Engaging Museum Visitors in Conversations about Nanotechnology and Society

Online Brown-Bag – March 4, 2014

NISE network™
NANOSCALE INFORMAL SCIENCE EDUCATION

NSF

The Center for Nanotechnology in Society
ARIZONA STATE UNIVERSITY

Presenters

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NISE network

Presentation Overview

- Nano and society background
- Engaging visitors in conversations about nano and society
- Three Big Ideas
- Online training resources
- Nano and society training
- Nano and society programming (NanoDays)

Nano & Society Workshops

ARIZONA SCIENCE CENTER

THE LAWRENCE HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

Children's Museum of Houston

Science Museum of Minnesota®

OMSI
OREGON MUSEUM OF SCIENCE AND INDUSTRY

Nano & Society Conversations

Engaging Visitors in Nano & Society

Overarching goal

To empower educators and visitors to reflect on the relevance of nanotechnology to their lives.

Why Science Museums?

We're positioned to do it…

- Museums can bring together public audiences, educators, and scientists.
- NISE Net is working to raise the field's capacity to engage the public in the relevancy of emerging science and technologies to their everyday lives.

Goals for Engaging Visitors in Conversations

1. Educators and visitors participate in open-ended, engaging conversations.
2. Educators and visitors have distinct, equally important roles in the conversation.
3. Participating in a conversation is a meaningful learning experience for visitors.
4. Facilitating a conversation is a valuable interpretive method for facilitators.

Two Approaches to Engaging Visitors

Demonstration

- Scientist/educator has knowledge and expertise to share
- Visitors discover phenomena and laws of nature
- The facilitator communicates facts
- Visitors ask questions and receive answers
- Promotes basic goal public understanding

Use this approach to explain the Bernoulli Principle to visitors

Conversation

- Everyone has their own values and perspective to share
- Facilitators and visitors consider facts and values
- Facilitators and visitors ask questions and receive responses
- Visitors form opinions and explore ideas
- Promotes basic goal of public engagement

Try this approach to engage visitors in nano and society

Nano & Society Big Ideas

Engaging in conversations about what nanotechnology means to us and our future.

Values

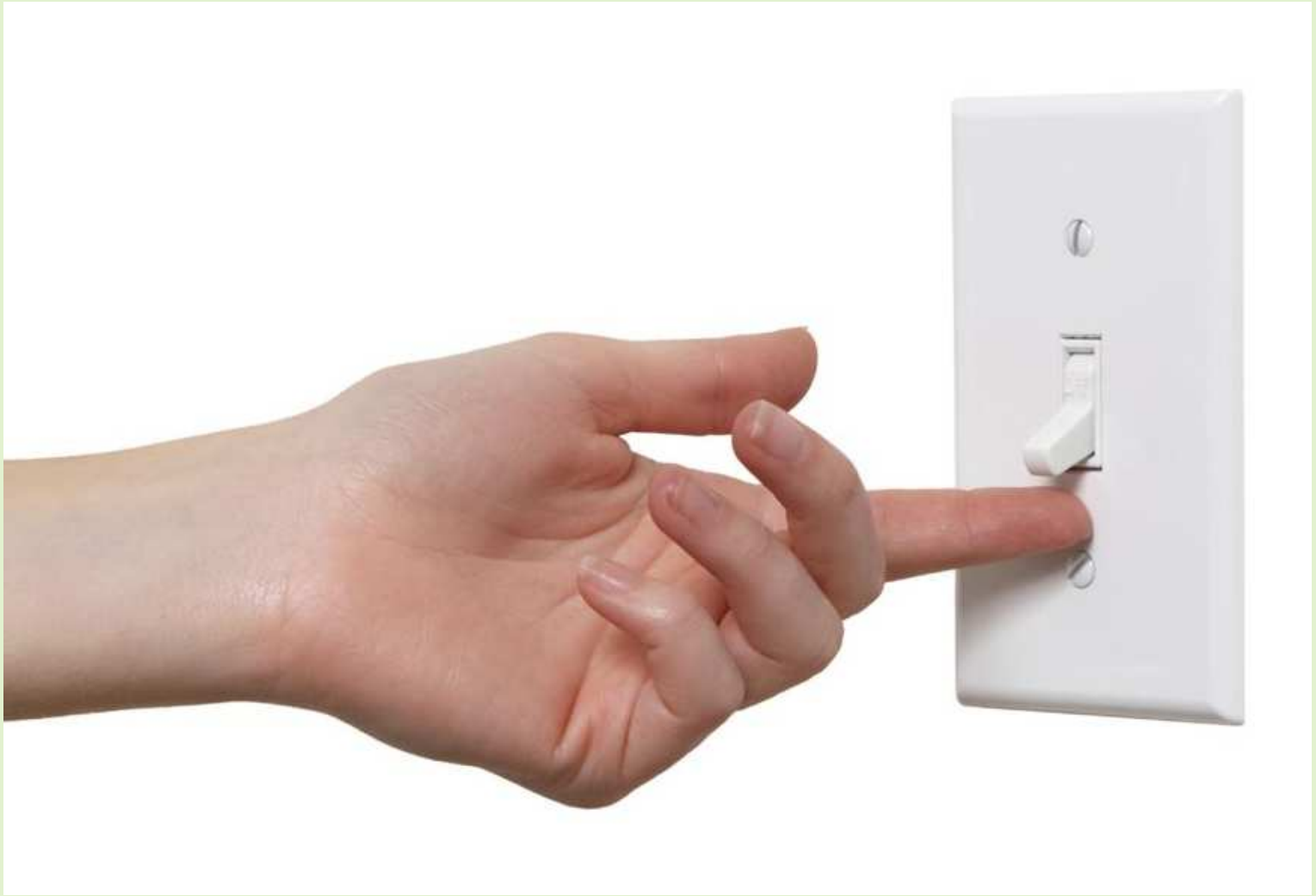
Values shape how technologies are developed and adopted.

Relationships

Technologies affect social relationships.

Systems

Technologies work because they're part of systems.

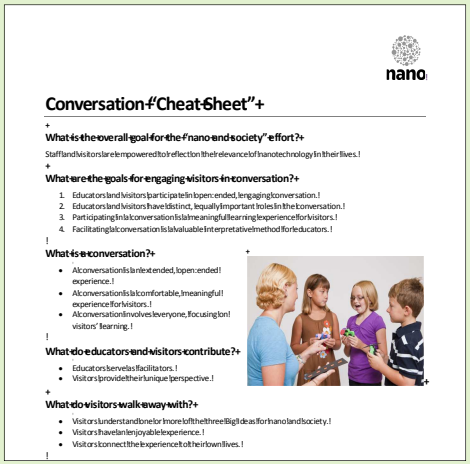


Nanotechnology and Society:

A Practical Guide to Engaging Museum Visitors in Conversations

By Jameson Wetmore, Ira Bennett, Ali Jackson and Brad Herring

Nano & Society Tools



Conversation "Cheat Sheet"

What is the overall goal for the "nano and society" effort?

Staff and visitors are empowered to reflect on the relevance of nanotechnology in their lives.

What are the goals for engaging visitors in conversation?

1. Educators and visitors participate in open-ended, engaging conversation.
2. Educators and visitors have distinct, equally important roles in the conversation.
3. Participating in a conversation is a meaningful learning experience for visitors.
4. Facilitating a conversation is a valuable interpretative method for educators.

What is a conversation?

- A conversation is an extended, open-ended experience.
- A conversation is a comfortable, meaningful experience for visitors.
- A conversation involves everyone, focusing on visitors' learning.

What do educators and visitors contribute?

- Educators serve as facilitators.
- Visitors provide their unique perspective.

What do visitors walk away with?

- Visitors understand one or more of the three Big Ideas for nano and society.
- Visitors have an enjoyable experience.
- Visitors connect the experience to their own lives.

What do educators get out of it?

- Educators add to their interpretive skill set.
- Educators gain a better sense of visitors' interests, level of knowledge, and opinions.

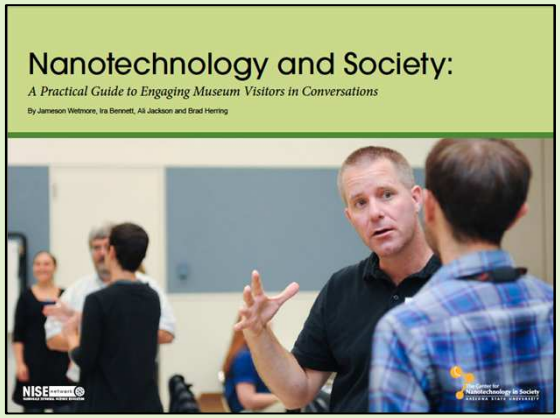
What techniques, skills, and strategies can educators use to facilitate conversations?

- Educators ensure that the conversation follows an arc, with a beginning, middle, and end.
- Educators take the role of 'facilitator,' using a variety of skills and techniques.
- Facilitators remain neutral and professional.

Nano & Society training materials

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

Improv Exercises for staff and volunteers



Technology & Society Guide

More info: www.nisenet.org/catalog/tools_guides/nano_society_training_materials

Educational Products in Catalog

Nano Around the World card game

Exploring Nano & Society – Invisibility Cloak

Exploring Properties – Capillary Action

Exploring Nano & Society – Space Elevator

Exploring Nano & Society – Tippy Table

Exploring Nano & Society – You Decide!

More info: nisenet.org/catalog

Educational Products in Catalog

Would you buy that?
Public program

Forums:

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

Wonders and Worries of Nanotechnology
Video episodes

Nano & Society Posters

Exploring Materials – Ferrofluid

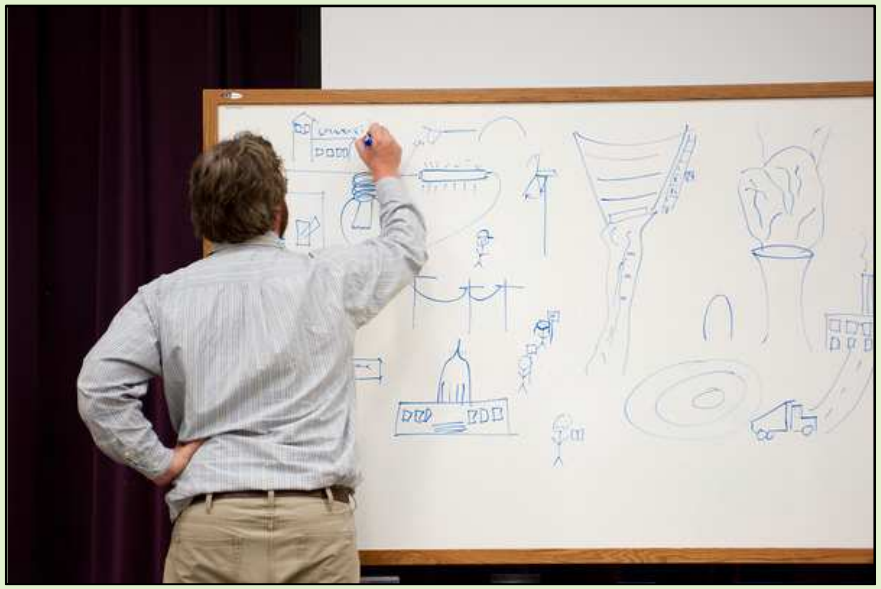
Robots & People

More info: nisenet.org/catalog

2014 ASTC Preconference Workshop

From Demonstration to Conversation: Engaging visitors in technology and society

Friday, October 17, 9a-4p



Nano & Society Training

Douglas Coler

Discovery Place Inc.

Poll Question

Which of the following NanoDays activities you would like to see demonstrated? (Choose one)

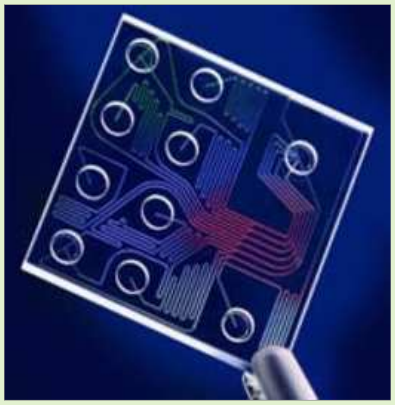
- You Decide
- Capillary Action
- Invisibility
- Ferrofluid
- Robots & People
- Would You Buy That?

Exploring Nano & Society—You Decide

Values shape how technologies are developed and adopted.

- Classify technologies in order of importance for you
- Classify technologies in order of importance for character
- Compare choices between visitors
- Emphasize no right or wrong answer

Exploring Properties—Capillary Action



Technologies work because they're part of systems.

- Nanotechnology is making it cheaper and faster to detect disease.
- How would lab-on-a-chip devices affect medical systems?

Exploring Properties—Invisibility

Technologies affect social relationships.

- Invisibility cloaks are a real possibility.
- What would you do if you had one?
- What would other people do? Should everyone have one? If not everyone, who?
- Would there have to be new laws around their use?

Exploring Materials—Ferrofluid

Technologies work because they're part of systems.

- Did you know you might have some nanotechnology in your pocket?

Robots & People

All three big ideas are touched on in this activity.

- Sometimes we value getting work done more quickly, precisely, or safely, so we make robots to do jobs people used to do.
- If we had robots working with us, how would that change our interactions with other people?
- What system is the Mars rover a part of?
- Kids create their own robots.

Would You Buy That?

Values shape how technologies are developed and adopted.

- Products survive in the market only if people buy them.
- To make choices, people weigh the risks against the benefits.
- Some choices may affect just one person and some choices may affect society as a whole.

Questions and Discussion?

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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.