Nanoscale Informal Science Education Network

NISE network — NANOSCALE INFORMAL SCIENCE EDUCATION

NSF-0940143

PIs: Larry Bell, Museum of Science, Boston; Paul Martin, Science Museum of Minnesota; Rob Semper, Exploratorium

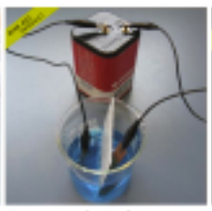
NISE Net was funded by NSF through two consecutive 5-year awards to raise public awareness, understanding, and engagement with nanoscale science, engineering, and technology primarily though the establishment of a Network, a national infrastructure that links science museums and other informal science education organizations with nanoscale science and engineering research centers

Educational Material Development

Collaborations between scientists and informal educators have allowed NISE Net to create all kinds of educational materials primarily for use in informal settings and actually used in a wide variety of ways in many different settings including formal ones


Powers of Ten Game


Nano Sunblock


Electroplating

Nanosilver


HS Summer Camp


Biomimicry


Graphene

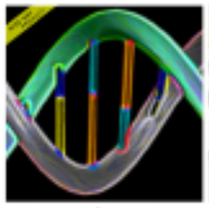

Piezoelectricity


Scientist Speed Dating


You Decide!


Balloon Nanotubes


Big Energy Problems


DNA Nanotechnology


Elementary Summer Camp

Nano Juggling Show


Let's Talk Theater

The NISE Net online catalog contains 157 educational activities, 158 media resources, and 60 tools and guides to support nano outreach and education all freely available to be downloaded at www.nisenet.org

34. In which of the following settings do you personally use NISE Net materials outside of NanoDays?

Settings	Count	%
Cart demonstrations/ brief table top activities	193	77%
K-12 school outreach activities (e.g. classes, after school programs, field trips, science fair)	175	70%
Special events (e.g. family events, chemistry events, nano-related events other than NanoDays, family nights, festivals)	170	68%
Science camps (daily, weekly, seasonal)	131	52%
Outreach activities with ongoing community partners (e.g. libraries, scouts, Boys & Girls club…)	117	47%
Professional development (for museum staff, school teachers, college students)	115	46%
Longer museum programs (e.g. forums, classes, labs, science club)	111	44%
Longer term display of materials in public spaces (e.g. within exhibits, on the museum floor, on a table)	97	39%
Lesson activities within college courses	45	18%
Other	6	2%
Total	*251*	--

Materials distributed in NanoDays kits get used for a variety of activities outside of NanoDays including K-12 outreach activities and even within college courses (Data from NISE Net 2012 Annual Partner Survey)

Nation-Wide Reach

Attention to partners' needs allowed NISE Net to create a network of hundreds of organizations that contribute to the work and also constitute a nation-wide dissemination channel for engaging the public in learning about science and engineering

NanoDays kits have been distributed to a total of 400 different sites scattered across every state, DC, and Puerto Rico

NanoDays kits have been the main mechanism for distributing physical resources to sites across the U.S. University educational outreach coordinators say the kits motivate outreach collaborations and give them new ways to engage with public audiences.

Kathryn Hollar, Director of Educational Programs, Harvard - We use these kits at 20+ events throughout the year, reaching thousands of K-12 students and families. They are a very valuable part of our outreach plan.

Kristin Dreyer, Program Director for Outreach & Education, Penn State MRSEC – NanoDays created an opportunity for collaboration between many new partners at Penn State….Doors were opened for future collaborations.

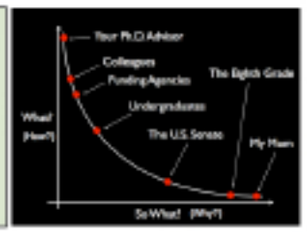
Terese Janovec, Asst. Director/ Education & Outreach Coordinator, University of Nebraska-Lincoln – The NanoDays kits have been the foundation on which we have built our outreach program. They can be adapted to use in a variety of venues to communicate about nanotechnology with quality and accuracy.

I had never actually seen a physical kit before. And when I opened it up—it was like, 'holy mackerel, everything's here to do everything!' And it was sort of that "ah-ha" moment… so that all of a sudden became… instead of doing the presentations to go and talk about things, it now became….now you can have kids come and do things.

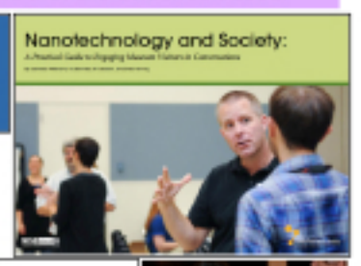
NISE Net has seven regional hubs that provide partners across the U.S. with access to the Network's activities which include distribution of over 90 copies of the *Nano* mini-exhibition and about 40 mini-grants each year as well as a variety of professional development opportunities

Professional Capacity Building

Learning by doing and professional development activities that focus not only on content but also on a wide range of skills has raised the capacities of individuals in both the informal science education organizations and the universities involved



NISE Net has developed guides, workshops, and related resources to support professional development of educators and early-career scientists in science communication, science and society, serving under-represented audiences, partnering, and making decisions about ed activities that are evidence based.



Gabriel Lopez, Director, Triangle MRSEC (Duke) - the Museum of Life and Science has…provide[d] invaluable training for MRSEC graduate students and postdocs in how to effectively communicate with members of the public about the unique principles and applications behind their own research and the importance of nanomaterials in general.

Maria Wang, CPN Associate Director, Stanford University – These outreach events have provided creative and engaging opportunities for our Center members to put their research into a larger, social context and make it relevant to the community. As such, they have been able to improve their science communication skills and see the bigger picture of their work.

Jerry Floro, Associate Professor, University of Virginia – At least 25 grad students participated, hence receiving valuable experience in communicating science to the public. This is a skill we do not tend to develop at all in graduate STEM education, hence this opportunity is critical.

NISE Net has awarded over 150 mini-grants to partners across the country to develop activities that go beyond NanoDays