



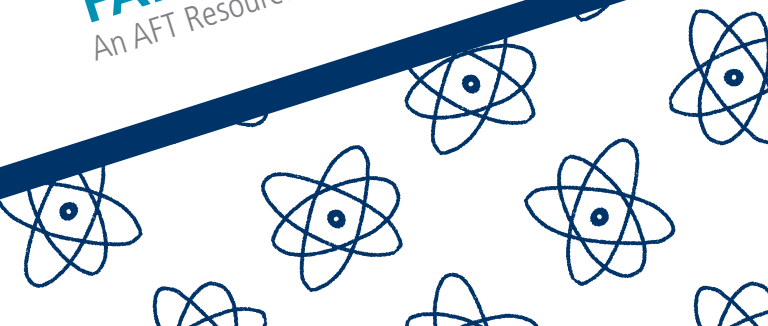
A Union of Professionals

**Professional
Learning**



GUIDE TO PLANNING FAMILY SCIENCE NIGHTS

An AFT Resource to Promote Science Education





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OUR MISSION

The **American Federation of Teachers** is a union of professionals that champions fairness; democracy; economic opportunity; and high-quality public education, healthcare and public services for our students, their families and our communities. We are committed to advancing these principles through community engagement, organizing, collective bargaining and political activism, and especially through the work our members do.

With the release of new science standards and a shift toward taking a more integrated approach to teaching science, technology, engineering, and math (STEM), the time is ripe for amplifying STEM education in your school. Hosting a family science or STEM night is one way to do this and has been practiced in schools for generations. This guide is designed to bring new ideas to an age-old practice and to help new educators design a plan for their first extravaganza! (For the purposes of this document, “science night” and “STEM night” will be used interchangeably.)

WHY FAMILY SCIENCE NIGHTS?

Family science nights remain one of the best ways to:

- Involve families as partners in their child's education;
- Use real life experiences to connect school learning with the broader community; and
- Build schoolwide excitement about STEM.



Family STEM nights aren't just fun but also provide meaningful, purposeful learning and application of that learning. When students are able to connect what they are doing to everyday experiences in their lives or community, and are provided an opportunity to explore natural phenomena, deeper learning takes place. Research on science learning has shown "that individual and cognitive aspects of learning are fundamentally connected to the social and cultural aspects of learning" (Zimmerman et al., 2009). This means that students' understanding of science is built upon their home culture, so involving families in science learning is essential to ensuring that science learning is equitable (A Framework for K-12 Science Education, p. 281). Families who participate are more likely to engage with their children about science and to become advocates for science education in the community.

Educators should:

Keep parents informed about local, state or national policies around science education and career advancement opportunities in STEM-related fields. Parent voice and advocacy can help ensure that teaching and learning science is a schoolwide priority and that adequate funding and resources are available to support programming.

HOW DO I GET STARTED?

Consider your goals for a family science night.

- What do you want students to achieve?
- Are there specific learning targets?
- What do you want students and their families to gain from the event?
- How might colleagues and the broader community benefit from participation?
- Do you want to generate excitement, or is there a specific advocacy campaign attached to the event?

TYPES OF EVENTS

Your goals will determine the type of event you should plan. Also, check with your district, local university, zoo or museum for specific parameters around planning these type of events.

- **Engineering extravaganzas.** In these events, students and their families work together to complete short, hands-on engineering design challenges, such as making kazoos, designing a catapult that will launch a pingpong ball the farthest, or building a model tower to withstand a simulated earthquake. *In California, the Oakland Unified School District's science materials center has kits that elementary schools can check out for a readymade "out-of-the-box" family science night.*





- **Science fairs.** Science fairs aren't just students standing by posters they've made (but that's OK, too). In these exhibitions, student work is the focal point, and students have prepared presentations, posters, demonstrations, and/or hands-on activities. *At Longfellow Middle School in Berkeley, Calif., sixth-graders present engineering projects they worked on for two months to solve an environmental issue in the community or world, and seventh-graders present science experiments they worked on with grad student scientist mentors.*
- **Presentations by scientists or community groups.** In many communities, local companies, universities or government agencies have scientists and engineers who can give presentations about their work, lead activities, and show students and families a career pathway to science. In some cases, such as for younger audiences, outside scientists and engineers may need formal or informal training about how to reach these learners; for older students or parents, formal talks about scientists' work can be appropriate and engaging. *At Nathan Hale High School in Seattle, the school's Science Boosters Club hosts monthly talks for students, parents and the community, presented by local scientists at the cutting edge of medicine, climate change, physics and other disciplines.*
- **Hosting at local science museums.** Local science museums nationwide offer family science night programming. Some museums offer packages in which their staff will go to a school to host an event. Some will support implementation with activity guides and materials lists, and others, like the

ScienceWorks Hands-On Museum in Ashland, Ore., offers schools the opportunity to take over the whole museum for a fee, including demonstrations and exhibits.

- **Community celebrations of science.** Community science celebrations encourage students to see value in science studies, and to consider science and technology as career options. They also promote local businesses involved in science and technology and bring the community together by showcasing science education opportunities, local industries, government agencies, schools and community organizations involved in science and technology.

LOGISTICAL CONSIDERATIONS

Carefully planned family science nights are a big undertaking, but the home-school connections and excitement they build are worth the effort.

- **Volunteers and personnel.** You can't do this by yourself! Build a team. You will need to determine which teachers, administrators, support staff, community members, families or older students will support the event, and how you will train, prepare or assign them roles. Determine who will lead the science activities or presentations: students, teachers, community members, etc.
 - » Younger elementary students can facilitate activities with their own families.
 - » Older elementary students can facilitate activities with small groups or be "docents."
 - » Middle school students can facilitate as well as help set up, prep food, etc.
 - » High school students can lead activities and assist with planning the event.
- **Food.** Sharing a meal is a great way to build community as well as a great incentive for families to attend. Food can be provided through Title I funding, PTA contributions or partnerships with local businesses.
- **Custodial and facilities.** Be sure to communicate with your school's custodial team to obtain the proper permits for hosting an evening event, cleanup, and to have a custodian on duty in case of spills or other problems.
- **Parking and transportation.** A lot more people will drive and park at your school for a family science night than for a regular school day. Be sure you provide clear instructions on how and where families can park. Families who are dependent on public transportation may not be able to attend or may need flexible timing if local buses don't run at night.
- **Conflicting community events.** Don't schedule your science night when there's a high school sports event, a major community activity like a scheduled protest or important school board meeting, or on a religious holiday such as Ash Wednesday, Eid al-Fitr, Diwali, Yom Kippur, etc.

THEME-BASED OR NOT?

Decide if your family science night should have a theme. STEM nights may have no theme other than science, technology, engineering or math, but more specific theme-based family science nights can generate excitement for students to learn science and explore the wonders of the world around them! Possible themes include:

- Zombies
- Superheroes
- Bigfoot
- Mysteries
- Crime/forensics
- Chemical engineering
- Myth busters
- Agriculture/farm night
- Science of toys
- Science and literacy
- Amusement parks

MATERIALS AND SETUP

Many science night activities require considerable amounts of consumable materials, which cost money and take considerable time to organize. The costs are often modest because many of the materials may be simple household items. Funding sources might include science consumables budgets, PTA support, Title I money, County Agricultural Extension office, or grant funding. Families are often able to collect and donate materials.

- In a station-based event, students and families rotate through activities set up in a large multipurpose room such as a cafeteria or in several classrooms. This kind of setup works great for engineering extravaganzas.
 - » For station-based events, it is helpful to have each station's materials in one or two containers that can be placed at the station location. Laminated task instructions for each station that can be used over and over are helpful.
- In a presentation-based event, participants choose or rotate between various presentations set up in classrooms. This works well for events featuring scientists or community groups for older students who can pay attention to more formal presentations.
 - In open houses, students and families circulate freely through the event, although students may stay near their work to present it. This works well for exhibitions of student work such as a science fair.
 - Tied to curriculum vs. standalone vs. project-based:
 - » Giving the project an interdisciplinary angle will help get all of the teachers on board. Include reading, writing and math, art, music and physical education - making it a STEAM night - can only garner more support and more excitement!





GETTING THE WORD OUT!

- It's important to get as many students and families as possible to attend the event. In most cases, only about 20 percent of fliers given to students will end up in their parents' hands, so direct outreach is essential.
 - » Call families.
 - » Meet parents at the curb when they drop off their students.

- » Go to each classroom to invite students personally.
- » Promote your event through all the channels that are used for communication at your school.
- Incentivize attendance. Use a shared meal, extra credit, or prizes to motivate students and their families to participate.

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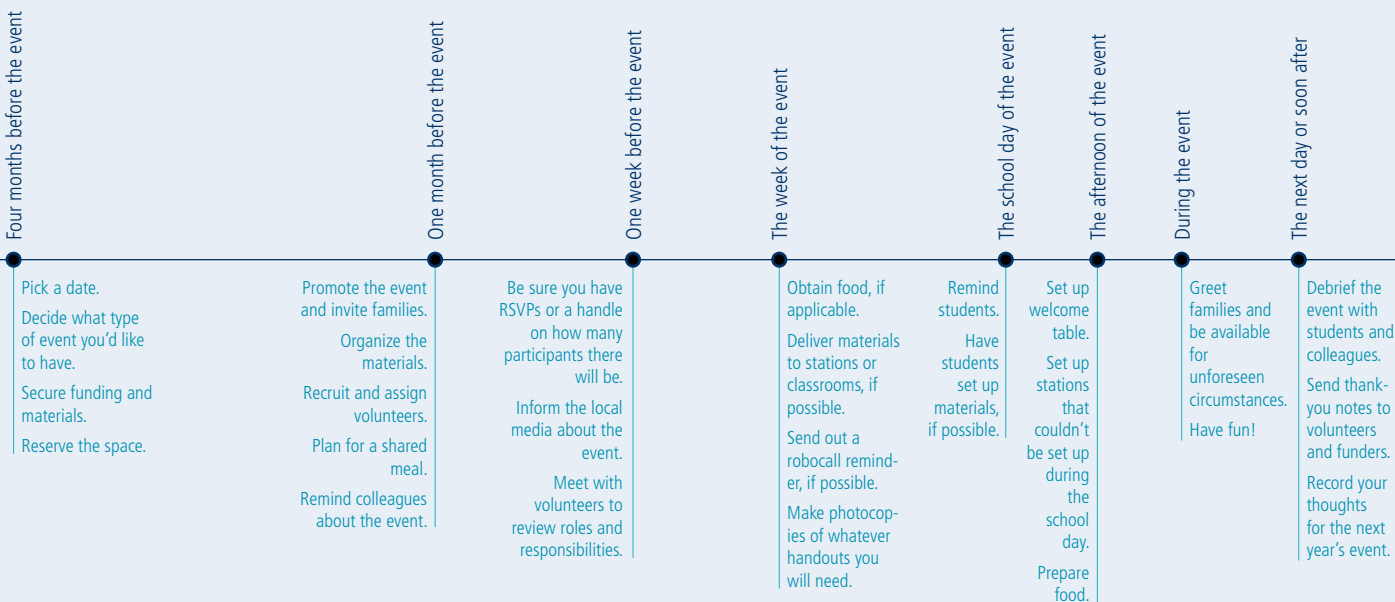
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