Sunscreen
Gummy Capsules	Invisibility
Thin film bookmarks	Nano Gold
Stain resistant pants	Graphene



[www.nisenet.org](http://www.nisenet.org)



### Goal:

Modify six existing exhibit signs to highlight nano science and nanotechnology connections.

### Challenge:

To stay true to our model of hands-on exhibits, we wanted our signage to be interactive as well.



[www.nisenet.org](http://www.nisenet.org)



### A Sample of our Solution:

#### CHANDLERY

The building you are standing in today was built in the 1890's and served as a chandlery, a store that sold nautical gear, candles, rope, sail repair kits and all of the other equipment a ship would need for a long voyage. Today, a chandlery carries different items many of which are made possible through nanotechnology, such as barnacle busting paints and energy efficient tools.

Funding for the Smartboard and Programming provided by  
The Laura B. Vogler Foundation,  
Captain Planet Foundation and Hofstra University



[www.nisenet.org](http://www.nisenet.org)




**MARITIME  
EXPLORIUM**



**NANO SPOT**

Click the 10<sup>-9</sup> to learn more about Nanotechnology at our exhibits!

Funding provided by NISE

**NISE** network  
NANOSCALE INFORMAL SCIENCE EDUCATION



[www.nisenet.org](http://www.nisenet.org)


**MARITIME  
EXPLORIUM**



The interface shows a grid of maritime-themed images and labels: COASTLINE, Lighthouse, CHANDLERY, SHIPYARD, SAIL LOFT, and Signal Center. A central text box says 'Tap the words and images to learn more!'. The Maritime Explorium logo is in the center. At the bottom, it says 'Funding provided by NISE'.

**NISE** network  
NANOSCALE INFORMAL SCIENCE EDUCATION



[www.nisenet.org](http://www.nisenet.org)



**Chandlery**

The building you are standing in today was built in the 1890s and served as the chandlery - a store that sold nautical gear, candles, rope, sail repair kits, and all of the other equipment a ship would need for a long voyage.

Today, a chandlery carries different items - many of which are made possible through nanotechnology.

Click here to learn more about what the chandlery was like over 100 years ago

Findings provided by NISE

[Return Page](#)



**Chandlery items in 1890 and today**

Click each image to learn more, then sort them by their characteristics!

1890 Today

Make your own category!

[Return Page](#)



**Whale Oil**



Whale oil is oil obtained from whale blubber. It was used as a source of energy, as many people burned whale oil in lamps for light before electricity was common in homes.


[Extend Page](#)

Funding provided by NISE



**Nanotech Paints**


Carbon nanotubes are used in paints to protect the paint. One of the first nanotech successes in paints was "barnacle busting paint," which is paint that has an extra hard finish that one could apply to their boats that barnacles and algae cannot cling to, which saves boat owners lots of time and money on cleaning.



**Nanotech Coatings**

Nanotech coatings can have nano-sized ingredients, or the coating structure itself may be nano-sized.

These include anti-graffiti, anti-static, anti-mist, or anti-glare coatings.



[Extend Page](#)

Funding provided by NISE



**Chandlery items in 1890 and today**  
*Click each image to learn more, then sort them by their characteristics!*

Post Address, N. Y.  
 Bought of J. M. & F. F. BAYLES,  
 Groceries, Hardware, Yacht Stores, Paints, Oils,  
 SHIP CHANDLERY, ETC.

1890 Today

Make your own category!

[Extended Page](#)



**COASTLINE**

**LIGHTHOUSE**

**CHANDLERY**

**SHIPYARD**

**SAIL LOFT**  
 (what is a sail? why not?)

**Signal Center**

Tap the words and images to learn more!

[Extended Page](#)

Funding provided by NISE





Thursday, October 4, 2012

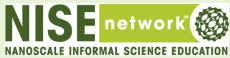
Regenerating Spines and Joints:

Research on Cell and Biological Repair System


Dr. Nadeen Chahine

Feinstein Institute for Medical Research






[www.nisenet.org](http://www.nisenet.org)



Thursday, May 3, 2012

Nanomaterials for a Healthier  
and Cleaner World

Dr. Perena Gouma  
Center for Nanomaterials and  
Sensor Development, Stony  
Brook University



**NISE** network   
NANOSCALE INFORMAL SCIENCE EDUCATION

 [www.nisenet.org](http://www.nisenet.org)




Becoming a  
professional  
learning community  
helps us  
leverage what  
we learn



**NISE** network   
NANOSCALE INFORMAL SCIENCE EDUCATION

 [www.nisenet.org](http://www.nisenet.org)



# NISE Net activities on the floor at MOS

## Drop-In Activities

The Museum offers a variety of hands-on activities daily. Stop by during program hours and stay as long or as little as you like! Check out a list of current programs and view the Museum's [daily schedule](#) for program times on a given date.



### Design Challenges

Participate in a hands-on activity to design, build, and test a prototype solution to a given problem.

[Get more information about this activity](#)



### Hands-On Laboratory

Help conduct real experiments using many of the tools and techniques of actual scientists.

[Get more information about this activity](#)



### Investigation Station

Think like a scientist as you gather evidence and look for answers. Topics vary from chemistry investigations to making your own electricity.

• [Currently Offered](#)  
• [Get more information about this presentation](#)

### In This Section

- Exhibits
- IMAX Films
- Planetarium Shows
- 3-D Films
- Live Presentations
- Drop-In Activities
- Events

### Contact a Visit Planning Expert

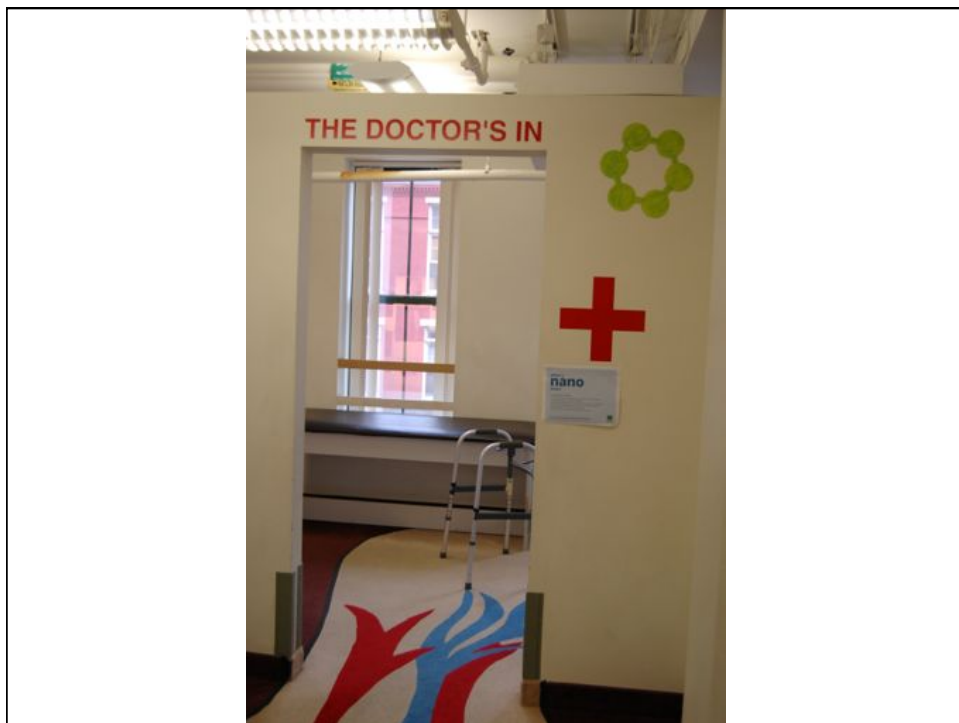
Daily, 9:00 am – 5:00 pm  
617-723-2200  
617-689-0417 (TTY)  
617-689-0187 (FAX)

### E-News

Stay informed! Receive special offers, late-breaking news, and timely reminders each month.  
[Subscribe today](#) →

<http://www.mos.org/drop-in-activities>







## NISE Net at ECHO & UVM



[www.nisenet.org/blog/network\\_news/partner\\_highlight\\_echo\\_uvm](http://www.nisenet.org/blog/network_news/partner_highlight_echo_uvm)

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- 11:00 Beyond Year 10 Discussion
- 1:00 Lunch and Meeting Wrap Up



## Reaching Diverse Audiences



### Inclusive Audiences

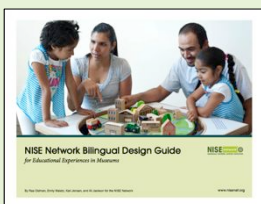
Raising our capacity to effectively engage underserved and underrepresented audiences

### Why use an Inclusive Audiences approach?

- Museums are uniquely situated to educate the public, inspire youth, and provide access to learning experiences.
- Inclusive approaches help reach all audiences more effectively.
- It allows us to go beyond education and inspiration to empowerment and social justice.



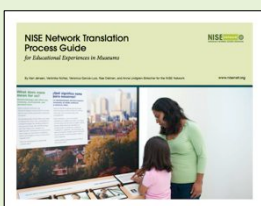
## Inclusive Audiences - Bilingual Audience Tools



**Bilingual Design Guide**



**Spanish Language Translations** for many educational materials



**Translation Process Guide**



**Bilingual Audience Workshop Resources**

**More info:** [nisenet.org/catalog/spanish](http://nisenet.org/catalog/spanish)  
[nisenet.org/catalog/tools\\_guides/bilingual\\_audience\\_workshop\\_resources](http://nisenet.org/catalog/tools_guides/bilingual_audience_workshop_resources)

## Inclusive Audiences - Bilingual Audience Tools

### Spanish Language Translations

Select NISE Network educational products are now available in Spanish!

**Español** Based on input from NISE Network partners, we have adapted our most popular programs for Spanish-speaking audiences! Follow the links below to explore Spanish versions of several NISE Network public programs, as well as other selected resources. We have placed the highest priority on translating products that directly serve public audiences. Professional resources, such as instructional materials and educator's guides are only available in English at this time.

**Below are a set of products with Spanish translations of public materials**

- Click on the **RESOURCE** tab
- Scroll down to the **SPANISH** files

**Tools**

- Translation Process Guide
- Bilingual Design Guide
- NISE Net Bilingual Audiences Workshop

**Website**

- Public website [WhatIsNano.org](http://WhatIsNano.org)

**Videos**

- Intro to Nano Video: "Nanotechnology: What's the Big Deal?"
- NanoLab Video: "How Small is Nano?"
- NanoLab Video: "What Happens in a NanoLab?"
- "Nano and Me" videos: Aluminum, Gold, Gravity, Latex, Pencil, and Silver

**Programs and Activities**

- Intro to Nano Card Games
- Sizing Things Down

**Browse by**

Audience	Nano topics
All ages (109)	Art and nature (71)
7 and up (39)	Bio and medicine (73)
11 and up (38)	Energy and environment (50)
15 and up (17)	Fundamentals (132)
19 and up (3)	Information Technology (47)
Informal science educators (25)	Materials, tools, and applications (148)
Scientists (14)	Society, policy, and research (14)

**Programs**

- Display (2)
- Facilitated activity (46)
- Game (4)
- Museum theater (4)
- Stage presentation (16)

**Available translations**

- Spanish (81)

**Nano throughout the year!**  
Browse products by season.

Select NISE Network educational products are now available in Spanish!  
Find answers to your questions about the catalog on our FAQ page.

**More info:** [nisenet.org/catalog/spanish](http://nisenet.org/catalog/spanish)



## Inclusive Audiences - Bilingual Audience Workshop



### Workshop held in June 2013 in Houston

- Explored importance of engaging bilingual audiences in nanoscale science, engineering and technology
- Strategies to better engage Spanish speakers by building capacity, using techniques like:
  - sheltered instruction
  - team-based inquiry
  - marketing strategies

#### More info:

[nisenet.org/catalog/spanish](http://nisenet.org/catalog/spanish)

[nisenet.org/catalog/tools\\_guides/bilingual\\_audience\\_workshop\\_resources](http://nisenet.org/catalog/tools_guides/bilingual_audience_workshop_resources)



## Bilingual Audience Workshop – Share-outs

- Susan Lynn Cole, Queens Libraries
- Megan Dominguez, MiSci



## NANO at the Library

Lots of  
kids! →  
Lots of  
books! →  
Lots of  
STEM!



**NISE network**  
NANOSCALE INFORMAL SCIENCE EDUCATION

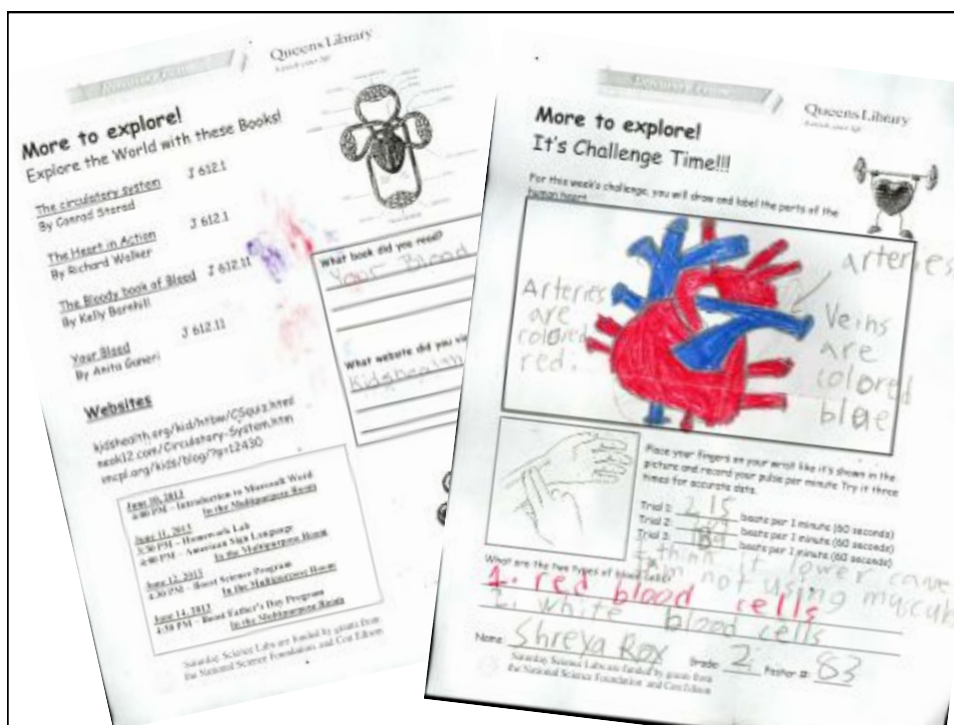


queenslibrary.org

## What do the kids take away, besides books?



## What do the kids take away?



**More to explore!**

**Books you have discovered!**

Now that school is out for a while, you have had time to read books and visit web sites. Give us your book and web site list of some of your favorites.

**Your Book Recommendations**

Title: My first 100 words

What you liked about it: I liked it because it was easy to read and it was fun.

Title: My first 100 words

What you liked about it: it was easy to read and it was fun.

**Websites we should know about**

Site: www.100words.com

What you liked about it: I like that it has a lot of words and it was easy to read.

Site: www.100words.com

What you liked about it: I like that it has a lot of words and it was easy to read.

**\*\*\*ALERT\*\*\***

Saturday Science Lab will be at 12:00 Noon on Saturdays until the 2<sup>nd</sup> week in October!!!


**Mark your Calendar**

Saturday Aug. 31  
Discovery Day Street  
Saturday, Sept. 7  
The Library will be closed

**More to explore!**

**It's Challenge Time!!!**

Draw a picture of the a LEAF LITTER habitat. Include at least 3 things you discovered in the leaf litter investigation we did in Saturday Science Lab.



Visit THREE exhibits in the Discovery Center. Describe something that happens when you use the exhibit.


1. See the earth around the sun to see why we have seasons
2. How far away the sun is from the earth
3. Strange things that happen in space

Name: Mary M. Smith Grade: 2

**More to explore!**

**It's Challenge Time!!!**

Draw a picture of the a LEAF LITTER habitat. Include at least 3 things you discovered in the leaf litter investigation we did in Saturday Science Lab.



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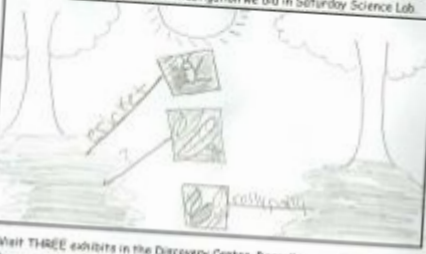
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**More to explore!**

**It's Challenge Time!!!**

Draw a picture of the a LEAF LITTER habitat. Include at least 3 things you discovered in the leaf litter investigation we did in Saturday Science Lab.



Visit THREE exhibits in the Discovery Center. Describe something that happens when you use the exhibit.

1. At the theater of light, when we see something different at the light I can see
2. At the theater of light, when we see something different at the light I can see
3. In the exhibit, if you see the earth it creates different seasons

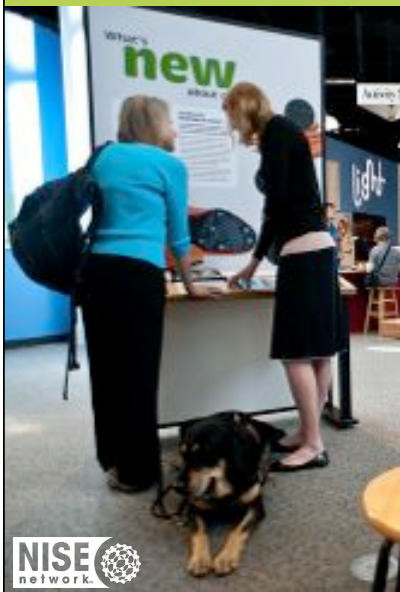
Name: Prindia B. Grade: 4



Thank you!  
NISEnet!



## Inclusive Audiences: Universal Design Workshop



### What is Universal Design?

The design of products and environments to be usable **by all people**, to the greatest extent possible, **without the need for adaptation** or specialized design.

More info: [nisenet.org/inclusive\\_audiences](http://nisenet.org/inclusive_audiences)





## Inclusive Audiences: Universal Design Workshop



**July 2013 at Museum of Science, Boston**

**Audience:** Museum Educators

Hands-on opportunity to apply Universal Design guidelines:

- Gathered feedback on NanoDays activities from experts with disabilities
- Used Team-Based Inquiry (TBI) approach
- Identified barriers & modified activities

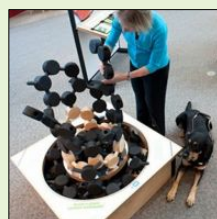


**More info:** [nisenet.org/inclusive\\_audiences](http://nisenet.org/inclusive_audiences)

## Inclusive Audiences: Universal Design Tools



**Universal Design Guidelines for programs**



**Universal Design Workshop Resources**



**Universal Design Guidelines for exhibits**

**More info:** [nisenet.org/inclusive\\_audiences](http://nisenet.org/inclusive_audiences)

## Universal Design Workshop– Share-outs

- Denise LeBlanc, Acton Discovery Museum
- Linda Bowden, ECHO
- Betty Jones, MOST
- Manirah Agans, Stepping Stones Museum for Children



## Universal Design Workshop– Ferrofluid

### Barriers or challenges – for multiple disabilities

- Hard to hold magnet and tubes at same time
  - Magnet and handle are too small
    - Make handle larger so easier to hold and so can't swallow
    - Mouth adaptor with sterile sleeve to insert in mouth
  - Tubes with magnetic sand and ferrofluid
    - Tube holder – make wedge holder with good contrast
    - Allow tubes to be removable so they can be picked up
- Signs/instructions too overwhelming
  - Simpler language, larger font, more images
  - Physical models for the blind



## Universal Design Workshop– Ferrofluid

### Solutions:

- Larger handles for magnets
- Wedged tube holders with contrasting color
- Color coding tubes for reference.
- Whiteboard for communication with deaf person
- Labels and images on smaller cards that can be used when needed
- Tactile model for ferrofluid, and descriptors (looks like porcupine, sea urchin, etc.)



## Universal Design Workshop– Ferrofluid signs

Can a liquid be magnetic?



Hold the magnets beside the  
Different test tubes.

What do you notice?



Ferrofluids are used . . .



Inside a speaker

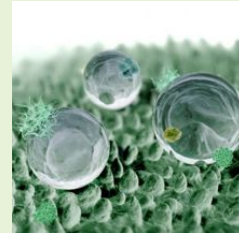


Inside a speaker

## Universal Design Workshop– Nano Fabric

### Nano Fabric Challenges:

- Droppers were hard to use
- Too many words on signs
- Text too small



### Solutions

- Dip fabric in clear pitcher of water
- Make simpler signs and define terms
- Use larger font and symbols when possible



## Universal Design Workshop– Nano Fabric

hydrophobic



hydrophilic



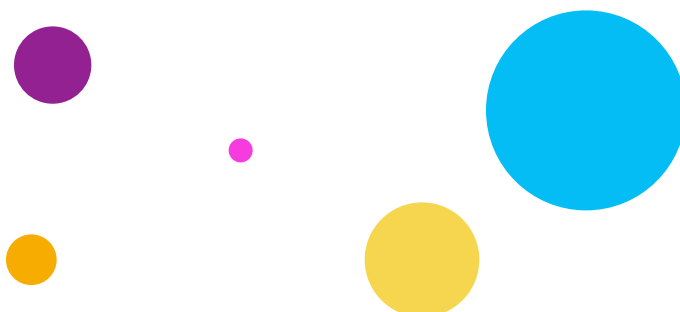
Biomimicry  
Life – imitate

Some leaves, like lotus and nasturtiums, have tiny, nano-sized waxy bumpy surfaces that repel water.



## Universal Design Workshop

### Stepping Stones Museum for Children



#### Early Childhood Classes

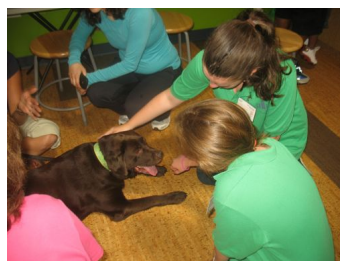
Stepping Into Senses, Move In Tune,  
ArtSmarts, Science Says



Move In Tune -  
Learning how to  
encourage  
autonomy...

#### Public Programs

Yoga with Storytelling, Mutt-i-grees,  
Around the World



Mutt-i-grees -  
Learning how  
to encourage  
empathy...



Day of Play -  
Learning how  
to encourage  
healthy  
living...

#### Special Events

World Wide Day of Play, BooZoo Canine  
Carnival, Monster Mash, Winter Wonderland  
Children's Ball



## Workshop Impact...

### Encouraged me:

- To make simple, yet profound, adjustments...these adjustments are *for* individuals to meet *their* experience!
- Always keep in mind that “we want to experience the tour outside of our disability.” –quote from an expert at the NISE Network Universal Design Workshop
- Don’ t make assumptions – just listen. Always ask “What would help you best?”
- Build in “access” from the beginning.

## Changes...

### Institutionally...

Create a tool kit for museum educators including...

- Sensory materials
  - light shielding visor
  - noise canceling head phones
  - Sensory toys and items
- Visitor Info Materials - visual map showing restrooms, seating, exits, etc.
- Educator Tips and Techniques – packet with general information for interacting with people with disabilities
- Customer appreciation materials – stickers, stamps

## Changes...

### **Institutionally...**

#### Professional Development

During the next 3 months, the education team will attend various trainings on...

- using the Universal Design Guidelines effectively during development
- applying the “Tips and Techniques for Interacting With People With Disabilities”
- how to use the materials of the tool kit effectively

## Changes...

### **In my own practice...**

Keep the Universal Design guidelines in mind while planning new programming and even updating current programming

- Provide ongoing support to my team as we continue to thoughtfully integrate Universal Design into our developmental process
- Work with YES2 Manager, Dod March, during the development of our new mentoring program
- Youth Enrichment at Stepping Stones (YES2) is open to youth ages 12-18 and provide both volunteer and enrichment opportunities. During the school year the museum has approximately 75 young people in the program who will spend time working on the museum floor.

## Changes...

In my own practice...

### Share the wealth!

- Continue sharing new information cross-departmentally
- Have informal conversations with teachers and parents during the “teachable moments” in programs

## Regional Meeting Agenda – Day 2

- 8:30 Breakfast at the Sciencenter
- 9:00 Improv Activity: *Red Ball*
- 9:15 Getting Nano into your Building  
(exhibitions, signage, partnerships)
- 10:00 IA Workshop Presentations
-  11:00 Beyond Year 10 Discussion
- 1:00 Lunch and Meeting Wrap Up






**Future:**  
Beyond Year 10

Project funding  
ends in ~ 2 years  
(August 2015)

**NISE**  
network

## Future: What remains after Year 10



**What remains after the funding ends?**

- Field-wide capacity to engage the public in nanoscience, engineering, and technology
- Relationships, including collaborations between scientists and museums
- Ongoing use of NanoDays and program materials
- Mini-exhibition copies on museum floors
- Website - online catalog
- Evaluation and research knowledge
- Network lessons shared with field

**NISE**  
network

## Future:



How can we sustain the benefits of the NISE Network?

## Future - Funding Scenarios After Year 10



### Range of Scenarios

**Scenario 1:**

No additional funding

**Scenario 2:**

Some additional funding for a core of activities

**Scenario 3:**

Funding for a new topic



## Future – Individual Reflection & Share out

### Scenario 1. No additional funding

- In the absence of any more funding, what would your institution be able to keep doing?
- Are you taking any actions or pursuing any resources in the next two years to be able to continue nano education work in the years beyond the grant?  
\_\_\_\_\_
- How could the partners in this regional hub support each other's work moving forward? Which collaborations do you plan to initiate/continue and how will you sustain them?



## What interests you the most?

### Scenario 2: Some additional funding for a core of activities

- If there was limited funding to support the NISE Network in the future, what activities would be most valuable to you?

- NanoDays physical kits
- NanoDays digital materials
- mini-grants
- exhibits
- regional hub structure
- in-person professional development
- online professional development
- new programs and media
- website with online catalog
- newsletter
- social networking (Facebook, LinkedIn, Twitter)
- other: \_\_\_\_\_



## What interests you the most?

### Scenario 3: Funding for a new topic

- If we could repurpose the network for another topic, what topics interest you the most?



- engineering
- climate change
- energy
- synthetic biology
- big data
- computer science
- convergent technologies (nano-bio-info-cogno )
- new emerging technologies
- societal and ethical implications
- nano is the only topic that interests me
- brain and neuroscience
- maker spaces
- other: \_\_\_\_\_

## Regional Meeting Agenda – Day 2

- 8:30 Breakfast at the Sciencenter
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## Last Minute Logistics



### Logistics

- reimbursement forms
- luggage
- airport rides?
- reminder: swap table
- lunch

# THANK YOU!

To all our partners - we could not do this work without you!

