Building Capacity for Public Engagement through Research Center – ISE Partnerships

CASE STUDY: Center for High-rate Manufacturing NSEC and Science of Nanoscale Systems and their Device Applications NSEC with the Museum of Science, Boston (MOS).

C. L. Alpert, J. Antill, C. Barry, L. Bell, A. Busnaina, A. Fiorentino, K. Hollar, J. Isaacs, T. Miller, J. Neely, L. Regalla, J. Rosenberg, A. Swint, R. Westervelt

NISE network™
NANOSCALE INFORMAL SCIENCE EDUCATION

NSF ESI 0532536

Case Study Abstract

The NISE Network seeks to foster partnerships between research centers and informal science education institutions in order to increase their capacity to engage public and K-12 audiences in learning and thinking about nanoscale science and engineering, potential applications and impacts. This case study focuses on the broad portfolio of education outreach activities produced by long-standing collaborations between the two Boston/Cambridge-based NSECs and the Museum of Science, Boston (MOS).

For consultation on developing a Research Center – Informal Science Education partnership (RISE), email rise@nisenet.org. RISE director: C. L. Alpert.

NanoDays

The NISE Network sponsors an annual week of festivities - March 28 – April 5, 2009 - that provides a focal point for energizing local research center - science museum education outreach partnerships. Grad students enjoy the opportunity to share their enthusiasm with youngsters.

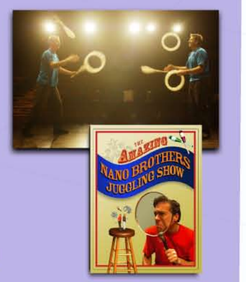
For info and kits, email nanodays@nisenet.org

Live Events

The Amazing Nano Brothers Juggling Show

40 minutes of sheer fun as the comedy team of Joel Harris and Dan Foley juggle their way through the nanoworld, introducing atomic structure, nanoscale forces, and scanning probe microscopy.

55 performances in 2008, informing and entertaining more than 9500 visitors.



Daily Presentations

"How-To" kits and resources for these lively presentations are now being distributed to other museums through nisenet.org/catalog.

Museum staff deliver about 300 nano presentations per year to an annual audience of about 17,000 visitors.

Amy Swint delivers "Intro to Nano" talk.

Tim Miller reveals the strange world of carbon nanotubes.

Guest Researchers

Museum audiences appreciate the opportunity to interact face-to-face with nano researchers. MOS provides public communication training for research center REU and grad students.

Professor Jennifer West of Rice University describes her experiments targeting cancer cells with gold nanoshells.

Harvard graduate student Tom Hunt invites a young Museum visitor to explore a homemade model of an atomic force microscope.

Nanotech Forums

"How-To" kits for forums are now being distributed through nisenet.org/catalog.

Northeastern societal implications researcher Ron Sandler frames the issues during a free public forum on nanotechnology.

Participants deliberate on the public's role in setting policy.

Broadcast & New Media

Nano Cablecasts

Live nanotech-in-the-news coverage from MOS is delivered via New England Cable News to 2.8 million subscribers throughout the five-state region on a weekly basis. Web postings at: mos.org/nano and necn.com

Nano Podcasts

MOS nano podcasts reach a global audience, with 5,000-7,000 subscribers on iTunes.

YouTube NanoNerds

Video clips from the MOS *Nanonerds* YouTube channel have been viewed 50,000 times. youtube.com/NanoNerds

Talking Nano

This 6-DVD set features lively talks by leading researchers including Don Eigler, George Whitesides, Eric Mazur, and David Rejeski, plus *The Amazing Nano Brothers Juggling Show.*

Available at: talkingnano.net.

Nanomedicine Explorer

An interactive, updateable multimedia exhibit featuring leading researchers in cancer nanomedicine. Bilingual: Spanish/English.

Available at: nanomedicine-explorer.net

Professional Development

Science Communication Workshops

REUs and graduate students learn how to describe their research in clear and compelling terms.

Presentation skills help build careers and lead to better teaching and public outreach.

The workshop format provides a safe place to practice.

Nanotech Symposium for Educators

NSEE professionals gather in Boston to offer workshops and hands-on classroom activities to New England teachers.

Bob Chang of the NSF NCLT shares insights and strategy.

Players of this board game developed by the Madison WI MRSEC explore societal implications.

Hands-on laboratory activities can help teachers introduce key nanoscale concepts into their curricula.

Evaluation

The independent evaluation company Multimedia Research works with the MOS Research & Evaluation team to help the partners assess and improve their presentations, exhibits, media, and workshops.

Prototypes of exhibit and media undergo iterative cycles of testing with MOS visitors.

Focus groups and surveys from the 2005 and 2006 Nanotech Symposium led to design improvements for later years.

A summative evaluation of the NECN nano cablecasts in 2009 will follow up on improvements made after a formative assessment in 2007.

NSF

NSEC Boston/MIT, UC Berkeley

P.I. Robert Westervelt

Center for High-rate Nanomanufacturing
P.I. Ahmed Busnaina NSF-0425826

Museum of Science™
P.I.'s C.L. Alpert and L. Bell