

Tips to Create an Expo Exhibit That Rocks!

Thank you for agreeing to create a fun and interactive hands-on exhibit for the USA Science & Engineering Expo! We sincerely appreciate your willingness to donate your time and resources to make the upcoming Festival and finale Expo a HUGE success.

Just a few words about the Expo: This event represents the nation's largest celebration of science and engineering. In this exciting milieu, your Expo exhibit provides an excellent opportunity to educate the public face-to-face about the wonders of science and engineering and to showcase the special technological projects involving your school, students, organization or institution.



We hope to attract more than 250,000 people over the three-day event in 2014 and each exhibit can anticipate reaching between 6,000-10,000 people per day. The following are some tips to enhance the planning, design and implementation of your Expo exhibit and booth. (Many of you have participated as exhibitors before and also may have great suggestions. Please forward them to lauren@usasciencefestival.org and we will incorporate them into the next version of this guide.)

Note: For your added information, at the end of this guide is an example of how a recent Expo exhibit was successfully conducted – from concept to hands-on demonstrations.

Tips for Planning and Designing Your Exhibit and Booth:

Use the 3 Modes of Learning. Remember, people learn in three main ways: by listening, by seeing, or by experiencing or touching. Creating an exhibit and booth that engages all three learning modalities will reach the greatest number of people. With that in mind, the most successful exhibits will be those that are engaging, hands-on, interactive, and accurate in the information they convey.

Involve Students. If you are a K-12 teacher, involve your students in planning, designing and participating in the booth exhibit. This will engage them in the science that is meaningful to them and showcase them as budding experts alongside you and other participating teachers, scientists and engineers.

Always Consider Your Audience. The Expo attracts a lot of families with children of various ages, so your booth should have information and activities that can be adapted to different age ranges if needed.



As a general rule, all booths should be targeted between an 8th and 10th grade level of science understanding or below. Booths certainly can be targeted at very young children but conversely should not overwhelm the audience with the science. Ideally, all booths will be staffed with a “Meet the Scientist” or “Meet the Engineer” so the subject matter can be brought up a level if so engaged.

Speak in Clear Layman's Language. When verbally communicating with your audience, be careful in the use of too many technical words and terms. Speak in layman's language, and with children, use "kid friendly" words and examples. When technical terms are used, make sure you follow it immediately with a clear, concise explanation. And remember...humor, smiles, voice inflection and gestures are other good ways to keep your audience engaged.

Develop a 'Take Home' Message. Plan your booth around one clear, main 'take home' message to be conveyed in an interactive hands-on activity. Engage or communicate this message to the audience within 30 seconds of the start of your interaction. This message should also communicate or demonstrate that science/engineering is indeed part of our everyday lives, and should be tied to the core science or engineering concept you wish to share.



For example, in one Expo exhibit, high school students showcased their year-long investigation into the physiological dangers of energy drinks. Their take home message was: "Consider the cost to your health before consuming energy drinks." The core science concept they used in sharing this message was physiology – specifically cardiology and the heart, since drinking energy drinks are known to substantially increase heart rate (which the students confirmed through their research results and demonstrations.)



Give Them Something to Touch. Keep in mind, "wiz-bang" demonstrations can be exciting to present but are also very 'static' to audiences. Participants love to touch things and be physically active in the learning process. They find interactive tactile activities the most fun and memorable. When planning, think about what interactive experience would draw you into your booth if you were a spectator, and then plan accordingly.

Keep Your Presentation Active By Asking Questions. Science discovery is fun, so let your presentation reflect this with a light, easy-going atmosphere that moves along. But you also want your audience to think about what they are learning, so keep the learning process active by asking young learners probing questions from time to time, such as "What do you think caused that?" or "Why did that happen?" Ignite a flame of curiosity in your audience!

Don't Forget Passersby Who May be Interested. While you and your exhibit staff are busy engaging your audience, don't forget to assign a volunteer or two to draw in other students and individuals passing by your presentation. Words like, "Come on in and check out this great science innovation" can be effective in increasing your audience and participation.



Planning for Supplies and Booth Staffing. Create your booth with efficiency in mind, including planning adequately for the supplies and give-away materials your exhibit will use. Consider how to most effectively reach 6,000-10,000 people per day with your activity. Hands-on activities should last only a few minutes and should be designed to be presented to 5-6 participants at a time, so design your booths accordingly.

And when scheduling the staffing of your booth, remember to schedule volunteers in shifts. Make sure they are provided with plenty of snacks and beverages (especially bottled water) to stay refreshed. See information near the bottom of this document for more staff and volunteer tips.



High and Low Tech Activities. An activity can be ‘high tech’ like letting kids explore virtual reality headsets, or they can be ‘low-tech’ like making virus particles with marshmallows and tooth picks. The goal is an interactive activity that teaches your ‘take home’ message.

Booth Decorations. Decorate your booth to be visually attractive through table and tent decorations. There are no restrictions on signage or displays, so feel free to be creative with visual graphics that will draw attendees to your booth.

Staff and Volunteer Attire. Matching outfits for your staff and volunteers (and potentially participants) are highly encouraged. Matching t-shirts, lab coats, uniforms and name badges not only give your exhibit a more cohesive, team-like atmosphere, but also lets people know whom to direct their questions to. You may also consider buying USA Science & Engineering Festival T-shirts for your crew ahead of time. They will be available for purchase on our website shortly!



Activity Safety. Keep in mind any safety precautions for an activity and plan accordingly if your booth requires lab coats, gloves or safety glasses.

Kids Love to Get Messy! Hands-on activities can involve getting kids’ hands or clothing messy or dirty. Please bring any necessary cleaning materials (paper towels, trash bags, etc.) and safety equipment for your participants. Keep in mind you will have a wide range of children with a variety of hands-on/lab experience and kids **love** to dig in and get messy.

Publicize and Promote Your Exhibit Beforehand. Use your website, email, news releases, flyers and other communication to let staff/alumni at your institution, news media and the general public know about your exhibit several weeks in advance. This is a great way to enhance attendance and add credibility to what you are doing.

Your Confirmation Packet. In the weeks leading up to the Expo you will receive a Confirmation Packet via (IS THIS HARD COPY OR EMAIL?) from us which will contain information about the exhibit sites, including your booth location, parking, instructions for unloading and loading your booth supplies and equipment, fire codes and signage.

Helpful Tips for Your Staff and Volunteers:

- Volunteering for an explanatory booth can be both exciting and exhausting!
- Make sure everyone is well trained beforehand.
- Volunteers should be at least college age or older.

- Keep some experts on-hand at all times so that kids can “Meet the Scientist or Engineer.” Their expertise adds a unique level of teaching to your booth.
- At least 2-3 people should staff the booth at all times to help with explaining and crowd control.
- Have the volunteers overlap shifts so that they can observe the activity.
- Have enough volunteers for shifts of 2-3 hours long. If you are limited to a number of people, have them rotate throughout the day and explore other booths for a few hours to help refresh them.

Don't forget to bring:

- Water and lozenges for your volunteers who will be talking all day.
- Lunch and snacks
- Hand sanitizer, Kleenex, cleaning wipes, first aid kit, paper towels

Most of all: **HAVE FUN!!**

After the Expo:

We have a goal of preparing a compendium of case studies and best practices for exhibit design that can be shared with other festival organizers. Please take lots of pictures of your booth and volunteers and send them to Larry Bock at biobock@mac.com. In your email, please briefly summarize the goals of your exhibit and lessons learned.

Here's an Example of How an Expo Exhibit Was Successfully Conducted – From Concept to Hands-On Presentation!

Hewlett-Packard: Thermal Ink Jet Printing and Ink Chemistry

Take home message: Images made from Thermal Ink Jet (TIJ) printers are created by a series of dots of ink on a piece of paper. TIJ is a simple process that requires the heating of ink in order to ‘shoot’ or ‘jet’ an ink drop onto paper in order to generate a dot. Ink drop placement in an image relies upon complicated ink chemistry and paper interactions. This booth demonstrated in a simple hands-on activity some of the complicated aspects of ink chemistry such as developing the proper thickness (viscosity) for an ink-drop and the idea of ‘shooting’ an ink drop from a print head.

How the message was conveyed:

Visually: A poster was created with the various steps of the thermal ink-jet process. An accompanying printer that was taken apart and was also available for the kids to explore.



Hands-on activity: Ink and printing

Step 1: The kids were given a plastic pipette and a dilute glue mixture that was their 'ink' and were told that they were a 'printer'. During the course of the activity they would 'print' with various 'ink' mixtures and try to hit a target on a piece of paper with their 'ink'.

Step 2: The kids took a pipette with an un-thickened 'ink' mixture and tried to hit a target on a piece of paper. The un-thickened 'ink' mixture typically spread around and would not stay on the intended target or make a good drop on the paper. This step demonstrated how an ink of the wrong thickness or viscosity did not interact well with the paper surface chemistry. The term viscosity was introduced to the students and the activity tried to have them demonstrate their understanding of the term by asking the question:



What do we need to do to improve our 'ink' mixture? (Answer: increase the viscosity and add color)

Step 3: The students added a colored Borax solution to their 'ink' that colored and thickened their 'ink' mixture. The demonstrators asked: ***What has happened to the ink mixture?*** Again, the activity tried to get the kids to use the new technical term viscosity and say that the mixture had increased in viscosity.



Step 4: The students attempted to 'print' their new 'ink' mixture by squeezing it from the pipette and tried to hit a target on a piece of paper from a distance which also demonstrated the very large relative print head to paper proximity.

Step 5: The kids then added even more of the colored Borax solution. Now their 'ink' was too thick to 'print.' The demonstrators asked the students: ***Is this a good ink? What is wrong with the 'ink'?***

This step got the kids to recall and again try to use the term correctly and say that their new 'ink' was now **too** viscous and didn't print well. This helped demonstrate the take-home message that ink chemistry is complicated and has to be fine tuned in order to interact well with paper and print well out of an ink cartridge.

Step 6: The "ink", paper and other used supplies were tossed into a trash bag making way for the next round of participants.

This booth was created by Hewlett-Packard, an industrial company, so all of the volunteers were scientists from Hewlett-Packard who were able to add value and insight to each step of thermal inkjet printing.

We will see you at the Expo in Washington, DC on April 25-27, 2014!