

Adult Role Models in Science (ARMS) Family Science Event Planning Guide



Why Have a Family Science Event?

Seeing your parents engaged and having fun learning makes a real difference—children who engage in learning activities alongside their parents or caregivers are more self-confident in their own learning. Family Science events help this happen. They present an opportunity for parents to act as positive role models in learning science with their children, and for children to act as science experts, teaching their parents and peers.

Goals:

- Bridge the gap between home and school
- Make science activities accessible to all families
- Help children and parents become confident that they can do science
- Illustrate the diversity of science and scientists, breaking down stereotypes about who does science and demonstrating that everyone is a scientist
- Highlight the relevance of science to everyday life

Overall Strategy—Emphasizing Science Process

Research shows that the most effective way to learn science (and enjoy it!) is to engage in hands-on investigative activities that use science process skills, like questioning, problem solving and communicating. To have the most impact, your family science event should engage families in science activities that provide opportunities to manipulate materials or explore a topic in an active way.

Tom Zinnen of UW-Madison’s Biotrek describes activities as “Exploration Stations” and explains that their goal is to “[present] learners of any age with a puzzle, paradox or problem to examine, explore, experiment or resolve.” Think of each activity station as being “staffed by a Puzzle-Giver, who may or may not be an expert in science, but whose chief talent is in coaching, coaxing and cajoling a learner to explore the puzzle.”

Format:

Below are two formats that have been used successfully. You can develop your own format that may be a hybrid of these strategies.

1. Many explorations stations in a large room like the gym or cafeteria. Each activity is at a table or certain area of the gym. Families move freely from one activity to the next. There is no particular schedule of events. Families usually spend 10 minutes or less at each station.
2. Organized like a conference: Activities are scheduled in different classrooms at certain times. Families do not go to all the activities but select those they are most interested in (usually registering ahead of time). A group of families participates in one activity for 30-45 minutes, then goes to a second activity.

There are pros and cons to each strategy. With #1, families have a lot of freedom and get to experience many activities. With #2, there is more opportunity to do activities that involve multiple steps and allow families to complete an investigation that may take longer than ten minutes. The second format also allows families to get to know each other, learn from each other, and get to know the activity leader, building a “learning community.”

One way to combine the two is to ask leaders to decide which format they prefer. Place those that prefer #1 in the gym, those that prefer #2 in classrooms. Post a schedule of the classroom activities, and note that families wishing to attend those must go at the scheduled times. You will need to limit the number of families in these classroom sessions.

Activity Leaders:

Science activity leaders often include scientists from the community, but in order to demonstrate that everyone is a scientist, it is important to include children, parents, teachers and after-school staff as well. Scout and 4H leaders and members, members of other community organizations like Kiwanis or Rotary, and scientists who work in business and government agencies are all potential presenters. Remember that science is everywhere and many people use science in their jobs, from chefs to plumbers!

Invite teachers, parents, administrators and after-school staff to be activity leaders. ***It does not require a background in science to lead hands-on science activities!*** Leaders may have ideas of their own (parents may have a science background and have expertise to share) or may need you to provide them with activity ideas. You can recruit groups of children to lead activities for their peers. These activities could highlight things they've done in science in classrooms or after-school science club or share individual interests.

You can recruit additional activity leaders from UW-Madison and other organizations and businesses, who may be practicing scientists or science students. Their activities may highlight current research and should involve families in the process of science at the same time. To list your event and recruit UW-Madison presenters, complete this Family Science Event Request Form: <http://go.wisc.edu/50h6e3>

Family Challenge Activity:

Activities that families do as a group get family members interacting with each other, working together, and really becoming engaged in science. Building spaghetti towers, racing marbles down a track, making wind-powered boats or cars—any sort of engineering activity works well. Hold a “Family Challenge” in the gym or cafeteria (maybe at the same time as the food) to bring everyone together. If families are seated at large cafeteria tables, more than one family will be at each table. They can then work together as a large group on the challenge activity, promoting communication between families.

Encouraging Participation:

Some schools and community centers encourage participation by having a raffle, door prize, or “passport” process. The passport approach requires a printed list of activities, which serves as a “passport” on which participants accumulate stamps as evidence of their level of participation. The passports are distributed to participants as they enter the event. Activity leaders each have stamp pads, and passport holders get a stamp on their passport when they complete each individual activity.

Supplies:

Most activities should use supplies that are inexpensive and easily accessible. Ask activity leaders to bring their own supplies if possible. The Adult Role Models in Science (ARMS) program can help you to borrow supplies from UW-Madison labs, etc.

Food:

Families will have a more positive experience at the event if you feed them, even a light snack. It could be at the beginning, middle, or end of your event.

Translators:

Consider finding translators or bi-lingual presenters so all families can participate.

Transportation:

Think about how you might arrange to offer transportation for families without cars. Can you provide them with bus passes? Could a van or taxi pick up families who want to come?

Timing and Location:

Family Science Events can be in the evening or on a weekend day, or there can be a series of events on more than one day. Events can be held at a school, community center, church, or anywhere else families are used

to gathering. It's important to schedule an event in a location that is easy for your audiences to get to and where they will feel comfortable. Consider having some outdoor activities: investigating plants, animals, soil, etc. in the schoolyard, stargazing with a telescope or binoculars, etc.

When picking a date, be aware of the dates of other significant events in the area/neighborhood, and dates that may affect your volunteer pool availability (like UW-Madison science events, breaks, and exams, which you can find about at www.science.wisc.edu and www.secfac.wisc.edu/academic-calendar.htm).

Planning Team and Community Partners:

Ideally, the planning team for a Family Science event should include teachers, parents, administrators, after-school staff, and students. This encourages each group to become invested in the success of the event and empowers them to help shape it to fit their needs. If you can't include all these constituencies on the planning team itself, you can engage them by informing them early in the planning process and asking for their input, ideas, and other types of involvement. Consider inviting your Neighborhood Association, local businesses, churches, and other community organizations to help with the planning and sponsorship of your event. It's a great opportunity for relationship building.

Steps in Planning:

At least 3 months before the event:

- Assemble a planning team.
- Decide on date, time, location and general format.
- List your event on the website: Family Science Event REQUEST Form: <http://go.wisc.edu/50h6e3>. Presenters will contact you directly if they can help with your event.
- Inform everyone in the school community and invite them to lead activities or volunteer to help.

At least 2 months before the event:

- Decide on specific locations (rooms) and schedule.
- Reserve gym or cafeteria and classrooms.
- Assign volunteers to specific roles:
 - **Publicity:** Develop a simple flyer announcing the date and time, write announcements in school newsletters, etc. Develop a registration form to be sent home with students or emailed to parents.
 - **Room set-up:** Ask presenters how much space they need, tables, AV, etc., and make sure rooms are set up when they arrive. Make signs to indicate which sessions are in which rooms.
 - **Registration:** Have copies of program for families to pick up when they arrive, record attendance, answer questions
 - **Greeters:** Show external activity leaders, who may be unfamiliar with the space, to their room or table, and make sure they have what they need for their activity.
 - **Food:** Seek donations of food from local businesses or parent organizations, set up and serve food at the event.
 - **Clean-up:** Provide waste and recycling containers for food as well as science activities. Provide wet and dry rags (more effective than paper towels). Ask all participants and leaders to clean up their areas.
 - **Evaluation:** Using several methods will give you a multiple viewpoints. Develop a simple evaluation form for families to complete (having a door prize or other reward for those completing forms can increase the number of responses). Make sure to record the total number of people attending, and you may want to record the gender and grade level of children. Ask attendees which activity was their favorite and why, and what other kinds of activities they would like to see next year. Visit the

activities and observe how families are engaged. Interview parents and children and ask them about their experience. Write down comments and reflections.

- **Recorder:** Keep track of all of the above and assemble into a file to save for next year's planning!

At least 1 month before the event:

- Develop final schedule
- Develop registration form
- Communicate with all activity leaders, ensuring they know the exact schedule and locations, including: date, set up time, event start time, contact emails and phone numbers (office and cell # for day of event). Make sure they know who to call if they can't make it at the last minute. Make sure you have their cell phone number to inform them of last minute changes.

After the event:

- Assemble and review information from evaluation forms, interviews, observations, etc.
- Write down the "lessons learned" and assemble all planning materials in a binder and e-file for next year's planning team.
- Send thank-you notes to all activity leaders and volunteers.
- Celebrate success with the planning team!

Websites with Activity Ideas:

- ARMS wiki: <https://sites.google.com/a/wisc.edu/arms/>
- <http://howtosmile.org/>
- <http://www.tryengineering.org/lesson.php>
- <http://www.sciencetoymaker.org/>
- <http://pbskids.org/zoom/>
- Fetch with Ruff Ruffman: <http://www.pbs.org/parents/fetch/activities/index.html>
- Nova: Making Stuff: <http://www.pbs.org/wgbh/nova/tech/making-stuff.html> Click on the *Education and Outreach Resources*
- Exploratorium: <http://www.exploratorium.edu/afterschool/>
- Steve Spangler: <http://www.stevespanglerscience.com/experiments>
- Bottle Biology: <http://bottlebiology.org/>
- Paul's Sandbox: (more bottle biology): http://fastplants.org/resources/pauls_sandbox.php
- Science Bob: <http://www.sciencebob.com/experiments/index.php>
- <http://gasch.genetics.wisc.edu/582.htm>

**Many thanks to the UW-Madison outreach community
and family science event organizers who contributed to this guide!**

ADULT ROLE MODELS in SCIENCE

