NanoDays™
The Biggest Event for the Smallest Science!

NanoDays 2011 Report and Survey

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Introduction

NanoDays is an educational, nationwide festival about nanoscale science, engineering, and technology. NanoDays events are organized by participants in the Nanoscale Informal Science Education Network (NISE Net), and take place at over 200 science museums, research centers, and universities across the country from Puerto Rico to Hawaii. NanoDays engages people of all ages in learning about this emerging field, which holds the promise of developing revolutionary materials and technologies. NanoDays 2011 took place between March 26 and April 3, 2011.

Each year (2008-2011), the NISE Network develops and distributes NanoDays kits. The kits contain educational products designed to introduce the public to basic concepts of nanoscale science, engineering, and technology, as well as supporting resources to help Network partners plan and implement local NanoDays events. The Network produces two kinds of NanoDays kits: physical kits and digital kits. Physical kits contain all materials and supplies needed to implement NanoDays, while digital kits include downloadable resources. Physical kit recipients are expected to provide feedback about their NanoDays events using an online report. The digital version of the kit can be downloaded for free from the NISE Network website (www.nisenet.org).

For NanoDays 2011, 200 physical kits were distributed on an application basis to informal science educators and research outreach specialists within the United States.[1] It is likely that many institutions participated in NanoDays 2011 without receiving the physical NanoDays 2011 kit, using kits from past years and/or digital kit materials.

NanoDays Goals

The NISE Network leadership team has articulated a number of goals for NanoDays.

Related to network community, NanoDays seeks to:

1. Cultivate a national network of museums and research institutions working together to engage the public, through common participation in a national event related to nanoscale science, engineering, and technology (NSET).
2. Increase capacity in the field to engage the public in NSET content, building on and contributing to best practices in informal education.
3. Provide a tangible opportunity for NISE Net partners to develop and strengthen local partnerships between museums and scientists or research centers.
4. Provide an impetus and support for the network to create, share, and implement public engagement products related to NSET learning.

[1] Website analytics indicate that a total of 44 partners downloaded the NanoDays 2011 digital kit in its entirety. (The website does not track downloads of individual NanoDays products.)

Related to public engagement, NanoDays seeks to:

1. Provide engaging programming experiences for public audiences, related to NSET.
2. Engage the public in content learning related to NSET.

(See Appendix A for a more detailed description of the NanoDays goals.)

Several evaluation efforts contribute toward measuring the success of NanoDays, including analyses of the annual NanoDays reports filled out by kit recipients (such as this document), delivery and reach studies, and formative and summative evaluation of NISE Net products for both public and professional audiences.

Methods

The NanoDays team designed this study to gather two kinds of information:

1. Information related to NISE Net's network community goals for NanoDays. The Network uses data on recipients' use of NanoDays 2011 kits to inform kit awards for 2012.
2. Information related to NISE Net's public engagement goals for NanoDays. The Network uses data on partners' interests, needs, and capacities to inform development of materials for NanoDays 2012.

All institutions receiving a NanoDays 2011 physical kit were asked to complete an online report and survey about their experiences with NanoDays. The survey instrument included two sections:

1. A report section, with questions about local NanoDays 2011 events.
2. A survey section, with questions to help the Network improve future NanoDays kits.

The report and survey instrument was administered through SurveyGizmo. Survey participants were informed that the online instrument had two parts. Responses to the report section would be linked to their organization, while responses to the survey section would be anonymous.[2] (See Appendix B for the complete text of the online instrument.)

Regional hub leaders sent e-mail messages with the link to all kit recipients prior to the NanoDays national event. A link to the report was also posted on the nisenet.org website and included in the March and April Nano Bite e-newsletters. Regional hub leaders sent email reminders to those who had not yet completed the report during the month of April. Institutions who did not receive the NanoDays 2011 physical kit, but did participate in NanoDays, were also invited to complete the 2011 NanoDays report. As an incentive for completing the report, respondents were offered the chance to win free supplies for future NanoDays events.[3]

[2] Part 2 of the online SurveyGizmo instrument stated, "Help Us Improve NanoDays: Your answers to these questions help us improve NanoDays and plan and develop future NanoDays resources. … For the following questions, your name and institution will not be associated with your responses in any reporting of the findings, and your responses will not in any way affect your kit eligibility next year. You may skip questions or end the survey at any time by hitting the submit button at the bottom of the next page."

[3] Prizes included paper buckyball models, temporary tattoos, and t-shirts.

Data were downloaded from SurveyGizmo between April 1 and May 3, 2011. By May 3, there were 130 complete or nearly complete reports. (Only complete or nearly complete reports were included in the analysis.) In a few cases, multiple reports were submitted by the same institution. These were combined or reconciled as appropriate, depending on whether or not they represented duplicate reports for the same event or reports of multiple events.

In total, data from 130 institutions were included in the analysis. They include:

- 126 of the 200 institutions who received a physical kit
- 4 institutions that did not receive a physical kit in 2011 but used either the digital kit or a physical kit received a previous year.

NanoDays 2011 Report

The first portion of the online SurveyGizmo instrument took the form of an event report. Report results are summarized here. More complete report responses will be shared with regional hub leaders, to aid with ongoing partner development work and to help allocate future network resources. Respondents were informed that their responses to the event report would be linked to their organization.

1. Collaborations

Of the 130 partners who reported on their NanoDays events, 68% collaborated with at least one other organization for their NanoDays event. Many respondents collaborated with multiple partners. Some respondents described having researchers and private companies bring specialized equipment to their NanoDays event.

Some examples of collaborations included:

- Heinz Community College collaborated with four colleges, an elementary school, and a children's museum.
- UC Santa Barbara collaborated with NNIN, California NanoSystems Institute, Santa Barbara museum of Natural History, and the Center for Nanotechnology and Society.
- The Danville Science Center collaborated with several private companies, a horticulture lab, a university, and local public schools.

2. Descriptions of events

All 130 respondents described their NanoDays events. Partner institutions held a range of different kinds of events, and used activities from the 2011 kit and previous kits. Additionally, partners and their collaborators augmented the kit with their own demos and activities. Many events took place over more than one day (throughout the week of March 26-April 3) in different formats and at varying locations.

Sample descriptions of NanoDays events:

- *We used activities from the kit to present information and involve visitors in all things Nano. Specifically, we used the tattoos, ferrofluid, magnets, nano pants, sand, measuring height and hands, and made carbon nanotubes with balloons. Also, many of our exhibits right now in "Matter Matters" deal with the subject and were developed to coincide with the NOVA program "Making Stuff". [Scientist] from [University] was instrumental in the making of that program and was consulted on the development of our exhibits. We set up the Nano activities in the same room to tie it all together. We put up the posters included in the kit as well.*
- *We used all 11 Nano activities that were supplied in our kit. We set up tables throughout the museum and guests were allowed to enjoy the activities. We also made three batches of Nano ice cream in our science lab. I hired a choreographer to work with the children to create a movement activity that would help them understand the properties of atoms, molecules, and polymer chains. Children are so use to having a full body experience at the museum I wanted to try something that would invite them to connect the experience with science. It was fun and the children really seemed to enjoy it.*
- *Our NanoDays event included our weekend event, entitled "Welcome to NanoDays" (see below). We also "nano-fied" all of our weekly programs for the week of March 27th, basically giving them a Nano theme (for example, our Creation Station (arts-based) program did "Big and Small" art during this week). Welcome to NanoLand Promotional Piece: In celebration of NanoDays, the [Museum] will be hosting "Welcome to NanoLand", a weekend packed full of fun nano-tastic activities! Learn why you should wear nano pants, measure yourself in nanometers, and celebrate the science of small! Description of Activities: We had stations/tables set up using different activities from the NanoDays kit. The activities that we chose to use were: Buckyballs, Exploring Measurement-Molecules (Balloons), Exploring Tools-SPMs, Exploring Measurement-Human Body, Exploring Materials-Nano Fabric, Exploring Forces-Gravity (Tea Cups), Exploring Tools-Static Electricity, Exploring Materials-Ferrofluid, and Exploring Size-Memory Game. In addition, we had a science professor from [University] join us and help with facilitating the activities.*
- *We used all NanoDays items in the kit, plus: *We brought our portable Scanning Electron Microscope (SEM): people could pick a bug out, and look at it under the SEM *We brought our portable Atomic Force Microscope (AFM), and showed the nanostructures in a butterfly wing *We had some handheld, LED-lit microscopes from Radio Shack (~$12 each) so people could zoom into their tattoo *We provided a Dino-Lite handheld microscope so people could take close up images & measure the size of body parts (hair, eyelashes, etc.) *We added an AFM boxes activity: basically people put a finger in the box and sketch what they sense with the other hand in 30 seconds. Then they repeat for 1 minute. This is a great lead-in to the SPM/AFM on how AFMs get pictures when we can't see. The point of timing it is to show that longer times give us better pictures (resolution). Also, we put some soft, squishy, or sticky substances, and probing deforms the surface--a real problem when imaging with an AFM. *We used buckyballs, and the balloon carbon nanotube from last year *we used CNSI-Los Angeles self-assembly with magnets activity *we brought in bunny suits from our clean room for folks to wear and take a photo *Finally, we did a 2-day, 18-hour "chip camp" in which we brought 15 high school students into our clean room and taught them how to make a microresistor using nanofabrication processes. All students made many resistors all by themselves.*

- *NanoDays at [Museum] took place on April 1st, 2011 during our member appreciation event. Members who came were treated to pizza, previews of our two new planetarium shows (Natural Selection and Earth, Moon & Sun), and a variety of nano-related activities. Stations included: Stretch-ability, Thin films, Nano fabric, Sunblock, Memory and Powers of Ten Card Games, Static Electricity, Measure Yourself, Scented Balloons, Alice in NanoLand Storytelling, Special Microscopes, Nanosand, and Mitten Challenge (all from this year's NanoDays Kit). We also did the Liquid Crystals from last year's kit directions, which each member got to take home with them. We did the Stretchability Game and Buckyballs (using ZomeTools). We ordered two NanoVenture Board Games for participants to play. The NanoVenture board game was a great strategizing game. Each player functioned as the federal government and had to allocate resources to science, industry, the military and the environment. We had three video stations: Introduction to NanoTechnology, Treating Tumors with Nano Gold and Nanotechnology in Energy. Nano sand was available for sale in our stores, and fun tattoos were distributed to our members. Staff, volunteers, and participants were all abuzz with excitement in anticipation of the evening's fun. Rumors started swirling about. "Hey, did you hear about the new nano sand beach they're building [at Beach]? April fools! Haha!"*

3. Audiences

Respondents reported that their primary audience for NanoDays 2011 was family groups with children, with a handful of exceptions. The number of visitors reported by partners ranged from 25 attendees to 9,106 attendees. All 130 respondents filled out this question. These self-reported data were collected to help regional hubs allocate resources in future years, but are unreliable for estimating the number of public participants in NanoDays 2011.

The *2010 Delivery and Reach Study* provides additional information related to annual attendance at NanoDays events nationwide. Pattison, Benne, and LeComte-Hinely (2011) found that there were over 470,000 participant encounters at partner institutions during NanoDays 2010. (The term "public encounters" is used instead of "number of participants" because it was impossible to determine whether participant count estimates represented unique individuals or duplicates across several activities.) Because the same number of kits was distributed for NanoDays 2010 and 2011 (200 kits), and because a majority of partners who received a kit in 2011 also received a kit in 2010 (over 80%), the 2010 figure of 470,000 participant encounters may also be a good estimate for NanoDays 2011.[4]

Sample descriptions of NanoDays event audiences:

- *All ages of visitors to the museum. During the weekdays we targeted school groups by selecting age appropriate activities.*
- *Audience in our area. We sent flyers to every local elementary school in our county and advertised the event on our website, Google site information, local newspaper and radio, Facebook, and flyers in our community.*
- *Multigenerational family groups with elementary age children*

[4] Note: This figure of 80% was calculated excluding 35 partners who received a physical kit in 2010 but did not reapply for a kit in 2011. Some of those 35 did participate in NanoDays 2011 by using physical kits from previous years, by using digital materials, or by partnering with another local organization.

- *Our museum caters to children aged one through 10 or 11 and their parents. For the most part, we tried to reach those aged 7 and above although many parents with little ones spent time doing the activities for their own edification. We were trying to reach mainly the adults who come with our young visitors (our ages range from 1 to 10), but many educators who saw the program on the 26th asked to bring upper elementary students and we accommodated the request*
- *Families were our target audience, including children between 5-10 years old and their parents. However, we saw a wide variety of ages participating and interested in Nano activities, from toddlers to senior citizens. We also used this as an opportunity to provide our member base with a "something new" that many are looking for.*
- *Our primary audience is young children ages 2-11 years old and their families. I love that this event gives us something both appealing for the parents and accessible to the children. The science literacy of our adult audience varies widely, but the majority are young parents and preschool caregivers with no specialty in science and often a reservation about viewing themselves as part of the scientific process. We always see a real engagement and sense of fascination from attendees, staff and volunteers at NanoDays. We began our event before the official opening of NanoDays to take advantage of the [School District] spring break. This provided a large visitor-ship and a large pool of high school volunteers.*

4. Use of kit materials outside of NanoDays

Of the 129 respondents who provided information about future use of NanoDays kits, 100% gave specific examples of ways they planned use the kits as part of other, ongoing educational efforts. Respondents described incorporating the kits into cart demos on the museum floor, outreach events, festivals, summer camps, local K-12 outreach, teacher workshops, and interactions with college students.

Sample descriptions of future uses for NanoDays kit materials:

- *We are going to use some of the activities during our Spring into Nature: Celebrate Earth event on Saturday, April 30. The nano sand activity in particular. All the NanoDays kit materials will also be incorporated into our 2011 Summer Camps and our 2011-2012 Homeschool program.*
- *We use the NanoDays kit materials several ways: 1) during Science Communication workshops (2-3 times per year to train researchers/grad students to do outreach 2) during Teacher workshops to identify nano activities teachers can use in the classroom 3) Exhibit Hall interpretation staff will use the kit activities as cart demos on the floor throughout the year. 4) Our Hands-on Laboratory will use kit demos/activities to have a nano-themed day several times per year.*
- *We use our kit materials on a regular basis for cart activities and classroom programming. We also use them for other special programming, like camps, homeschool classes, and toddler storytimes.*
- *Our NanoDays kits our absorbed into our regular programming and are often delivered at our rotating science space. The tools and ideas are also incorporated into videos, blogs and outreach efforts.*

- *In June 2011, we are starting up a weekly program entitled "Small, Smaller, Nano!" in which we will do activities from the NanoDays kit and other Nano-themed activities at the museum on a weekly basis. This program will take place on Mondays, Sundays, and Saturdays. We also plan to do another "Nano Night" for our Museum First Fridays program that takes place on the first Friday evening of every month.*
- *We will use it for afterschool activities, outreach, scouts, cart demos and teacher workshops.*

5. Comments about NanoDays experience

Eighty-eight of 130 respondents answered a question inviting comments on their NanoDays event experience. (All comments are included in Appendix C-6.)

Sample comments about NanoDays experience:

- *Our NanoDays audience keeps growing each year. Our staff also loves this event. It is a joy to teach the general public about nanoscience. The public finds it fascinating and enjoys the hands-on aspects of the event. We hope to keep participating for years to come!!!!*
- *The NISE network has been phenomenal in relaying new and unique resources every year, and as a result, our Nano Day seems to get better year after year; it is terrific to be able to mark its evolutionary progress. This was the third time we were hosting Nano Day, and I would have to say that this was the best one yet! Audience participation and interest was very high, especially by adults.*
- *I really like the new kit activities! A few comments about materials: 1) What is the brand/type of black bristol paper in the thin films? I purchased additional supplies of a paper I thought was similar, but the color ran in the water and made a MESS! Please specify a location/source for this paper. 2) Static Beads activity - is there a way to discharge the tubes between demos? 3) The Powers of Ten card game was particularly popular at our institution and will be used by staff all over for a variety of activities. Volunteers LOVED it, and Visitors loved it! They asked where they can purchase these cards. It would be great to offer them for sale at the museum gift shops. Many people would buy them!*
- *It was a huge success. The children could not get enough. We finally had to tell them time was up. Every day they ask when we are going to do our Nano experiments. I have walked by groups of children as they are talking with each other and heard them discussing something as being a nano. It was one of the best programs I have ever taught. The children don't get science in school anymore, so this was a special treat. It was created so the children could relate it to everyday life.*

NanoDays Survey

The second half of the online SurveyGizmo document was a survey requesting feedback to help the Network improve NanoDays materials and resources. Specifically, respondents were asked about use of existing and potential NanoDays kit materials. Respondents were informed that their responses to the feedback survey would not be linked with their organization.

1. Educational materials

Institutions were asked how likely they would be to use a variety of educational materials, if they were included in future NanoDays kits:

- 59% of respondents reported that they were very likely to use **unstaffed experiences** (n=130)
- 48% of respondents reported that they were very likely to use **educational banners and posters** (n=130)
- 39% of respondents reported that they were very likely to use **longer demos and programs** (n=129)
- 32% of respondents reported that they were very likely to use **educational videos** (n=130)
- 29% of respondents reported that they were very likely to use experiences that engage the public in **societal and ethical implications** of nano (n=129)

Sample comments about potential new educational materials:

- *Longer demos and programs would be very useful, as we are always striving to increase our educational programs menu.*
- *Since we have a small staff, unstaffed exhibits and activities could expand our offerings for an event like NanoDays without "maxing" our staff.*
- *Unstaffed, simple exhibits and displays work well (for large crowds with minimal facilitators/guides) in conjunction with longer demos and programs (for context)*
- *Loved the hands-on, concrete, fun activities in this year's kit. More like that would be fabulous!*
- *one bigger, more exciting kit (per year) would be great. kind of main attraction - like the model made out of balloons*
- *The hands-on activities are most useful.*
- *The most useful educational materials are demonstrations and simple exhibits. We also find that posters with interesting illustrations or short facts are helpful to start conversations with visitors.*
- *Videos would be great, especially ones that can be shown as filler between demonstrations or throughout the day. Demonstrations are always a hit here as well.*
- *Anything hands on and accessible to children ages 0-12 years old and their families*
- *I would love to see more info about what Nano is doing for society to show how it impacts people's lives!*

(See also Appendix C-1.)

2. Spanish translations

Institutions were asked about their use and awareness of Spanish-language translations:

- 6% of respondents used Spanish-language materials (n=130)
- Of those respondents who did not use the Spanish-language materials, 74% (n=121) reported that they were aware of the materials.
- Altogether, 80% of respondents (n=130) were aware of the Spanish-language materials.

Interestingly, none of the respondents who used the Spanish-language materials were located in Arizona, California, Florida, New Mexico, or Texas (states where the Network has many partners and where there is a large Spanish-speaking population).

(See also Appendix C-2.)

3. Training materials

Institutions were asked how likely they would be to use additional training materials, if they were included in future NanoDays kits:

- 42% of respondents said they were very likely to use **training videos** providing an overview of nano content and NanoDays activities (n=130)
- 38% of respondents said they were very likely to use a **training slideshow** providing an overview of nano content and NanoDays activities (n=130)
- 35% of respondents said they were very likely to use training materials to help institutions engage **diverse audiences** (n=130)
- 31% of respondents said they were very likely to use a more comprehensive staff/volunteer **training guide** (n=127)
- 28% of respondents said they were very likely to use training materials to help staff and/or volunteers engage the public in **societal and ethical implications** (SEI) of nano (n=130)

Sample comments about potential new training materials:

- *Quick overview of nanotechnology and why it is important. We utilize a lot of volunteers that may not be strong in science and may only be helping with this event so we have a short amount of time for training. We have more time to devote to training for the staff members.*
- *The materials were very self-explanatory for the most part, but maybe that's because we are used to doing science based programs!*
- *Simple and visual. I love the fact that you include learning objectives that are easy to read and understand. Since we use a wide variety of ages and experiences for volunteers it helps to have basic information.*
- *I think we had a very good thing using students in our presentations; something we could provide them on "how to present to the public" would be very helpful.*

- *Our staff training typically happens in the two weeks leading up to NanoDays, and is usually 45-60 minutes of an introduction to nano concepts, and an overview of what is in the kits. It's always tricky trying to find time for all of our staff to rotate through this training, so anything to help streamline it (videos, powerpoints) would be very helpful. I think all of the instructions for performing the activities are pretty clear--but having a video of someone doing it live could be a potential improvement.*
- *Slideshows regarding nanoscale science overall would be very helpful to ensure that all staff people feel confident explaining the NISE Net activities.*
- *Considering how many volunteers participated in NanoDays, I think it would be helpful to have a short video explaining the "what and how to's" for each activity that could be emailed the person working that activity to study in advance.*
- *The background materials provided are quite clear and concise, a feature that I hope continues into the future.*
- *I'm especially interested in training materials to engage public about societal/ethical implications of Nano.*

- *The explanations in the display stand for each demonstration were just fine*

(See also Appendix C-3.)

4. Marketing materials

Institutions were asked about their use of the NanoDays marketing materials:

- 78% of respondents used the **logos and graphic elements** (n=129)
- 76% of respondents used the **promotional banner** (n=130)
- 42% of respondents used the ready-to-print **promotional posters** (n=129)
- 40% of respondents used the **taglines** (n=129)
- 40% of respondents used the **publicity photos** (n=130)
- 35% of respondents used the sample **press release** (n=130)
- 23% of respondents used the ready-to-print **promotional ads** (n=128)
- 18% of respondents used the **PowerPoint template** (n=127)
- 6% of respondents used the "I heart Nano" **t-shirt design** (n=127)

Sample comments about marketing materials:

- *The marketing materials that were provided were sufficient for our organization*
- *Great materials, better than most marketing materials we get. Great design and easy to use.*
- *We think it is great that you provide a variety of marketing options! Additional videos to embed (or send people a link to) would probably be useful.*
- *They were wonderful - our graphics person was thrilled to have things pre-done that could be printed out and used in emails, flyers, and posters.*

- *Our marketing/communications person says she can't think of anything you hadn't already done. Kudos! Were happy with what you provided.*
- *I work with an institution that jealously guards its public image, so I'm limited in what materials I can use for publicity. Most materials must be generated by our own departments.*
- *I really appreciated the upgraded and eye-catching banner this year—it was a huge hit with our staff, and really helped draw in audiences for our activities! I think NISE Net does a great job of putting together all of the kit, but makes it especially easy to utilize the graphic elements and marketing materials. Having a CD that I can hand to our graphic designer and say "have fun!" is GREAT!*
- *A lot of the flyers were only available as Adobe Illustrator documents, making them inaccessible to us and, I imagine, many other institutions.*
- *Our PR staff found all the materials helpful and easy to use. The publicity photos, ad and poster templates, and banners made it into our press coverage, onto our website, and into our onsite advertising and day-of information postings. We did post the promotional video onto our Facebook site, but because it came so late, we were unable to use it elsewhere.*
- *We love the emotionally engaging photos showing kids and families! Being able to edit the ads and select elements to incorporate on our web page and other media is a great feature. We would use the t-shirt design if we could afford to give them out to staff, volunteers, or as prizes. Maybe a local sponsorship appeal package?*

(See also Appendix C-4.)

5. Comments about NanoDays kits

Sixty of 130 respondents provided additional comments or suggestions to help improve NanoDays kit materials. (See also Appendix C-5.)

Sample comments about NanoDays kits:

- *No [other comments or suggestions]. I just want you to know that we are very appreciative of the materials we receive and put them to good use each year. They are very impressive and professional!!!*
- *No, they were great! As a Program Director who usually "does it all"--marketing materials, press release, etc., it was nice to have this already done for us!*
- *Keep up the good work! The website has really improved in the last two years. It is very easy to find activities using the search tool.*
- *Nope. You're doing a fabulous job! Thank you for coordinating this. You are AMAZING!*
- *Thanks so much for your dedication to Nano Science and outreach to the community regarding NanoScience! We get so excited each year the kits arrive, it is like Christmas morning for us :)*
- *Keep up the good work. Your materials get better and better each year! Thank you.*
- *The resources available from your website are spectacular. If I think of anything I'll make sure and get in contact with you all.*

- *We like that the kit is ready-to-use, and takes relatively little preparation and training to pull off an event. We would like new kinds of visitor experiences like longer programs, but things that work in the context of a busy event and remain relatively easy to implement would work best for us.*
- *We see a great progress and refinement of the NanoDays kit each year. Thank you very much for your hard work and dedication in making these resources and materials available to us, and to the children who are our future!*
- *This is a great program. It is not often that you find the quality of presentation of materials as well as engaging materials that is packaged and ready for you to use. We love this initiative - it has been so impactful to growth of our staff. Thank you!*
- *I look forward to seeing what new materials are used for 2012!*

Appendix A – NanoDays Goals 2008-2015[5]

Network community

1. Cultivate a **national network** of museums and research institutions working together **to engage the public,** through common participation in a **national event** related to nanoscale science, engineering, and technology (NSET).

   Network identity

   a. 2008-2015: Develop a national identity for the NISE Network and network community, through a signature, branded event.

   Participating partners

   b. 2008: Recruit 30 organizations to participate in the first NanoDays and receive a physical kit.[6] Involve 100 partner institutions in the NISE Network by the end of project year 5.

   c. 2009-2011: Recruit 200 organizations to participate in NanoDays and receive a physical kit. Provide support to additional partners who participate in NanoDays (without receiving a kit). Maintain an ongoing relationship with the organizations that participate in NanoDays.

   d. 2012: Recruit 225 organizations to participate in NanoDays and receive a physical kit. Provide support to additional partners who participate in NanoDays (without receiving a kit). Maintain an ongoing relationship with the organizations that participate in NanoDays.

   Participating organizations

   e. 2008-2011: Serve our core NISE Net partners, primarily US museums and research centers. (Generally, other kinds of partners—schools, libraries, community centers, international partners—can utilize digital kit materials but do not receive physical kits.)

   f. 2012: Explore the possibility of expanding the types and number partner institutions beyond our core partners.

   Organizational investment

   g. 2008-2011: Provide a turnkey, prepackaged programming event that can be easily implemented, requiring minimal staff training and other resource investment.

   h. 2012-2015: Provide a turnkey, prepackaged programming event with a set of core activities that can be easily implemented, and that require minimal staff training and other resource investment. Provide additional programming resources that require greater investment of staff training, but also provide deeper and more varied learning experiences for the public.

[5] From NanoDays Goals document dated May 4, 2011 (RO/negnog).

[6] This goal was exceeded: we created 100 physical kits for NanoDays 2008.

2. **Increase capacity in the field to engage the public** in NSET content, building on and contributing to best practices in informal education.

    a. 2008: Begin to engage the general public in NSET content, establishing that it is a feasible and desirable topic for informal education.

    b. 2009-2011: Continue to engage the public through network partners. Increase our knowledge and capacity in the ISE and research communities for effectively conveying NSET content in informal education experiences and research contexts.

    c. 2012-2015: Continue to engage the public through network partners. Increase our knowledge and capacity in the ISE and research communities for effectively conveying NSET content in informal education experiences and research contexts. Broaden the kinds of content, educational experiences, and practices we offer through the NanoDays kits to encourage greater public impact and professional growth.

3. Provide a tangible opportunity for NISE Net partners to develop and strengthen **local partnerships between museums and scientists or research centers**.

    a. 2008-2015: Create an easy, low-risk venue where informal science educators, research scientists, and the public can interact, share individual expertise and perspectives, and learn from each other.

    b. 2008-2015: Initiate and foster local relationships among ISE organizations and researchers, which have the potential to expand beyond NanoDays.

4. Provide an impetus and support for the network to **create, share, and implement public engagement products** related to NSET learning.

    <u>Kit development</u> (Tier 1)

    a. 2008: Complete and disseminate a coordinated, packaged set of educational products early in the project.

    b. 2008-2015: Develop a core set of common NanoDays activities that:

        i. are appropriate for a broad public audience

        ii. engage the public in fundamental concepts related to nanoscale science, engineering, and technology

        iii. can easily be supplemented by additional programming

        iv. are easily adaptable

        v. can be used in a variety of educational contexts, including beyond NanoDays

    c. 2012: Expand the range of educational programming included in the NanoDays kits beyond the core activities, to include a greater variety of experiences.

    <u>Implementation and delivery</u> (Tiers 1-3)

    d. 2008-2015: Use NanoDays kit materials—plus additional educational experiences developed by the NISE Network or elsewhere—to deliver local NanoDays events that reflect the mission of participating organizations and are appropriate for local audiences.

Public engagement

1. Provide engaging programming experiences for public audiences, related to NSET.
    a. 2008-2010: Deliver NanoDays experiences in a local NanoDays event, ideally during the national NanoDays week.
    b. 2011-2015: Deliver NanoDays experiences during the national NanoDays event week, as well as other times each year and in other educational contexts.
2. Engage the public in content learning related to NSET.
    a. 2008-2010: NISE Network public learning goals[7] for NanoDays:
        i. Nanometer-sized things are very small, and often behave differently than larger things do.
        ii. Nanotechnology is manipulating matter with control at a small (size) scale.
        iii. Nanoscience and nanotechnology lead to new applications.
    b. 2011: NISE Network public learning goals[8] for NanoDays:
        i. Nanometer-sized things are very small, and often behave differently than larger things do.
        ii. Scientists and engineers have formed the interdisciplinary field of nanotechnology by investigating properties and manipulating matter at the nanoscale.
        iii. Nanoscience, nanotechnology, and nanoengineering lead to new knowledge and innovations that weren't possible before.
        iv. Nanotechnologies have costs, risks, and benefits that affect our lives in ways we cannot always predict.

[7] From the nanoawareness goals articulated in the year 5 program summative evaluation. Note that an individual NanoDays event might not include programming options that address all these goals.
[8] From the big ideas articulated in the year 5 content map, v.1. Again, note that an individual NanoDays event might not include programming options that address all these goals.

Appendix B – NanoDays Report and Survey Instrument[9]

Thank you for participating in NanoDays!

We ask that partners hosting NanoDays events report back to the Network about your experiences through this online survey. There are two sections in this survey:

- A report section, with questions about your NanoDays 2011 event.
- An information-gathering section, with questions to help us improve kit materials for future NanoDays.

The reporting deadline for NanoDays is May 1. Once you complete the report (on time!), your name will be entered into a drawing for paper fold-your-own buckyball models. Two drawings will be made, and winners will be notified in late May.

The survey takes approximately 15 minutes to complete.

Part 1: NanoDays Report
First Name
Last Name
Job title
Institution
Address 1
Address 2
City/Town
State
Country
Email Address

Please confirm your institution in the pull-down selection below. If your institution is not listed, choose "other."
[Pull-down list of institutions]

Did you receive a physical kit for NanoDays 2011?
[Yes, No]

Did you collaborate with other organizations on your NanoDays event?
[Yes, No]

[If yes] Which other organizations did you collaborate with on your NanoDays event?
Organization Name
Role at NanoDays event

Please briefly describe your NanoDays event. Include the types of activities you offered, either from the NanoDays kit or from another source.
[Free text]

[9] Text used in online SurveyGizmo instrument.

Please describe the types of audiences you intended to reach during your NanoDays event.
[Free text]

Approximately how many people attended your NanoDays event(s)?
Please estimate the total number of people you reached. If you held multiple types of events (lectures, hands-on activities, exhibits) or held events over multiple days, please try to estimate the overall attendance.
[Free text]

How do you plan to use NanoDays kit materials outside of NanoDays (May 2011 through April 2012)?
[Free text]

Do you have any other comments about your experience with NanoDays?
[Free text]

Photos
You don't need to attach photos to this report, but if you have great NanoDays photos to share, call or email Eli Bossin at the Museum of Science: ebossin@mos.org, 617 589 4411.

Please note: to be able to use and share photos of your local NanoDays events, we must have a signed NISE Network release form from each person in the photo. In the NISE Network, photos are often shared and used by multiple institutions, so we need permission for not just your institution to use the image, but also for other institutions in the NISE Net to use the image.
The release form was included in the NanoDays kit and can be found in the nisenet.org catalog as part of the NanoDays Promotional Materials package.

Part 2: Help Us Improve NanoDays

Your answers to these questions help us improve NanoDays and plan and develop future NanoDays resources. We pay attention to your feedback! Information from past NanoDays reports and evaluation has led to changes in the kit activities, supporting materials such as banners and signs, and the kinds of additional resources that the NISE Net provides.

For the following questions, your name and institution will not be associated with your responses in any reporting of the findings, and your responses will not in any way affect your kit eligibility next year. You may skip questions or end the survey at any time by hitting the submit button at the bottom of the next page.

Thank you for taking the time to answer these questions.

How likely do you think your institution would be to use the following <u>educational materials</u> if they were included in your NanoDays kit (in addition to the materials we already include)?
[Very unlikely, Somewhat unlikely, Not sure, Somewhat likely, Very likely]

- Longer demos and programs
- Unstaffed, simple exhibits and displays
- Educational banners and posters
- Experiences that engage the public in societal and ethical implications of nano
- Videos

Please provide any additional comments about the types of educational materials that would be most useful to you.
[Free text]

Did you or your institution use the Spanish-language NanoDays materials?
[Yes, No]

If no, were you aware of the availability of the Spanish-language NanoDays materials?
[Yes, No]

How likely do you think your institution would be to use the following additional <u>training materials</u> if included in your NanoDays kit?
[Very unlikely, Somewhat unlikely, Not sure, Somewhat likely, Very likely]

- More comprehensive staff/volunteer training guide
- Slideshow to train staff and volunteers, providing an overview of nano content and NanoDays activities
- Videos to train staff, providing an overview of nano content and NanoDays activities
- Training materials to help you and your staff/volunteers engage the public in societal and ethical implications of nano
- Training materials to help you engage diverse audiences

Please provide any additional comments about the types of training materials that would be most useful to you.
[Free text]

Did you or your institution use any of the following NanoDays marketing materials?
[Yes, No]

- Logos and graphic elements
- Taglines
- Publicity photos
- Ready-to-print promotional ads
- Ready-to-print posters
- Promotional banner
- Sample press release
- PowerPoint template
- “I Heart Nano” t-shirt logo

What would make our marketing materials more useful to you?
[Free text]

Do you have any other comments or suggestions to help us improve NanoDays resources for 2012?
[Free text]

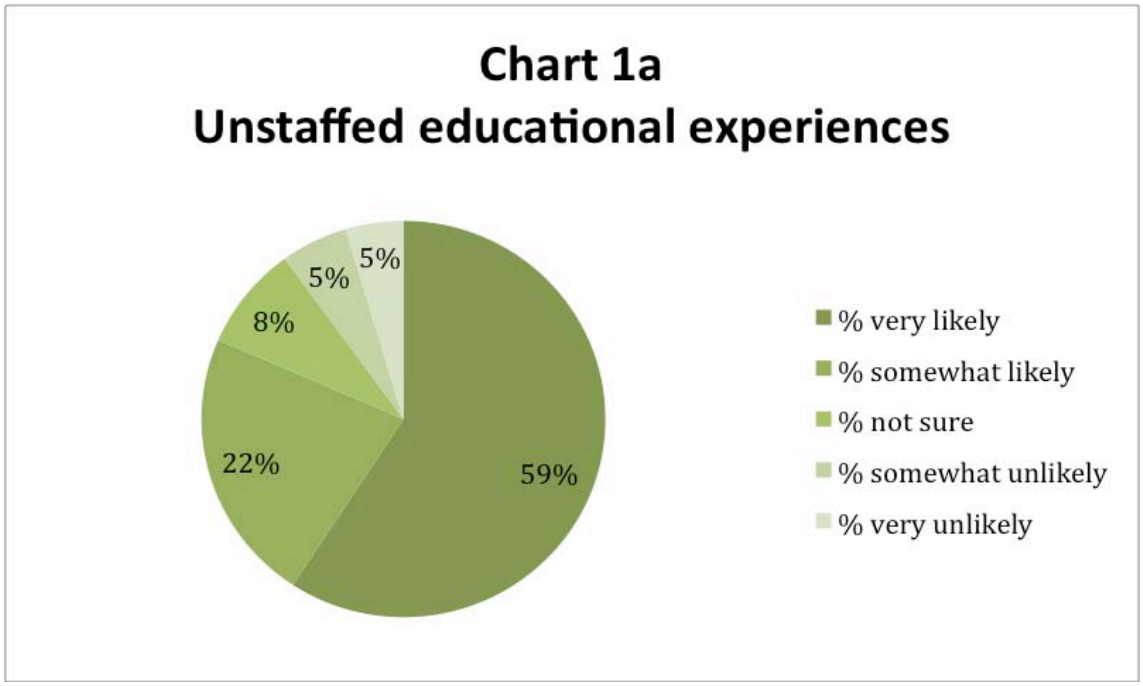
Thank you!
Thank you for taking the time to answer these questions! Your feedback is important to us.

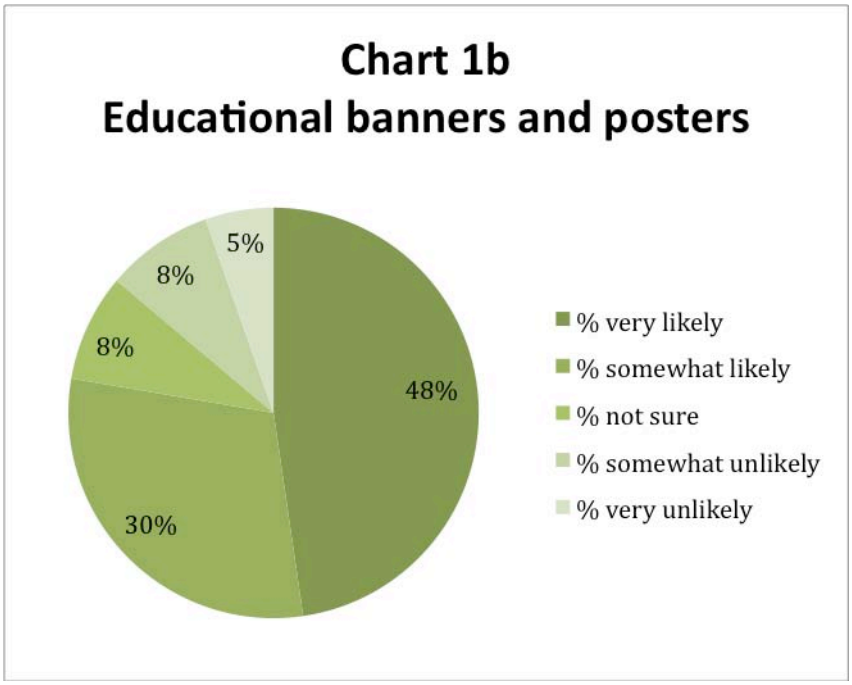
As a special thank you for filling out the report by May 1st, your name will be entered into a drawing for a set of prizes including paper fold-your-own buckyball models, tattoos, t-shirts, and more. Two drawings will be made, and winners will be notified in late May.

Appendix C – Open-Ended Survey Questions

Appendix C-1: Additional educational materials

How likely do you think your institution would be to use the following educational materials if they were included in your NanoDays kit (in addition to the materials we already include)?





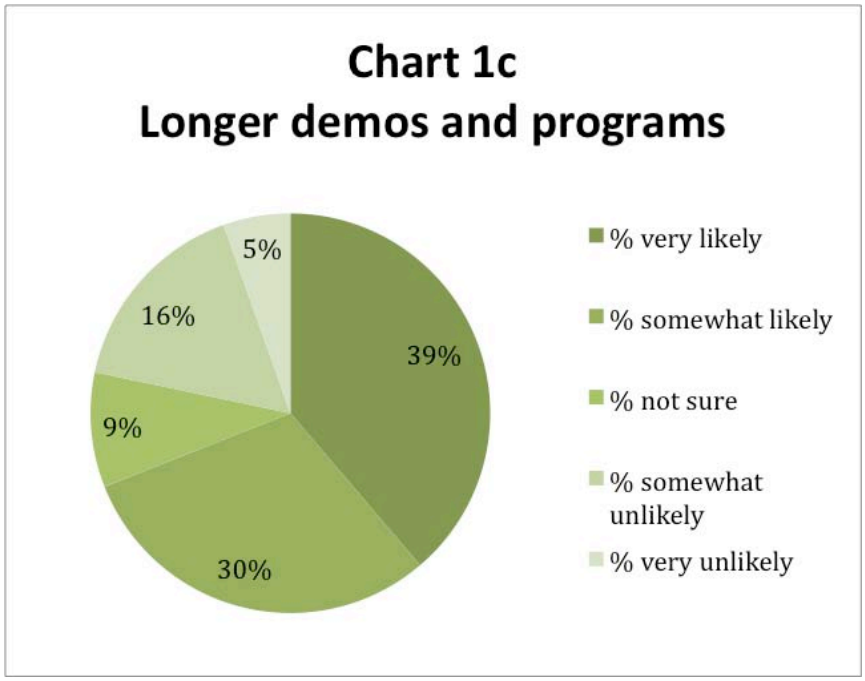


Chart 1c
Longer demos and programs
39%
30%
9%
16%
5%
% very likely
% somewhat likely
% not sure
% somewhat unlikely
% very unlikely

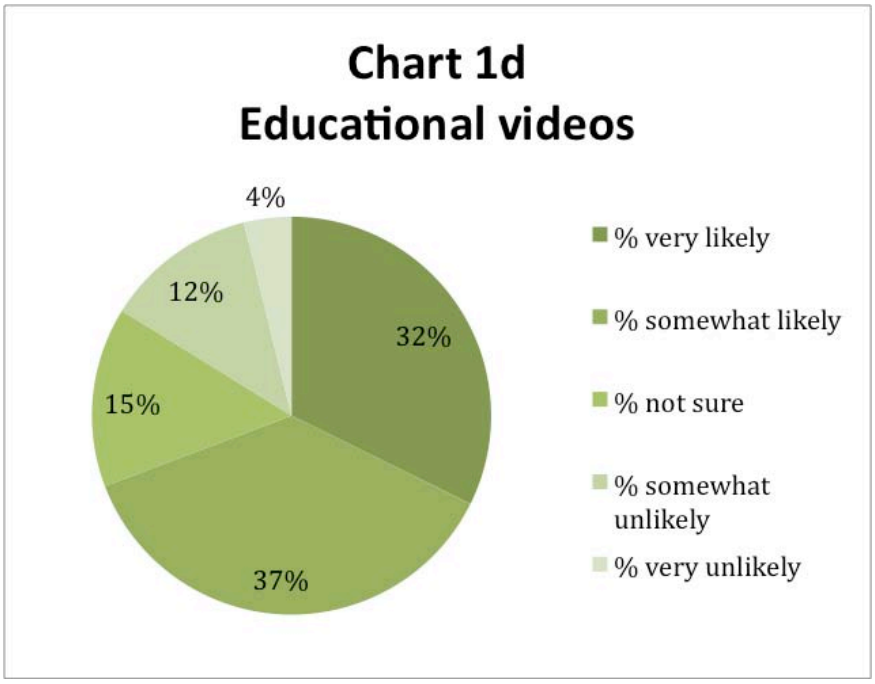
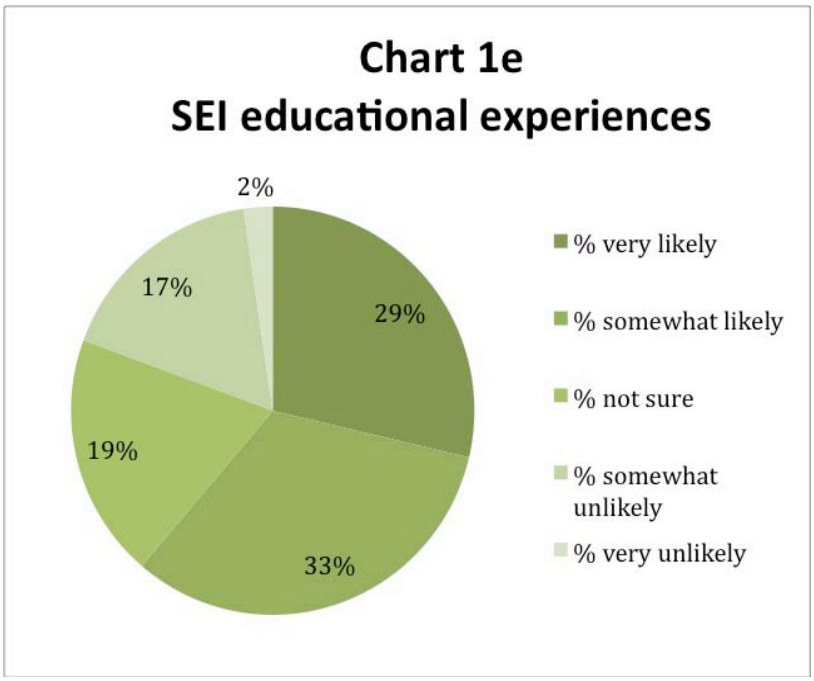


Chart 1d
Educational videos
32%
37%
15%
12%
4%
% very likely
% somewhat likely
% not sure
% somewhat unlikely
% very unlikely



Verbatim comments:

- *You've covered everything above. The videos are much needed.*
- *Any resources that enhance the experience of our younger audiences.*
- *Materials that are interactive and hands-on for our guests would be most helpful, as well as activities that provide resources for multiple uses.*
- *Wall posters are not that useful because we don't have any wall space to put them on (and are not allowed), so any posters need to be mounted and put on easels. With our directional signage, it's a bit limited. That said, more banners would be AWESOME!*
- *Longer demos and programs would be very useful, as we are always striving to increase our educational programs menu.*
- *Buckyballs were not included in this year's kit and I would like to see them return.*
- *The posters […] sent last-minute seem fantastic and I hope they get into next year's kit. It would be nice to have an additional poster that says "Ask a Nanoscientist."*
- *Since we have a small staff, unstaffed exhibits and activities could expand our offerings for an event like NanoDays without "maxing" our staff.*
- *stand alone activity stations that can be done separately or combined to make a longer program. We don't do big science theater shows.*
- *Videos are great as well as any give aways.*
- *It might be helpful to have recommendations about what activities work well with certain age groups and to have developmentally appropriate signage to go with those activities.*
- *We would like to have materials for a longer (30 minute) show type presentation and maybe a large decorative display to hang in the museum that would be eye catching and cool (maybe a giant blow up buckyball or "nano man"- haha).*

- *Unstaffed, simple exhibits and displays work well (for large crowds with minimal facilitators/guides) in conjunction with longer demos and programs (for context)*
- *Anything hands-on!*
- *Materials for full-blown student activities that inservice teachers would find useful in their own classrooms*
- *We really enjoy all the materials and try to use as much as possible including the banners, measuring posters and tattoos :)*
- *We love those large molecule models --from OMSI (I believe). MS-2 virus model & working model of an enzyme (there is a challenge!) The display instructions and explanations are fantastic and easy to give volunteers!*
- *We would love to host more in depth hands on workshop that introduce the science of nano to kids in the 8-13 age group. We would also love to partner with nearby institutions that have an interest in educating the public about Nano- it would be great if the website had a way of showing the network among institutions so that we could partner more easily.*
- *Hands-on*
- *Hands-on kits are the most useful for our programs.*
- *Our faculty and students felt that teaching high school kids was the best group to try to reach - so they would be interested in demos that relay more complicated ideas. The ferrofluid and nanosand were useful. Also we loved the buckyballs!*
- *I prefer hands-on activities. The stretchabillity and using gloves to model self assembly ones I didn't use.*
- *Unstaffed exhibits and displays would be great. We are not really a walk in institution, but always have walk -ins in addition to the students who stay overnight for programming. Longer demos and programs can be incorporated into our other programming, missions, and summer camps.*
- *Give-away items*
- *Small table top displays and demos are best!*
- *As a small non-profit, we are a small staff trying to put on big events. The more you offer that the public can use on their own (without a staff member being there), the better!*
- *The kits have great materials.*
- *the activities are most helpful.. the discussion based items and videos less so*
- *Hands-on activities that appeal to a wide variety of ages and that allow families and groups to interact with each other (have conversations) and/or a facilitator seem to be the most successful at our museum.*
- *Loved the hands-on, concrete, fun activities in this year's kit. More like that would be fabulous!*
- *I've found it helpful to link the hands-on activities with some application video. For example, the ferro-fluid activity combined with showing the Dragon Fly TV episode on water treatment. In an ideal world, the videos are a bit too long and it would require too many DVD players to be located adjacent to the activity. I know the cost might be high, but I wonder if electronic / audio books could be made that tells an application story to go along with the hands-on activity.*

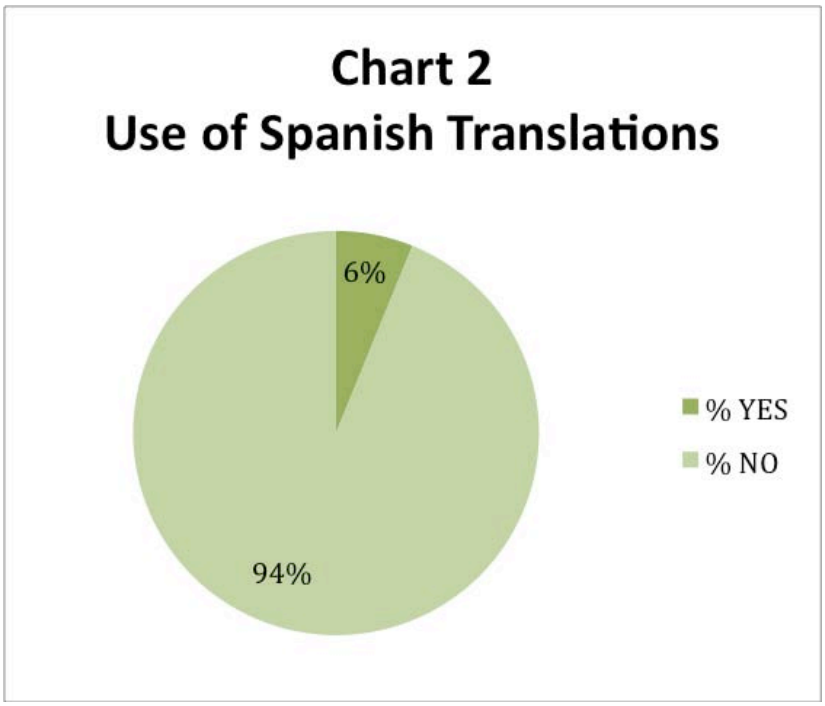
- *The more hands-on the better!*
- *Any hands-on materials that include high-school level information (chemistry, physics, geometry) are great for us; our outreach events have the secondary motive of attracting potential students.*
- *We just don't use the banners. Your on-line web friendly graphics about NanoDays was most helpful.*
- *Hands on activities are GOLD!*
- *Our visitors were most impressed with the ability to be hands-on with most of the materials. Docents were sometimes needed to keep order as many guests were loath to stop their experience, so more and different materials of that type would be most welcome. PS - we were much impressed with your ability to think of "everything" including the table cloths! Hands-on activities that would help even young children understand how small a nano is.*
- *Clever self guided demo kits work very well classes and the general public.*
- *I will use the NanoDays Spanish guides in school outreach.*
- *Activities that require multiple participants do not synch well with our style of NanoDays programming.*
- *We used the "Feel Nano" magnets and supporting signage as an unstaffed activity when our staff wasn't able to be on the floor. Having more robust exhibit components would likely provide a better, clearer, and more attractive interaction and introduction into nano for our participants. Right now our staff is working on utilizing some of the existing "long-format" nano programs (i.e. - Attack of the Nanoscientists), so we'll see how that works with our audience. Videos are often difficult for us to utilize, but we're looking to include some of the videos from past kits in a Current Science and Technology display in one of our exhibit galleries.*
- *Ways to engage the audience in ethical and societal implications would be very helpful to our adult audiences and older youth audiences. This has been a somewhat challenging area in our programming, and models regarding nanoscale science would be helpful not only in nano programming, but for other subjects, especially in our cafe science programs and distance learning offerings.*
- *one bigger, more exciting kit (per year) would be great. kind of main attraction - like the model made out of balloons*
- *Our capability should expand over the next year, as we open the [Center] and have more space and facilities. The presentation options will be broader from cart activities on the floor to the dedicated programming room with full video display capability. We will be able to make much better use of videos and longer format programs.*
- *The hands-on activities are most useful.*
- *We loved the displays for each activity that explain how it relates to Nano. They were very useful.*
- *short (< 10 minute) videos are good for explaining concepts*
- *I use new hands-on activities in my space whenever I can. I appreciate the level of background information provided, which makes it very easy to present the activities in the kits. Sometimes I have families work on their own with the materials, so having explicit step by step directions to post with the materials is very helpful.*

- *The kits that can be used by younger patrons are our favorites. The "mitten challenge" was especially popular. We also like those with a take home component like "thin films".*
- *Brief videos (similar to Nanotech: what's the big deal) Handout or information for families to take home*
- *hands-on, interactive demos, simple signs that explain*
- *Low cost, low maintenance, easily transported, and self guiding experiments are often well received.*
- *The most useful educational materials are demonstrations and simple exhibits. We also find that posters with interesting illustrations or short facts are helpful to start conversations with visitors.*
- *I'd love to have a booth where people were asked to answer a brief survey about some of the ethical questions raised by Nano. Such as the questions at the SF conference 2 years ago about where or not you would be willing to put a nano chip in an Alzheimer's relative. This seems like an excellent way of bringing it home. Or maybe a nano teddy bear?*
- *I could have used a 'vertical' NanoDays banner, to hang on the door -- the long 'horizontal' one was not convenient (we used one of our lab rooms).*
- *Self-contained materials are best and those that do not require a lot of "resetting" since children have a very short attention span.*
- *We would able to use all of these materials, both at NanoDays and at other times of the year. We are very flexible in the kinds of materials we can use at NanoDays, and we have a lot of capacity in terms of staff for our local NanoDays, so we could use all of these additional educational materials. We would also be able to use these materials at other times and in other contexts throughout the year. We would be especially interested in NanoDays materials to complement the miniexhibition.*
- *Posters and banners would be useful if they target a very young audience - age 2-10 years. A few years down the road we may have enough partnerships to use the societal and ethical activities with middle school and older children, but it would be challenging to use it right away. That said, as a scientist and member of the public I support that effort! Short videos we would likely link to online - the marketing videos this year were very useful for linking to our facebook page. We would probably never use them in the museum as we seek to be an alternative to screen time for families.*
- *We are trying to increase the amount of activities that engage older children- middle to high school age. We run faculty staffed workshops on other science topics. I would appreciate more advanced nano-related activities.*
- *[Museum] made its own liquid crystal solution when we ran out for our event. However, larger numbers of supplies of cards (for liquid crystal) would have allowed us to hand out something to every participant. Both [Museum] and [College] could have benefited from more materials in this way. Perhaps there could be a process to apply for increased supplies for large events hosted by collaborating institutions?*
- *Big banners under each display will capture the audience*
- *take away materials for parents and home schoolers*
- *Videos would be great, especially ones that can be shown as filler between demonstrations or throughout the day. Demonstrations are always a hit here as well.*

- *We have the capacity (manpower) to take on all of these materials/options. I think our only limiting factor would be space, but if have the room, we would love to include any/all new educational materials.*
- *Low cost, well constructed (as I call it public Proof) exhibit rentals or purchase would be great.*
- *For the NanoDays event, we are able to use only the unstaffed simple exhibits. However at other times during the year we are able to use the more in-depth activities. Having a good balance of both types of activities is important to us, so we can use them throughout the year. For the "unstaffed" activities that are meant for younger students, having an extremely simple instructional page with large font would help. If the technical background information is on one page, and clear basic instructions on" what to do" is on another page, students with basic reading skills would be able to self-explore the exhibit more easily. This would help the young students, who can't sift through lots of words easily, find the directions independently.*
- *Multiple copies of media materials to share with teachers and other libraries*
- *We would love to have activities and resources that serve older youth (e.g., high school). The activities seemed geared for a much younger audience. Even the marketing materials are for a younger audience. Also, we would like career information for this audience.*
- *More Anders videos, they are great*
- *Visitors loved the miniature tea cup activity. Where can we purchase additional tea cups?*
- *We have limited space on our gallery floor for anything too large, but we could really use anything that would help engage the public. Demos and hands-on experiences have the best impact. I like the option of using materials in Spanish, but have not had the opportunity to use them yet.*
- *Simple demos about nanotechnology that the public use or has interest in such as energy (the thin film was very successful), etc...*
- *Anything hands on and accessible to children ages 0-12 years old and their families*
- *Once again, the educational poster were a great addition to the demonstrations.*
- *I would love to see more info about what Nano is doing for society to show how it impacts people's lives!*
- *Hands on activities are what we really try to provide for the visitors.*
- *Materials available electronically so our educators (informal and K-12 teachers) may be able to have access to them.*
- *clickers as a method to poll audience response in real-time*
- *Some posters and videos would have been nice. We have a 85 seat theatre that we would put the video on a loop.*

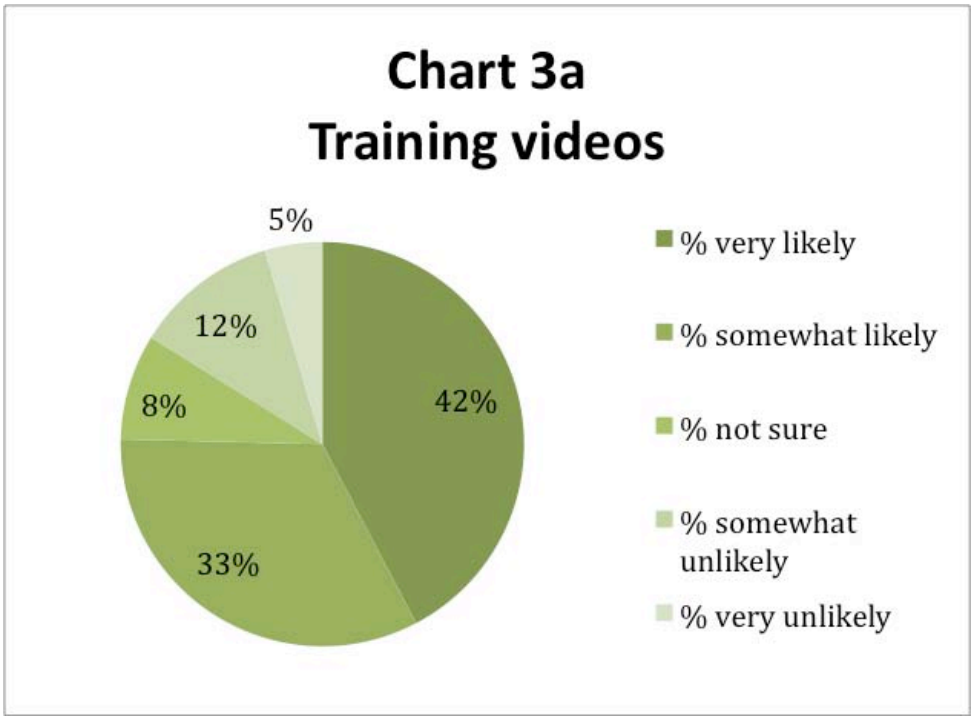
Appendix C-2: Spanish translations

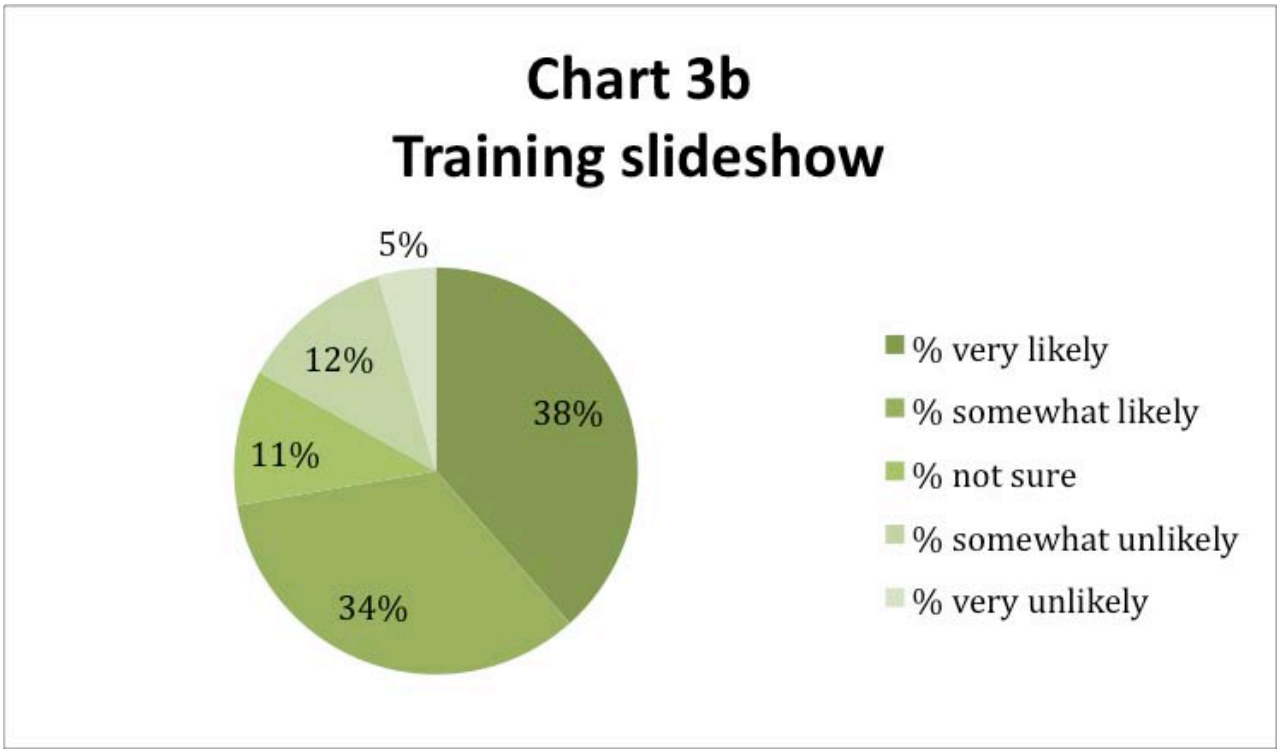
Did you or your institution use the Spanish-language NanoDays materials?



Appendix C-3: Additional training materials

How likely do you think your institution would be to use the following additional training materials if included in your NanoDays kit?





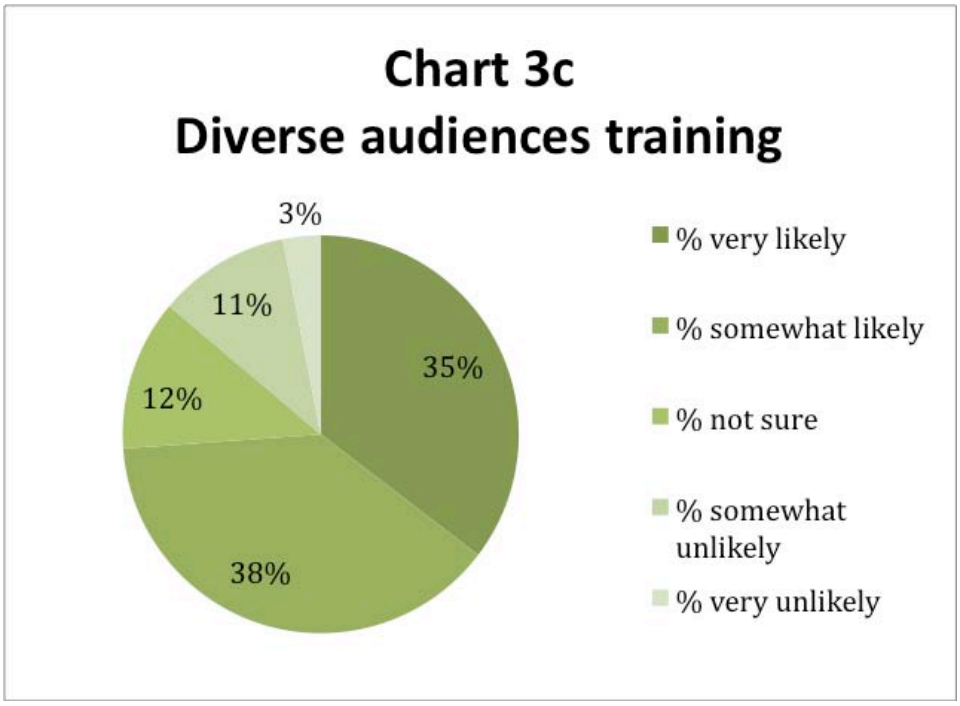


Chart 3c
Diverse audiences training
3%
11%
35%
12%
38%
% very likely
% somewhat likely
% not sure
% somewhat unlikely
% very unlikely

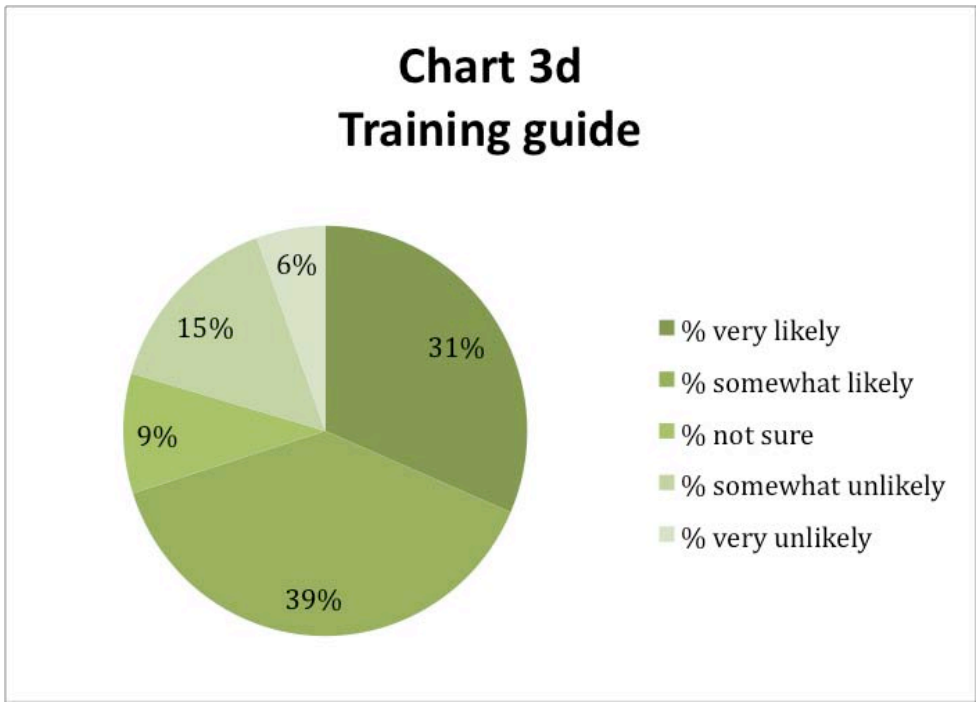
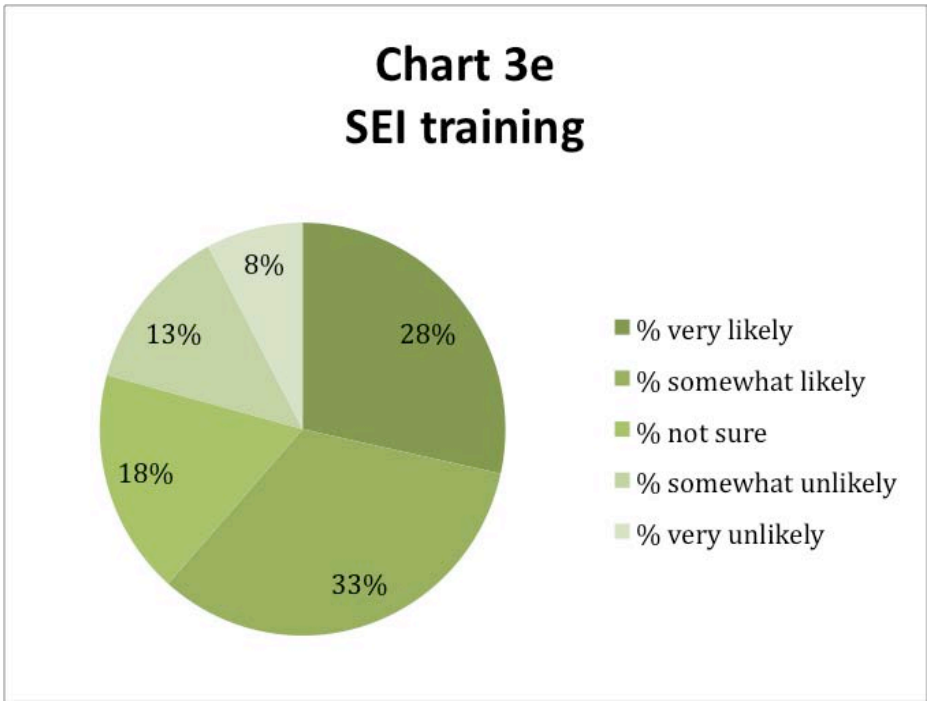


Chart 3d
Training guide
6%
15%
31%
9%
39%
% very likely
% somewhat likely
% not sure
% somewhat unlikely
% very unlikely



Verbatim comments:

- *We do a lot of training and mostly use our own created materials, but seeing other training materials would be helpful.*
- *Quick overview of nanotechnology and why it is important. We utilize a lot of volunteers that may not be strong in science and may only be helping with this event so we have a short amount of time for training. We have more time to devote to training for the staff members.*
- *A visual representation of the training materials would be more effective than the written materials.*
- *I like the NISE training videos online. We referred to several before the event.*
- *We provide training before NanoDays and before each of our public outreach activities. I might use training materials if you provide them, but I've developed some of our own, and I use materials that coincide with an undergrad teaching program here on our campus, as many of our undergrads are in that program as well as ours.*
- *We made our own videos for training volunteers, so those would be very helpful!*
- *NISE net has wonderful materials*
- *The materials were very self-explanatory for the most part, but maybe that's because we are used to doing science based programs!*
- *Simple and visual. I love the fact that you include s learning objectives that are easy to read and understand. Since we use a wide variety of ages and experiences for volunteers it helps to have basic information.*
- *The Miller and Peterson training materials were useful for giving staff and volunteers background in nanotechnology.*

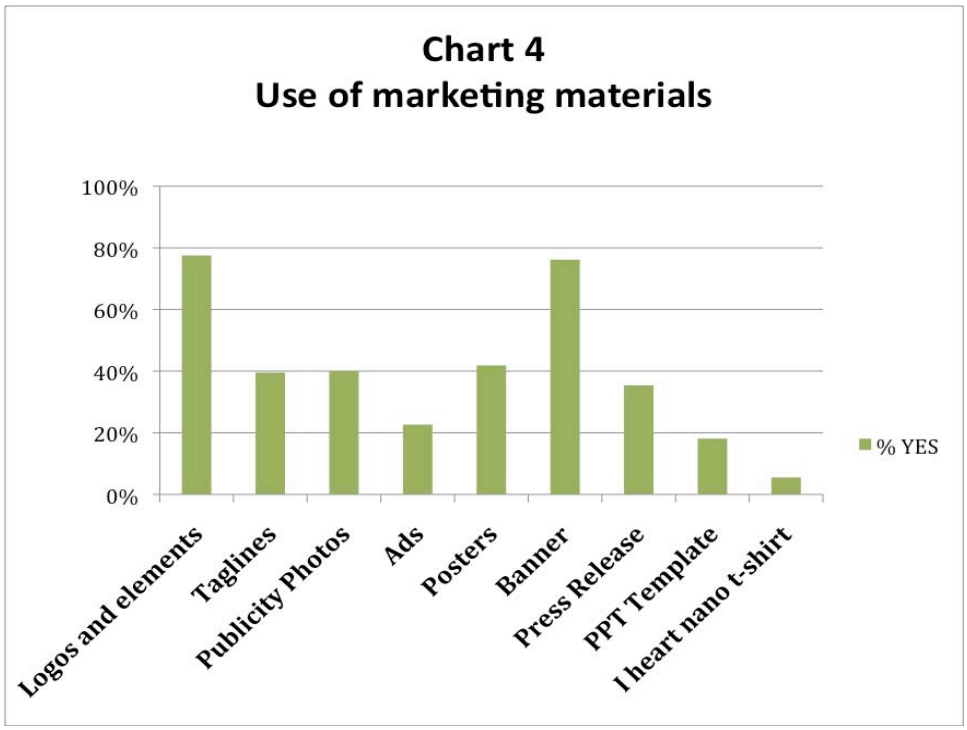
- *Video demonstrations, esp. of scientists explaining content behind activities in kid-friendly language.*
- *I think we had a very good thing using students in our presentations; something we could provide them on "how to present to the public" would be very helpful.*
- *The ethical implications can be somewhat difficult for a volunteer or even a staff member to handle unless they understand the concept of Nanoscience more fully. They are not the type of conversations to have on a casual basis.*
- *I don't have time to read big bunches of material, so a video would be great.*
- *Our volunteers and staff usually come from early childhood programs, so materials that easily make the point are needed. They will be helping guests who for the most part are non-science types, but willing to learn. Videos or hands-on lessons would work. We used the approach of asking them to be the students and going through the exercises, then having them practice on each other. Our docents were very good at getting children any where from 7 to 90 to understand about nanos, but the younger ones were still pretty clueless. Any ideas about addressing the subject with a younger audience would be helpful.*
- *Training materials that clearly differentiate between 'examples of nanotechnology' and 'concepts of nanotechnology'*
- *Our staff training typically happens in the two weeks leading up to NanoDays, and is usually 45-60 minutes of an introduction to nano concepts, and an overview of what is in the kits. It's always tricky trying to find time for all of our staff to rotate through this training, so anything to help streamline it (videos, powerpoints) would be very helpful. I think all of the instructions for performing the activities are pretty clear--but having a video of someone doing it live could be a potential improvement.*
- *Slideshows regarding nanoscale science overall would be very helpful to ensure that all staff people feel confident explaining the NISE net activities.*
- *Considering how many volunteers participated in NanoDays, I think it would be helpful to have a short video explaining the "what and how to's" for each activity that could be emailed the person working that activity to study in advance.*
- *Ah, multi-modal learning, text, audio and video resources along with hands on activities. Video and slide shows would be a great addition, and a wonderful way to spread the capabilities[…]. I could use them for the in-service sessions, and I assume they would be available for staff to view on line. [Organization] has an exceptionally diverse staff and customer base.*
- *The background materials provided are quite clear and concise, a feature that I hope continues into the future.*
- *The material was helpful, but time was a major factor in limiting our pre-NanoDays training.*
- *I'm especially interested in training materials to engage public about societal/ethical implications of Nano.*
- *More detailed information about the materials sent and the application of nanotechnology would inform the use of these materials.*
- *I find my facilitators learn what they need by DOING the activities!*

- *Training materials would be very useful and helpful for working with volunteers. It takes an average of 50-75 volunteers to run our expo and ensuring they are all trained is a challenge.*
- *We would like ready-to-use training materials to train incoming staff and volunteers for the NanoDays event. The training guide, slideshow, and videos would work for that. Re videos: We do not need videos of each activity, because the activities are easy to learn and we prefer to have volunteers role-play them to learn them. But videos modeling good presentation skills and good visitor interactions would be useful, using a sample NanoDays activity. The training materials would need to accomplish the training in a relatively brief time period, in an hour or two at most. We would also use materials related to societal and ethical implications and reaching diverse audiences to train ongoing staff, but we might not use them for once-a-year NanoDays volunteers (unless this content were embedded in other training materials, but that treatment would need to be fairly brief). It would be nice if the materials served as general training materials, not just nano-specific training, so that we could use them at other times too.*
- *Any of the above would be desirable. One copy of physical materials plus electronic version that could be shared with volunteers online would be great. Something our high school and adult volunteers could review on their own schedule would be very useful. Built in quizzes that assess whether they understood would be the gold standard.*
- *anything online that could be send ahead to volunteer staff. We had some trouble with people showing up 30min before their activity and trying to teach them how to lead the activity and the science behind it.*
- *I think what you already give us is excellent. We hope to use the Spanish text next year.*
- *The slideshow and the video sound really helpful, but the length of these two media pieces would determine whether we would use them or not. I'm guessing they wouldn't be super long, so I think we could use them. The societal and ethical implications training would be GREAT! To give volunteers more confidence in talking about these issues would be fantastic.*
- *A one-page sheet that we can hand to volunteers. Maybe a special promo item we can give to volunteers (e.g., water bottle, etc.)*
- *All materials would be useful since I am not well versed in Nano yet.*
- *The staff/volunteers for our events were undergraduate and graduate students from [University], so our training strategy was quite easy in the sense that [Scientist] familiarized one SWE student and one engineer faculty with all the activities during one afternoon. Afterward student and faculty trained the 40+ students that would be guiding the hands-on activities on a different day. Additional training material becomes more relevant to train teachers to provided these kind of activities in their classrooms. Professional development at [University] takes place during the summer, so having a DVD with all the activity demonstrated will increase the possibility for the teachers to replicate those activity in their classroom.*
- *Any training materials that can be provided to help in preparing our staff, interns and volunteers to participate in and help facilitate any NanoDays programs would be hugely beneficial to our organization.*
- *The explanations in the display stand for each demonstration were just fine*

- *It is difficult to explain how to facilitate activities, allowing the participants to be the ones most involved. Many student helpers want to lecture and demonstrate, even when instructed otherwise. Training materials, especially videos that compared and contrasted methods, would be very helpful. (If I create a service learning course to prepare for NanoDays, it will contain a lot more training than we currently are able to provide.)*
- *n/a*

Appendix C-4: Additional marketing materials

Did you or your institution use any of the following NanoDays marketing materials?



Example verbatim comments:

- *The marketing materials that were provided were sufficient for our organization*
- *The posters were in PDF format and I don't know how to change the dates to make them unique to us. I don't believe I have the program for it.*
- *These materials are great, we just need better coordination with our PR staff*
- *Great materials, better than most marketing materials we get. Great design and easy to use.*
- *Making them in a format that could be edited in Microsoft Publisher or Adobe InDesign.*
- *Nothing- it's great!*
- *We would love T-shirts!!! :) But everything you provide is amazing. We enjoy the tag-lines and banners.*
- *We think it is great that you provide a variety of marketing options! Additional videos to embed (or send people a link to) would probably be useful.*
- *Can't think of anything. They were pretty good.*
- *They are great and thought we don't use many directly as provided, they are a good reference for integration with our own format*
- *We wear "I am made of atoms" shirts during our programs. We have distributed a LOT of little probe magnets with the NISE logo!*

- *They're good as they are- we did a press release in 2009 which really helped draw people in.*
- *We market our as part of University Days program every year.*
- *They are already more than sufficient.*
- *Because we targeted science classrooms maybe preprinted classroom posters would be good.*
- *They are already very useful. Some flyers in English/Spanish would be useful. Maybe have some text that we could use to describe the event to sell the public on it. This would be very helpful when we put it online in places like craigslist events.*
- *They were wonderful - our graphics person was thrilled to have things pre-done that could be printed out and used in emails, flyers, and posters.*
- *More of them in more choices*
- *They were very useful.*
- *Professional pre-printed posters were very useful. The "I heart Nano" tattoos were popular, as were the hands-on items (magnetic probe). Any "take-home" science things like the magnetic probe would go over really well. In our particular case, "Expo" is the main draw to campus, so our promotional materials are primarily used in the campus spaces to draw people to the exhibits. More posters would mean we could post more in the other engineering building on campus.*
- *Think you've got that covered.*
- *I don't know.*
- *Our marketing/communications person says she can't think of anything you hadn't already done. Kudos! Were happy with what you provided.*
- *I work with an institution that jealously guards its public image, so I'm limited in what materials I can use for publicity. Most material must be generated by our own departments.*
- *Handouts with background info for parents and educators -Lesson plans to go along with the demos would be wonderful.*
- *not sure*
- *I really appreciated the upgraded and eye-catching banner this year--it was a huge hit with our staff, and really helped draw in audiences for our activities! I think NISE Net does a great job of putting together all of the kit, but makes it especially easy to utilize the graphic elements and marketing materials. Having a CD that I can hand to our graphic designer and say "have fun!" is GREAT!*
- *We had some trouble getting the publicity photos off of the disc, but just ended up using the photos directly from the NISE Net website. Really, it wasn't a problem in the end because everyone at the NISE net was very helpful in getting us the material right away.*
- *offer other software programs like Microsoft Publisher or Adobe InDesign.*
- *I was unaware of the t-shirt logo. Now that I know about it I might be able to have a sponsor print shirts next year for our staff, volunteers, and a few lucky NanoDays patrons.*
- *Hopefully, we will make better use of materials next year. Over all, the programs we presented are such a very tiny, nano, part of what the library system does, it is hard to get special attention from marketing.*

- *Since our "main event" takes place at our nanotech teacher conference--"give aways" are always useful.*
- *I am not sure. Releasing them as far ahead of time as possible can make it more feasible for me to get the museum's marketing dept. to use the materials in promotional paper publications. These often have a long lead time so content must be established months ahead of publication.*
- *More pictures (stock photos?) that show the application of nanotechnology in the real world rather than only the physical kit experiments.*
- *Again, time was the only restraining factor in our usage of the materials available. There was nothing inhibiting on your end.*
- *Unfortunately, the reason we did not use some of the marketing materials were due to financial constraints.*
- *We did use the "I'm made of atoms" t-shirt design.*
- *Our PR department has a ready to go file on Nano Days at this point.*
- *Larger quantities of certain materials - fabrics for testing, photovoltaic cells, tiny teacups.*
- *(Maybe I just missed it), but a set of individual files with the various logos & artwork designs (I did a cut & paste from your materials)*
- *A lot of the flyers were only available as Adobe Illustrator documents, making them inaccessible to us and, I imagine, many other institutions.*
- *All of the marketing materials are useful. Maybe a website template/email template design would be helpful.*
- *Our PR staff found all the materials helpful and easy to use. The publicity photos, ad and poster templates, and banners made it into our press coverage, onto our website, and into our onsite advertising and day-of information postings. We did post the promotional video onto our facebook site, but because it came so late, we were unable to use it elsewhere.*
- *We love the emotionally engaging photos showing kids and families! Being able to edit the adds and select elements to incorporate on our web page and other media is a great feature. We would use the t-shirt design if we could afford to give them out to staff, volunteers, or as prizes. Maybe a local sponsorship appeal package?*
- *Thus far we've been piggy backing on events that already draw a large number of people so we've done little to no advertising.*
- *The taglines were great- we had candy labels printed with some of the taglines and used the "nanocandy" in our prize bags.*
- *More videos to imbed/post on museum website/social media platforms.*
- *More give away presents*
- *It would be useful to have a list of NanoDays blurbs to promote on facebook or twitter*
- *The marketing materials were great, we just didn't give ourselves enough planning time to make use of them -- hope to do better next year*

- *Possibly bigger banners- I know that that gets tricky, though. The current size is probably most accessible for the most museums. We are more limited by where we can advertise (our marketing department takes care of that, and we have not marketing budget) than what was available. What you have is great!*
- *I Hand the disk to my marketing group, they ask me a question, I ask them if they looked at the disk, and they never call me back! :) It works great for me.*
- *The marketing materials were great. We did not use many of them because of internal schedule issues.*
- *I have witnessed the improvements to the marketing materials over the years and am so grateful for them. Since I can be greedy here, I would love to have the materials as both InDesign and Illustrator files, although the .ai files included were awesome, with all linked files and everything we need. I am glad that the marketing booklet was coil-bound this year. I would like to see the ads in SAU measurements -- one-column, two-column, etc. I used the Illustrator files to make a "generic" full-color flyer that has NanoDays graphics but no date. I printed enough of these flyers that we can use them year after year; we will just run them through our copier to customize each year's information.*
- *We are more likely to use marketing materials next year now that we are confident with nanoscience information and working to grow our organization participation.*
- *May be increase the number of banners you send to us.*
- *We found that the smaller materials that participants could take away (e.g. magnet, tattoos, small samples) were the most popular.*
- *Continue to provide resources for our marketing department to pull from. They were super excited that there were sample press releases and so much information that they could use for this. Since this was our first NanoDays event, our education really started with our staff - not just the programs and education staff but senior staff and support departments like Marketing and Development.*
- *If the students in the photographs looked as diverse as our student participants, we might use them.*
- *n/a*
- *It was fine.*

Appendix C-5: Comments about NanoDays kits

- *No [other comments or suggestions]. I just want you to know that we are very appreciative of the materials we receive and put them to good use each year. They are very impressive and professional!!!*
- *All the informational packets and supplement resources the [Museum] received worked wonderfully.*
- *I do not feel that materials from the previous year's NanoDays kit should be sent with the new kit. It is a waste of paper and resources.*
- *No, they were great! As a Program Director who usually "does it all"--marketing materials, press release, etc., it was nice to have this already done for us!*
- *Keep doing a great job! The activities that visitors respond to the best are the ones that are simple, everyday materials but have a good 'wow' factor or unusual reaction. I.e. gravity cups.*
- *Thanks for everything! Keep doing what you all do- this is quite a treat for us :)*
- *The addition of new activities made it nice for people who remembered the activities from last year, so any new ones for 2012 would be great. People really liked the handouts.*
- *We really benefited from the kits because the Making Stuff demos were more difficult to adapt to tables on the floor. Kit materials for NanoDays are always well written so that I can easily train volunteers. Thank you.*
- *Not at this time.*
- *Keep up the good work! The website has really improved in the last two years. It is very easy to find activities using the search tool.*
- *Try and come up with more activities without water. This makes it harder in case you are presenting in an area without a source of water close by.*
- *It would be great to get new activities, to keep the event fresh. Thanks for doing such a great job!*
- *Nope. You're doing a fabulous job! Thank you for coordinating this. You are AMAZING!*
- *We want to do it again! Thanks!*
- *Thanks!*
- *Minor item: Plastic folders with all written materials in kit arrived cracked and broken. Great idea, Sparco folders just not robust enough. These are the best, most comprehensive resource materials we have ever received.*
- *None that I haven't already mentioned.*
- *Some of the older kit materials looked very interesting; resources on how to reproduce or obtain these would be very helpful and of interest. Thank you! We consider our event to be a success, both for the visitors and for the presenting students.*
- *The banners are expensive, I think I'd leave them out. Posters for on floor events with the general public should probably not include ethical information. (The stuffed bear poster.) These topics require more conversation than should be presented with children present.*

- *As far as the actual hands on activity instructions that you provide. . . I would like to see a simplified version for young readers.*
- *During some of our busiest times, more sand and "pants" would have helped. We bought more oven mitts and used our own blocks to help cut down on wait time for that activity. Those were places that the docents spent a lot of time with the children while parents perused the other materials. More sand!*
- *The new posters were awesome and really made a difference in the table set ups. However, they were very tightly packed in the poster tubes with the banner and the measure me height poster. This made the materials difficult to remove, and the posters tore a bit.*
- *Instructions on how to replace materials- both consumable and nonconsumable. For example, where can I find another tiny teacup from last year's kit?*
- *The only suggestion that I can think of is to include a diagram of how to put all of the demo boxes back inside of the large box! Our staff is so excited to see the new demos each year that we pull everything out of the kit once it arrives--but we always forget to pay attention how it packs up again! (Seriously, that's the only suggestion for improvement I have--the kits are wonderful as-is!)*
- *The kits continue to become more tactile and sensory, which is great for our audience. Likewise, the signage has become easier to understand. Keep up the great work and thank you!*
- *Thanks so much for your dedication to Nano Science and outreach to the community regarding NanoScience! We get so excited each year the kits arrive, it is like Christmas morning for us :)*
- *More visuals to accompany the activities. Also have them laminated so they will be easier to display and so they will last longer. As an artist I appreciate the beauty of nanoscale imagery and I had hoped to find some to display at our event. I did, however it would have involved a curated exhibit or purchasing the images at fine art prices. Also, a sample exit survey would be helpful for to collect people's opinions of NanoDays events and activities.*
- *Have you thought about translating any of the materials into additional languages? Is there a book list of non-fiction and fiction titles, especially for children, that relate to nano?*
- *Keep up the good work. Your materials get better and better each year! Thank you.*
- *Great content as always. I would like to see more items related to biological sciences if possible.*
- *Make sure that experiments can be done over and over again (the tiny pants get soaked fast on busy days)! We appreciated that the kits covered many learning areas i.e. mathematical, language skills, scientific. Also, for "thin films" we compared the peacock feather and a regular feather under a microscope. This was a great addition to the kit! We liked the memory game cards that had a progression "human, blood cell, virus" like the "how small is nano" book. Overall, we love the kits. They help us to provide a unique experience for our visitors and are very easily adapted to various program formats and skill levels.*
- *Make the time to present longer. With only 2 weekends it was challenging to schedule and/or bring additional outside presenters.*
- *Alice in NanoLand was not very engaging.*
- *The resources available from your website are spectacular. If I think of anything I'll make sure and get in contact with you all.*

- *The only activity that really didn't work for us was the nano sand. Between sand going all over and kids squirting too much water (because that's what kids do), the demo was a mess 1.5 hours into our 6 hour event and we had to pull it. Even the nano sand was getting kind of soggy. Probably won't use it again.*
- *I think training resources would be very helpful.*
- *We like that the kit is ready-to-use, and takes relatively little preparation and training to pull off an event. We would like new kinds of visitor experiences like longer programs, but things that work in the context of a busy event and remain relatively easy to implement would work best for us.*
- *We always enjoy our surprise packages with new Nano kits. After introducing them to the volunteers, it is great to be able to refer them to NISE net for more info about their specific kit.*
- *On the website, I always need to hunt for the list of 'resources', that includes those that go with the various activities -- would also be helpful within that if there were an obvious (brief) contents\index or searchable list -- so one need not scan through the various pages to find, e.g., the handouts on 'ferro-fluid' (and this will become more essential as the list of activities gets longer -- and I will have a couple to submit soon for your consideration).*
- *The nano sand activity was really messy. We decided to only showcase the nano sand and remove the regular sand so they did not get mixed together and we could recover the nano sand for reuse (though it did eventually 'wear out'). A larger packet of nano sand and no regular sand would be preferable. The static electricity vs. gravity demo was great out of the box but day after day we found that it stopped working after a few minutes. I tested several variables - putting the fleece in the dryer, a different fleece, cleaning any hand lotion residue off the jar, shaking it, whacking it, etc - but I couldn't figure out how to discharge/recharge it when it failed. Leaving it alone for a couple of days helped. Suggestions welcome! I finally went to a hobby store and bought a miniature punch bowl set with tiny brass cups to replace the white plastic teacup that always ends up getting crushed by an enthusiastic child. It is a little harder to see the water in the brass cup, but it lasts longer. Must remember to dry out the cup with a cotton swap or it will rust!*
- *More suggestions of links between the abstract activities in the kit and real life examples would be useful. We've developed a few of these - including using a dollar bill and magnets to demonstrate ferrofluid, a soccer ball to bring life to buckyballs, and demonstrating the power of small by showing how sugar sifts through cheesecloth, but cornflakes don't. A list of other things like this that wouldn't be put in a kit, but could easily be added to existing demonstrations could be useful.*
- *More materials to engage older children.*
- *It is going great. Look forward to it.*
- *It would be extremely helpful to have videos of other people doing the activities with visitors.*
- *Do all of the old activities make it into an online archive or just some of them?*
- *The sunscreen sample lotions in the Sun Block Hands-on Activity did not look different enough to get the point across. The two most favorite Hands-on Activities are Surface Area and Nano Fabric.*
- *I miss the bucky balls!*
- *2011 kit was great!*
- *NanoDays logo T-shirt transfers*

- *We still have trouble keeping track of all the activities and their names. E.g., the "Mitten Challenge" is known to us as "the LEGO activity." I don't even know the real name of the activity with the magnets; it's just the magnet activity. So maybe something in the naming of the activities that ties more closely to how people would refer to them. Also, I love the Web site and the catalog and searchability is awesome. However, after many years of doing NanoDays, I find myself wishing I had a one-page inventory of all the kit activities and a one-sentence description of them. It is getting harder for us to go back through the years and remember what exactly we have in inventory, what needs to be restocked, what can just be used as-is, etc. I love the packaging; everything in its own neat container. Thanks! Oddly, the plastic envelopes seemed to crack and break this year. But everything else holds up great.*
- *Just keep coming up with more/new hands-on kits and re-supplying the popular ones (like make a infrared heat card for your thumb print)*
- *Keep up the awesome work! We're having a ball!*
- *I hope to continue working with you and gaining more knowledge to share with the public. Thank you!*
- *We see a great progress and refinement of the NanoDays kit each year. Thank you very much for your hard work and dedication in making these resources and materials available to us, and to the children who are our future!*
- *All the activities were great and easy to use. The only one we didn't use was the book.*
- *This is a great program. It is not often that you find the quality of presentation of materials as well as engaging materials that is packaged and ready for you to use. We love this initiative - it has been so impactful to growth of our staff. Thank you!*
- *An experienced teacher said that students love certificates. If NISE could create a template for a NanoDays Participation certificate, each site could do a little editing to personalize these certificates and then sign them and distribute them to the students. I was going to design my own NanoDays certificate, but ran out of time.*
- *having 'things' to hand out seems to work best*
- *I look forward to seeing what new materials are used for 2012!*
- *For my first nano-days I thought it was great!*

Appendix C-6: Comments about NanoDays experience

- *Our NanoDays audience keeps growing each year. Our staff also loves this event. It is a joy to teach the general public about nanoscience. The public finds it fascinating and enjoys the hands-on aspects of the event. We hope to keep participating for years to come!!!!*
- *The NISE network has been phenomenal in relaying new and unique resources every year, and as a result, our Nano Day seems to get better year after year; it is terrific to be able to mark its evolutionary progress. This was the third time we were hosting Nano Day, and I would have to say that this was the best one yet! Audience participation and interest was very high, especially by adults.*
- *The [Museum] was thrilled to participate in NanoDays 2011 and looks forward to being a part of this exciting event next year! The educational and supplemental materials were fantastic and will continue to be a wonderful resource for our organization.*
- *I really like the new kit activities! A few comments about materials: 1) What is the brand/type of black bristol paper in the thin films? I purchased additional supplies of a paper I thought was similar, but the color ran in the water and made a MESS! Please specify a location/source for this paper. 2) Static Beads activity - is there a way to discharge the tubes between demos? 3) The Powers of Ten card game was particularly popular at our institution and will be used by staff all over for a variety of activities. Volunteers LOVED it, and Visitors loved it! They asked where they can purchase these cards. It would be great to offer them for sale at the museum gift shops. Many people would buy them!*
- *NanoDays was a nice break from the norm. It was very interesting to see how guests of all ages reacted to some of the NanoDays activities. We are looking forward to next year!*
- *The two week period chosen this year avoided Easter and the associated break, unlike last year. This was partly a good thing, because generally more staff and volunteers were available to help. There was also the downside of it not being anywhere near as busy with guests as last year's, so we reached fewer people with our NanoDays activities.*
- *One thing missing from this year's kit were buckyballs. People really enjoy making them.*
- *Great as always. The Thin Films activity was a little difficult to explain, but otherwise, a fairly well-rounded kit this year. It would be nice if the Carbon Nanotube made it officially into the NanoDays kit with new signs, etc. It's done pretty extensively throughout the Network, so it would be nice to have matching signs.*
- *This was our first and thought it was a great success.*
- *It was a huge success! Many people were excited about the focus on nanoscience and were even more excited to learn about the many opportunities provided to informal education institutions by the NISE Network. NanoDays was a wonderful platform for the [Museum] to develop a partnership with the science department at the [University]. Now that we have this connection, we can explore the possibility of branching out more into the advocacy arena of nanoscience for future NanoDays events.*
- *Great experience! Activities are easy to learn, interesting, and demonstrate an interesting property of nanotechnology. Really appreciate how turn key the materials are-very little prep needed to establish a great event!*

- *It was a huge success. The children could not get enough. We finally had to tell them time was up. Every day they ask when we are going to do our Nano experiments. I have walked by groups of children as they are talking with each other and heard them discussing something as being a nano. It was one of the best programs I have ever taught. The children don't get science in school anymore, so this was a special treat. It was created so the children could relate it to everyday life.*
- *All of the activities in the physical kit were well-chosen and featured eminently clear instructions. My only suggestion is for the Nano Sand activity. The "regular" sand was not exactly regular in its color, and behaved so strangely that it was difficult to tell it from the Nano Sand based on its behavior with water. I think that ordinary play sand would have worked better as a "control."*
- *The kits are very well thought out and prepared. Thanks!*
- *We love the kit! Thank you so much! Our Nano Days this year was a success compared to last year especially. Kids had fun, the show was a blast, and we all made this a great event for families to enjoy.*
- *Our NanoDays event was very well received by participants of all ages and we look forward to hosting another, larger event in the future. We found the materials and resources to be user and kid friendly.*
- *Nano Days is awesome. I love the title "The Biggest Event for the Smallest Science".*
- *Thanks to NISE Net, our amazing partners at the [Museum] and our Center's knowledgeable volunteers, NanoDays is always awesome. This year, we found that the Static Electricity activity "stops working" after a while. We "fixed" the activity by having people not touch any part of the "test tubes" except the top plastic portion, but "please touch but don't touch" didn't work for very long with many of our guests (kids). Did any other kit users experience this phenomenon as well? We'd love to know. Thin Films is a hit, especially in solar-cell conscious [City]. All ages really got the concept. Many, many, many thanks!*
- *We much appreciated the new activities, the upgraded/revised signs from previous kits, the non-paper measuring chart, and the nano and society handouts. The handouts generated a lot of good discussion and complimented the activities nicely.*
- *Mitten challenge and exploring size were not engaging to our visitors. Combined thin films with a couple of bubble trays and that worked well to draw younger visitors to table.*
- *Loved it. I learned a lot and so did our community of learners! Can't wait for next year.*
- *Teachers were interested in the activities and materials and wished that they could get the kits too!*
- *Once again, very enjoyable experience with consistently engaged visitors. Also a nice way to reach out and work with community partners.*
- *We had one return visitor that commented that after they had been to our NanoDays event, they attended another event in the state that featured nano science and engineering. She was impressed that we were all "on the same page." One funny thing-- we stuck a plastic gecko onto the ceiling of our museum with magnets and it is amazing how many children notice and ask, "What is that and why is it up there?" -- providing us with a great opportunity to talk about nano at any time. We have found the activities and materials provided by NISE net to be accurate, well organized, easy to teach to others, and valuable to all of our programs.*
- *It's a great program- our visitors love it!*

- *The kits were much better this year.*
- *Thank you for putting together such complete, understandable, and fun activity kits!*
- *We love this annual event. Thanks for helping make it happen!*
- *This was a lot of fun for the graduate students & faculty involved. Everyone enjoyed getting a chance to talk to local high school kids.*
- *This is so well organized and put together. This is my 2nd time doing NanoDays and I was inexperienced with doing a museum set up and with marketing. You made this very easy to organize, to advertise, and to implement, thank you!*
- *It was awesome! The materials were very well packaged and explained, so we were able to have volunteers step in and help with minimal training. The people who attended it loved it! We usually do space centered activities, so this was a great addition to and variation for our programs. We plan on using the materials again and again!*
- *Thank you! One of my personal goals of participating in this event was to coordinate a collaboration between community colleges and four year colleges in the [Area]. This kit allowed me to focus on the collaboration between the schools. This project has sparked an interest between the schools to work together in other chemistry outreach programs at the new children's museum. Really, I can't thank you enough for providing this opportunity.*
- *What went well about our event: For the first time we made large signs indicating the times of the various activities and directing visitors into the large room in which the table-top activities were housed. This helped to steer visitors to this side area better than in the past. We had a high level of participation by student volunteers again. There were several new table-top activities this year, all of which worked well. The three classes helped to bring in extra visitors and to spread them throughout the day. The training of the undergraduate class leaders really helped, and the classes were more hands-on than in 2010. We received many compliments about the content and the delivery of all activities (table-top and classroom). Overall attendance at the event was up considerably from the prior two years. What we'd do differently next time: Possibly offer four classes, two in the morning and two in the afternoon. Sort the class participants by age for all four classes. Consider skipping the noontime demonstration. Although well-received, it left little time for some of the visitors to get lunch (particularly those who were enrolled in morning and afternoon classes).*
- *Great way for us to showcase the research of our faculty. We really appreciate the physical kit. It is very useful to us.*
- *This was our first year and we had no idea of what to expect. It was a very well put together kit and the public responded well to it. We look forward to hosting more events in the future.*
- *We were thrilled with this year's event. Last year we hosted our first event and hoped for 25 attendees. We had 31. This year we wanted to double our attendance (60) and we had 120! It worked well to integrate an entertainment component with the event because it seemed to draw in more people.*
- *Found that visitors had a great interest in, but little knowledge of nanotechnology. Visitors enjoyed interacting with kit activities.*

- *The NanoDays kits are of the best quality and without them I don't know how much our small museum would be able to participate. With the kits we have been able to offer new programming to the local school. all of the local science teachers love the program for the fact that the kids get hands on science programming and materials something are local schools have drop from their curriculums. thank you on behalf of our museum and all the schools that have participated in Nano days or had a Nano workshop.*
- *We love the resources available to us and use the activities in multiple settings.*
- *These kits are extremely helpful and great tools to work with visitors.*
- *It was wildly successful! We almost had kids (and adults) in tears when we had to pack up so our volunteers could go home. Visitors really enjoyed the activities--especially the scented balloons and tiny pants--and our volunteers commented that they felt like they really bolstered an interest and confidence in science and nanotechnology in the visitors.*
- *The children really enjoyed the activities even if they were to small to fully understand the science behind it.*
- *This year's kit was well-suited to our audience--very hands-on, concrete, and fun!*
- *We really appreciate the kits. We hope to continue this event annually. The timing lined up well with area school's spring breaks. We also hope to bring in area universities […] and paper / forest products organizations to share their research in the field of nanotechnology.*
- *Very rewarding! The "Static electricity + spheres" materials broke down; I think the contents were exposed to humidity and the static effect was no longer observable after a brief time.*
- *People are beginning to recognize what NanoDays means and called and looked forward to the event. We're about 4 years into this. I suspect next year our numbers will go up even higher.*
- *We are very happy to be a partner again this year!!!*
- *Wow! We got good press this year. Our promotions reached the local TV news, front page of [the] newspaper, and was broadcast on the local NPR station. We more that doubled our attendance compared to other Nano Days we have held. We could have used more volunteers to help us pull the event off. Kids really loved almost all of the hands on stuff. Weirdly, practically no one did the "oven mitt lego" challenge. Lots of parents, asked lots of good questions about Nano. It was a great event. Very intense week.*
- *We wish that [University] students and faculty could have been able to spend more time with NanoDays, as did they. In 12 weeks time those students who helped set up for last week's celebration will return and we will see if we can do a mini-celebration at that time. At least one professor who teaches a class in nanotechnology in the medical arena is willing to do some activities with us. Needless to say, we were quite excited about the experience as were our guests. All in all, we were very gratified with the interest from the people who came to see the exhibit and do the activities.*
- *Great new electrostatic demo. High school juniors and seniors loved the tattoos. I need to get more for when I give nanotalks at schools.*
- *It was a great event, made easier to facilitate through the availability of the kits that were provided.*
- *An effective and engaging weekend of programming.*

- *This was the first year that we have really collaborated with other groups for NanoDays--and it was wonderful! We're looking forward to continuing to work with these groups on nano-related projects--including next year's NanoDays celebration!*
- *Every year, the language of the signage and the activities seem to become more inclusive of our audience of families with young children. Also, incorporating Making Stuff activities and videos seemed to give a nice tie in for our audience to some of the materials science applications of the nanoscale.*
- *Our graduate students LOVE using the kits. It makes it so easy for them when they are preparing demonstrations. They love the organization. The kids love the demos as well!*
- *We had a wonderful event thanks to the extensive support from NISE.net and collaboration between [Organization], [Organization], and [Organization].*
- *Wow! It was Wonderful! Impressed by a table full of hands-on activities, friendly people, and an iconic nanotube sculpture made from balloons at ASTC in Forth Worth several years back, I knew then that NISE Net offered the resources [Organization] could benefit from. Like a fish out of water I, an art education curator, dove blindly into NanoDays and was awarded the 2011 kit for [Organization]. And let me say, the website and kit exceeded my expectations. I was so impressed and relieved when I opened the kit to find how complete each activity was, each kit even had a sign and sign holder, wow! Thanks for being so thorough in your planning and preparation. This made it so much easier for me, an artist that loves science, facilitate this awesome event. Now that I've been adopted by so many local scientists I would love to see [Organization] host this national event annually.*
- *you provide a wealth of materials. We don't get to nearly all of them. perhaps, over the next several months, we'll make use of resources we haven't gotten to, for instance at a street fair in May.*
- *The kids were all excited about the hands-on activities and were amazed on what nano materials can do.*
- *This was our first year participating in NanoDays. It was a great experience and we look forward to participating again next year!*
- *(1) We have fully enjoyed our partnership with [Museum] and the NISE -- the graduate students enjoy presenting at NanoDays and have significantly improved their communication skills. (2) The powers of ten card game is great! We all loved the game and many members of out public audiences asked where they could purchase the game.*
- *I really appreciate the level of support that accompanies all of the wonderful free materials, and I hope the program continues well into the future.*
- *The kits are fantastic! The information is presented in a way that makes it easy for the staff to communicate the scientific principals to our young patrons. We did however, modify some the signage so it just had the instructions and a VERY simple explanation. This made it easier for us to facilitate multiple visitors/activities at a time. We provided further information verbally. We also love the tattoos!*
- *We absolutely love participating in NanoDays. It provides a wonderful opportunity to focus on one thing that we do for a period of time. It also facilitates wonderful collaborations with local organizations and universities.*

- *The activities and support materials are very well organized and easy to use. The video is a great introduction. We had several families who came several days during the week to try different activities! Like it very much, but wish could have NanoDays last for a month!*
- *NanoDays kit 2011 is very easy to use and makes science understand for everyone!*
- *Our experience with NanoDays was very successful. We look forward to continuing with the program and to presenting more of these interesting and informative activities.*
- *The professors tended to talk above the heads of many of the students, so if we could have them go through a "how to speak to the public" workshop we might be able to get them to engage the younger audience better. Foreign accents were also a significant challenge for the younger kids. We will also be changing the format of our presentation so that it is better age appropriate for younger students.*
- *NanoDays has been growing in popularity over the past couple of years.*
- *Nano Days seem to introduce visitors to a field of science they were unaware of previously. The children are fascinated by the unusual properties demonstrated while the adults are interested in discussing some of the ramifications of this rapidly developing science.*
- *During NanoDays @ [Organization], we included a special offering where students were invited to participate in a lab-based session that tested sands for hydrophobicity. This event was offered twice. Twenty two visitors participated in the sessions. Student work was collected to be analyzed. [Scientist] (Ask Dr. Nano) circulates during the event to engage participants in nanotechnology ideas. Participants gather to test his nano fiber lab coat with water and he discusses the body as a nano-machine. [College] student volunteers report that they learned about teaching strategies for informal education settings, as well as, nanoscience content. Participants ask many nano-related questions during their interactions with the variety of content.*
- *This was great -- used the 'card game' for the first time and it worked really well.*
- *As a children's science museum, we can use many of the NanoDays kit materials throughout our numerous clubs, camps, and educational programs. For instance, the ferrofluid material provided in the NISE kit can be used as a demonstration within our "Magnet Magic" field trip. Additionally, the Nano Sand and Nano Fabric provide excellent illustrations of the effects of surface tension and can be incorporated into our "Tense Water Drops" field trip. Not only did the kit materials prove useful as excellent teaching aids during the NanoDays event, but they also serve as great demonstrations to further enrich the quality of educational services our museum can provide.*
- *I certainly enjoyed learning about Nano Science and was equally excited to share in my FIRST Nano experience!!!! The ongoing self- training, coupled with the training resources/materials, and exposure to Nano just lends itself to a new conversation piece as I meet with diverse populations in the name of [Organization] or [Area].*
- *We had a very positive second-year experience and we are actively looking for ways to expand the reach of the program and involve more collaborators.*
- *This project provides a wonderful and highly effective mechanism for making "nano" tangible and meaningful to members of the general public of all ages. It is a pleasure and honor to be involved in such an important endeavor.*

- *We love the chance to put on our NanoDays event in [Town], and were especially pleased to have both an event at both [Museum] and [University].*
- *Thank you, NISE Net! Thank you NSF! This project is a fabulous success! The program materials are so wonderful and easy to implement. The professional development opportunities are truly priceless. Our small museum has learned so much about building capacity by being connected to this project. We are just beginning to branch out to other local community partners and look forward to seeing the collaborations grow.*
- *The posters were great!*
- *The kits are so well put together and interesting. They make it very easy to launch the Nano Days event.*
- *Thank you so much for developing the kit- it made planning and hosting the event so much easier. Everyone was very impressed with the activities and really enjoyed themselves. Our undergraduate student volunteers were very engaged in the event. I think part of it is because of the wealth of materials and information that NISE Net provides.*
- *Our collaboration with [University] was extremely successful, and we plan on continuing it in the future. Our partnership combined our drawing power and family audiences with experts doing research in the field who presented the NanoDays activities. It was a great experience.*
- *This year we had collaboration with [Museum]. It was displayed for two days at the Museum. We ran out of the liquid crystal display. The third day it was in [University] where undergraduate, graduate and faculty took part.*
- *The marketing materials were very useful. It would also be great to add to the marketing materials possible blurbs that could be used to promote NanoDays on facebook or twitter.*
- *Your kit is fantastic! It's immediately usable and made this complex science relatable. Due to the sheer number of visitors, I ended up buying several pounds of nano sand and the largest size nano fabric pants. The lego, tool activity was fun but the children were so young, I doubt they made the connection to nano science.*
- *The NanoDays kits were very easy to set up and use. They gave us the tools to better explain Nano to the public. We loved to be able to use these at both the NanoExpo and the Engineering Expo where the kids and the public both really were able to understand more about just what Nano is.*
- *The NanoDays event is becoming a tradition for our department and [Museum]. We are committed to continuing with this in the future.*
- *The kits are very attractive and easy to use.*
- *I would have to say that out of the three years that [Organization] has participated in NanoDays, this has been the best one yet. The simulated clean room was a huge success and a big hit especially with the kids. We truly look forward to doing this again next year!*
- *It was great to be a part of and to see visitors engage in nano.*

- *It is fabulous! We love the authentic experience it provides our High School students, the opportunities it has created for them, and the excitement it creates in the middle school students they engage with. We also love the community events- they are a great way for us to collaborate with others in our community who are striving to increase scientific awareness and practices in our community, but we get to do it in this fun and engaging way! Also, it is fabulous to hear from members of our community about their impressions and experiences with NanoDays. I was working in an elementary school, and a father who was there approached me to tell me about how he and his son had come to our last NanoDays event- they had never been to the Museum before. They had such a great time and thought that the materials were so engaging and well done, they became members.*
- *The collaboration with the [University] faculty and students has been very helpful and successful. We intend to continue and hopefully expanding this effort next year as well.*
- *Thank you so much for providing such incredible resources for NanoDays. Our visitors loved learning and exploring with great hands-on activities, and very clear guidelines/instruction sheets. Our staff felt that the activities hit many informal science objectives, and were both educational and attractive for exhibit spaces. The online resources and NISE Net website is extensive, and provided many of our visitors with extra information if they wanted. Overall, putting on NanoDays was an incredible experience: the ease of use for staff at the Museum, and approachability of activities for visitors was appreciated and welcomed. Thank you.*
- *This year we did not have our traditional NanoDays theme day, instead we had it earlier with our partnership with WBGH and Nova "Making Stuff." In addition we are planning to convert my 700sqft connecting gallery into a Nano Exhibit using the mini grant from NISE. The walls will have current Nano topics and current Nano activity in [Area] and there is a place for 3 Nano activity centers to have rotating hands on Nano activities available for our visitors.*
- *The kits were very well put together. Everything that was needed was available. I was able to bring the volunteers who were staffing the tables up to speed very quickly using the background information you provided.*
- *The materials provided with NanoDays are wonderful! We thoroughly enjoy receiving the materials in the mail and brainstorming ways to make our programs better. We have used many NanoDays activities over the years to meet our nanotechnology needs here at [Research Institution], whether it be in our Science Learning Center programs (grades 1-6) or middle school and high school programs (7-12). Thanks for the great work!*
- *Materials and graphics get better each year, especially this year. Public awareness is increasing*
- *As always, we are so grateful to receive the physical kit. In fact, I'm not sure how we could do everything we have done without those materials. We are slowly bringing in more university students, faculty and now even private industry and our local hospital. We are encouraging them to develop their own activities to share with the public. However, the kit activities are the meat of what we do. We love them!*
- *We had a great time, much better turn out than last year. Volunteers and staff enjoyed the interaction and the demo went over well.*
- *lots of fun activities and very easy to use*

- *We continue to grow more knowledgeable about nanoscience with daily use of the kit's activities. Visitors enjoy the activities and feel inspired to learn more about nanoscience after engaging in the activities with staff.*
- *I like how easy it is to introduce Nano to the public, especially to those who are not familiar with the topic.*
- *The Local media took notice of our NanoDays event and [TV Station] invited [Scientist] for a TV interview to advertise the NanoDays event on the [TV Show] ([url]). In addition, [Scientist] was interviewed about NanoDays and the event was featured in an article that appeared on [Newspaper], "double dose of smart fun" , "Learn about science at NanoDays in [Town]", or laugh with a scientist at a one-man Einstein show in [Town], by [Author] on [Date] ([url]). [Specific credits and acknowledgements.]*
- *We found that all the activities were attracting a wide range of group ages. For some activities we did purchased additional materials (such as "Magic Sand" and fridge magnets) so that every visitor would bring home a small sample on nanotechnology.*
- *This was a great event for us. It was a great way to partner with [University] in yet another way. We really enjoyed it and look forward to future NanoDays Events.*
- *The posters that came with the kit were very nice for transforming the room into a better learning environment for nano materials. The organization of information for the kit was excellent.*
- *It was very well received by all audiences.*
- *NanoDays 2011 was great. I got a lot of good ideas from the NISE Annual Meeting in San Francisco, and while I was not able to put together a Science Cafe this year, I met with several faculty and staff from different departments and colleges around campus to talk about ways of including more people and departments in future NanoDays activities. There is a lot of interest and our network is growing. One continuing problem in the current budget situation is a lack of university support for these programs. I am working on finding ways to incorporate the undergraduate NanoDays outreach training into a new service-learning course, as one means of supporting the program in the future.*
- *This year's kit was a great improvement from previous years and made it even easier to organize fun and approachable demonstrations. We had great feedback from this year's event!*
- *As always, we greatly appreciate the kits! We would likely not put on a NanoDays event if we did not have the kits as resources.*
- *I really appreciate how the kit materials tie in to real-world applications, e.g. NanoSand, NanoFabric, Thin Films. It's important for students to see the connection and importance of materials science and engineering with current and future technologies.*
- *Great job with the kits!*
- *The kids loved learning about the smaller side of science. It was great!*