



ARIZONA
SCITECH
festival

STREET TEAM/VOLUNTEER HANDBOOK

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WELCOME TO THE ARIZONA SCITECH TEAM!

The Arizona SciTech program has more than doubled in size and scope each year since its inception in 2011. Arizona SciTech attributes its continued growth to excitement about STEM as well as our phenomenal partners and collaborators who are committed to driving innovation and excellence in Arizona education. This groundswell of STEM support appeals to residents and new businesses alike, impacting their decisions to relocate, plant roots and expand here.

We are indebted to our more than 600 collaborators, volunteers and workers whose individual contributions make Arizona SciTech one of the largest celebrations of science in the nation. They are the engine of the festival, creating memorable experiences for attendees and generating momentum for STEM and innovation. This team has grown Arizona SciTech from a seasonal event to perennial presence.

This official Handbook serves as a reference for the Arizona SciTech team as they deliver innovation experiences across Arizona.

Thank you for your contributions. Our success would not be possible without you.



Jeremy Babendure, Ph.D.

Executive Director, Arizona SciTech Festival



LOGO

Arizona SciTech is known for creating and implementing the largest STEM and innovation festival in the State of Arizona. Festival events and information can be identified by our colorful, educational and STEM-inspiring logo—*The Famous Gecko*.

The Famous Gecko comprises many of the symbols Arizona SciTech celebrates. Largest to smallest, the symbols represent the following:



- Chromosome
- DNA (what makes up chromosomes)
- Nucleic acid (chemical component of DNA)
- Carbon atom (one of the atoms making up a nucleic acid)
- Quark (subatomic particle that is a component of an atom)

MISSION

The Arizona SciTech Festival is committed to establishing a statewide collaborative of traditional and non-traditional STEM organizations whose collective efforts engage all Arizonans in the awareness and importance of science, technology and innovation in our future.



STAFF CONTACTS

ADMINISTRATION

Statewide Executive Director

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COMMUNITY PARTNERS AND SPONSORS

FOUNDATIONAL PARTNERS

Arizona Commerce Authority
Arizona Science Center
Arizona State University
Arizona Technology Council Foundation
University of Arizona
Arizona Board of Regents

PRESENTING

Cox Communications

PLATINUM

Helios Education Foundation

GOLD

State Farm
Honeywell

SILVER

IDS Technology Marketing
KAET Eight, Arizona PBS
Arizona Renaissance Festival
Thomas R. Brown Foundations
Freeport-McMoRan Foundation
SRP
Nextiva
ASML
Maricopa Community Colleges
IBM
Yelp

BRONZE

Harkins Theatres
Intel
Phoenix Analysis & Design Technologies
MJS Designs
KJZZ 91.5 FM
ASU Walton Sustainability Solutions Initiatives
University of Advancing Technology
KTAR 92.3 FM - Arizona Sports 98.7 FM
Grand Canyon University
Arizona Parenting
Clarisoft
Arizona Attorney General
United Skates of America, Inc.
AZ Tech Beat
U.S. Air Force
Google

COPPER

Arizona Family College Savings Program
Green Living Magazine
Eventinterface
Tonto Creek Camp
Sonoran Schools
Bear Essential News
Carrington College
Microsoft

KRYPTON

Phoenix Business Journal
Midwestern University
Arizona Virtual Academy
Biz in a Boxx
Discover the Region
Project Lead The Way

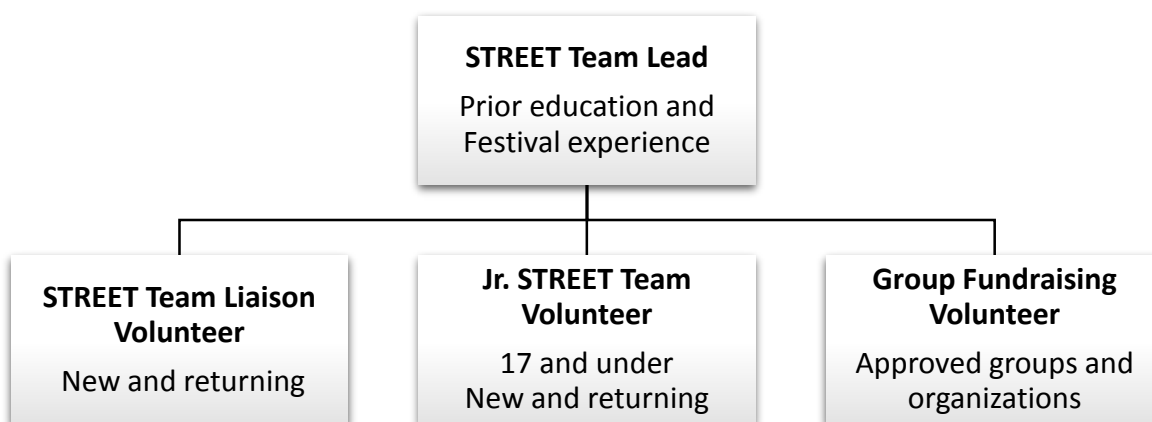
TITANIUM

Emerald Computers



ROLES AND RESPONSIBILITIES

STREET Team and volunteers should have the desire to learn about general areas of STEM. They must be willing to engage guests with this knowledge and have the ability to effectively communicate with diverse age groups, academic levels and cultures.



STREET TEAM LEAD

An organization is as strong as its leadership and the Arizona SciTech Festival’s STREET Team Leads are some of the best in business, within local organizations and many are known for their commitment to ongoing community service. This is why the Festival proudly utilizes experienced and respected individuals in our communities to lead the way to ensure the success of the Festival’s presence and representation at events throughout the state. The STREET Team Lead is one of the Festival’s public “faces” and serves as the Festival’s public image for the program.

The STREET Team Lead is responsible for the following:

- Exhibit Booth Setup.
- Providing the Festival cart with necessary materials and supplies (Obtained from staff).
- Supplying the standing pull-up banner and large and small banners for each event.
- The Lead is the first to arrive (one hour) prior to event start, and the last to depart (end of event).
- Tearing down the booth setup and properly repacking materials and supplies for use at future events.
- Calls the Event Host One Month in advance to receive factual logistics – location, street address, parking requirements and options for workers, exhibit space size, load-unload



zones, check in procedures for exhibitors, confirmation of event time and setup/tear-down times, ensure that event will supply table(s), chairs and shade covering, if needed for outdoors; provide names of attendees and confirm booth/exhibit space and materials for Arizona SciTech Festival. Ensure that STREET Team has materials needed to conduct a successful event: adequate information for set-up, exhibit set-up materials and supplies, tables/chairs, tent (if outdoors), provide contact information for event(s) in the event of problems, changes or questions.

- Calls and/or emails STREET Team members or volunteers Two Weeks in advance of event to confirm their help and provide all event details. One week before event, may call Event Host and STREET Team member or volunteer(s) to remind them of the Festival's participation and event details.
- The STREET Team may be made up of working professionals, retired executives, winter visitors, and experienced team members who have an avid interest in STEM and/or Innovation.
- Collecting all required form signatures, and collecting all completed surveys, sign-in sheets and sign-up sheets and ensuring their storage in designated envelopes/files.
- Mailing out to Festival staff, completed surveys (if surveys are conducted through booths/exhibits), E-NEWS sign-up sheets and sign-in sheets for Volunteer/Student hours. Team Lead utilizes the self-addressed, self-stamped envelopes provided for them in their accordion files. The completed surveys (if completed through booth/exhibit) are returned once per week, completed E-NEWS is mailed out once per month, and completed sign-in sheets are mailed out once per month.
- Assigning jobs when other team members arrive, such as the following:
 - Survey Taker(s) – larger events 2 or more surveyors
 - Information Table worker - 1 worker
 - Activity Table workers - 2 if staff-power allows
 - Workers may alternate jobs (except for designated Survey Team).

STREET TEAM LIAISON VOLUNTEER

The STREET Team Liaison Volunteer position is important to the growth and sustainability of the Arizona SciTech Festival. The Liaison positions are one way the Festival continues to extend its reach further out across the state and share its messages with more of the Arizona public from year to year. Liaisons possess the characteristics of the STREET Team Lead but are new to the Festival program and therefore are gaining in experience by working with other long-term or full-time team members to be able to more confidently communicate the Festival message. The Liaisons may also be available on a more part-time basis as many serve as working professionals, winter visitors, college students, retired professionals or stay-at-home parents



wishing to keep involved in a program of substance and continue to maintain or develop out their community contacts.

The STREET Liaison Volunteer is responsible for the following:

- Arrive at designated event assignments 30 minutes early wearing STREET Team T-shirts.
- Assist the STREET Team Lead with the exhibit setup.
- Submit any required forms upon completion to STREET Team Lead.
- Attend and participate as a STREET Team Liaison for a minimum of three events.
- Engage event audience with Festival activities.
- Conduct Festival Surveys and submit to STREET Team Lead upon completion.

JR. STREET TEAM VOLUNTEER

The future is now, and there is nothing better than using the platform of the Arizona SciTech Festival to offer opportunities for growth and experience to students and those interested in building their community outreach skills, resumes and contacts. The Jr. STREET Team offers a structured, accelerated plan of earned community service hours as well as scholarship awards. All student volunteers will receive certificates of participation as well as accumulate hours towards scholarships. The time commitment for Jr. STREET Team Volunteers is a minimum of 10 hours, which is the equivalent of three to four Festival events.

The Jr. STREET Volunteer is responsible for the following:

- Arrive 30 minutes before assigned events wearing Arizona SciTech Festival T-shirts.
- Assist the other team members with booth setup and teardown.
- Sign IN on provided Registration Sheet upon arrival and sign OUT upon leaving.
- Make sure all authorization forms have been completed and turned in to STREET Team Lead at time of event.
- Engage event audience with Festival activities or responsibilities assigned by the STREET Team Lead.
- Conduct Festival Surveys and submit to STREET Team Lead upon completion.

GROUP FUNDRAISING VOLUNTEER

Interested in a learning experience with benefits? If you are part of a nonprofit group classified as a 501(c)(3) or 501(c)(6), and are looking for ways to help your community spread the good news of science and technology, you are eligible to apply for an opportunity to raise funds for your organization while benefiting from the educational programs and activities offered



through the Arizona SciTech Festival. We invite groups to share their enthusiasm for STEM, time, energy and talents as one of our featured organizations working throughout the Arizona SciTech Festival. Groups are asked to participate in a minimum of three events.

The Group Fundraising Volunteers are responsible for the following:

- Qualify as a nonprofit organization with the designation of a 501(c)(3) or 501(c)(6). Typical groups that might benefit: College Honors club, Debate, Robotics, STEM, Key Clubs; High School Career and Technical Education students, Leadership and Sister City organizations.
- Connect with Festival staff to discuss interest and opportunities: JeremyB@AZcommerce.com
- Complete and return all required forms and participate in Festival training in advance of event participation.
- Arrive to assigned events 30 minutes early to assist the Festival team with setup, receive specific assignments, and help with exhibit teardown.
- Engage event audience with Festival activities
- Conduct Festival Surveys and submit to STREET Team Lead upon completion.

BEST PRACTICES: PREPARATION AND ATTIRE

Event attendees come first.

It's fine to visit with co-workers and to make an occasional necessary personal call from the Festival booth. However, as soon as a visitor approaches the Festival booth, or there is a flow of visitors that can be attracted to our activities, please *refrain from personal visits and non-event-related phone calls*. Electronic media such as *notebooks and laptop computers may be used if and when there is little to no traffic flow* to the booth area. Otherwise, any electronic media, other than a cell phone, should be stored under the booth table, or packed into a Festival cart.

Know the type of event you are attending.

If you attend an outdoor event, it's fine to wear clean slacks, walking shorts, jeans or casual attire. Any of the above—accompanied with the official STREET Team T-shirt and comfortable, closed-toed shoes—are recommended. If you attend a casual indoor event, clean slacks and the official STREET Team T-shirt are recommended. For a more business-like, formal event, a T-shirt may not be appropriate. Consider business attire such as pantsuits, skirts, jackets, slacks, collared shirts, etc.

Get to know the Festival and its current events



- Review the Festival website (www.azscitech.com) and familiarize yourself with its offerings. Of particular importance: types of events offered and where we offer them.
- Read the Festival Community Report 2014, review the statistics that measure who and how many we reach, and know the Festival milestones. Also, learn about the different sectors that we represent as well as our collaborators.
- Know your 30-second Festival pitch. (See “Connecting with the Public”).
- Understand the Festival E-NEWS, know when it comes out, what it features and be ready to sign people up to receive E-NEWS.
- Read through and understand the Festival Survey that we are including as part of our outreach activities. How do you approach Survey prospects about completing the form?
- Familiarize yourself with the Festival Prize Sheet found in your accordion folder. There is no age limit for those eligible for receiving Festival prizes and incentives.

Put forth your most positive image at your booth

Attire and grooming are important to any image. We are proud of our working teams and hold them in the highest esteem. We are hopeful others will do the same. Looking your best is a positive reflection on you and the Festival as a whole.

Where to place food or beverages during event programs

It’s a perfectly common question. Where should team members eat and drink during an official program? Eating and drinking (non-alcoholic beverages) are allowed when the worker is not serving as the primary contact at the booth, as long as this activity is not in full view of the general public. Festival workers may consider alternating times to serve as the primary booth contact so that food and drink remain out of the primary sight of booth visitors. Team members may indulge in small snacks and beverages that can be neatly placed under the booth table, or in the Festival cart placed under the table or at the back of the booth. Bottled water is fine at all times, but should be placed out of sight (behind a Festival table sign or on the floor beside the worker). The key is to make sure that any foods and beverages are out of sight of booth visitors.

Take responsibility for your event and shift.

As a Festival team, it’s important that each of us understands our role with regards to working with the public and sharing the STEM message. The easiest ways to do this are by being prepared for specific event assignments, asking questions of those more experienced than ourselves and observing those who have a knack for successfully engaging the public.

Here are a few tips on successfully meeting your responsibilities:



- Look up and read the highlights of the event you will be working so that you can intelligently address questions about the event’s highlights as visitors come by your booth.
- Review the upcoming Festival events in the various communities across Arizona so that you have common discussion points with booth visitors and you can encourage greater event attendance by giving people a quick glimpse of upcoming activities.
- Check in with the Team Lead when you arrive at your event(s) and find out the role you will serve during your shift.
- In an emergency where you cannot meet your assignment responsibility, connect ahead of time with the Team Lead (48+ hours ahead) to let them know not to expect you.
- If you find that you cannot attend a particular event, it is your responsibility to ensure that you have a qualified replacement to take your shift. A team roster is available to all team members within their Handbook packet as a source of potential substitutes. If you experience difficulty in finding a replacement, contact the following (48 hours+ in advance) to assist with filling the necessary time commitments:
 - Jeremy Babendure: JeremyB@AZcommerce.com; 480-250-7764

Review materials for substance and quantities needed for events worked.

Before and after an event, take inventory of your exhibit materials to ensure ample supplies are in place to accommodate the anticipated number of attendees. At the end of each event, note materials that may need replenishing prior to your next event and advise Jeremy Babendure what your needs are. Consider stocking up on basic supplies so you are able to work several events or even the duration of the Festival with adequate supplies. Overages may be returned.

CONNECTING WITH THE PUBLIC

It’s one thing to *be present* at a booth, but it’s another to attract people to your display and get them involved in the STEM process. Learn from your visitors—what they enjoy and what educational needs they find most important. Here are some approaches to attract people to your booth—some of these questions will help pull people into conversations about STEM:

- “Hello! Have you heard of the Arizona SciTech Festival? “
If Yes: “Great! Wait until you see what we have going on this year!”
If No, present a variation on the following pitch: “*The Arizona SciTech Festival is the largest celebration of science, technology, engineering, math and innovation in the history of the State of Arizona. Our mission is to celebrate the wonders of science*”



happening right in our own backyards. We do this through partnerships across the state by way of mini festivals, tours, hikes, debates, demonstrations, and events and activities for people of all ages, from 3 – 103! Here’s what we have going on this year...”

- “Hi there! Where are you folks from?”
If local, pick up on their community and let them know that there are very cool things happening in their area. Show them the Schedule of Events and explain how to use it.
If non-local, inquire how long they will be in Arizona. Let them know what is happening during that timeframe. Showcase that there is something in every corner of our state!
- “Greetings! Welcome to the Arizona SciTech Festival booth. Do you have a favorite hobby/sport/activity?”
Based on the response, show them the Schedule of Events and provide an overview of sports or other activities that might interest them.

BOOTH/EXHIBIT SETUP

Consistent setup of Festival booths is essential in projecting a professional and unified brand to the public. Team Leads and STREET Team/Volunteers must ensure that the booth is set up according to the specifications below, in addition to maintaining its clean, organized and attractive presence. *A sample of the booth setup will be available at all team training sessions.*

Requirements

Review your Event Assignment Grid “Booth Information” area.

The Arizona SciTech Team Lead must ensure certain items are supplied by the team for events. Occasionally, Arizona SciTech must supply its own table, chairs and pop-up tent. Obtain from Festival Executive Director, Jeremy Babendure.

Booths will consist of one or two 6’ or 8’ tables and chairs at each table.

- **Two-table setup:** One official tablecloth, two gecko overlays/runners. One overlay is placed over the tablecloth; one over the second table that does not have a tablecloth. Set up the tall, pull-up banner in between the tables and slightly angle the tables towards one another.
 - On the first table (tableclothed table), set up with information: Schedules of Events, Fun Books, Art & Coloring and Celebrate My Drive Flyers; Sign-Up Sheet for E-NEWS with Clip Board and pens; Sign-in Sheet for Students/Volunteers; Festival Surveys with Pencils (if required); One-two Plastic flyer holders for



Art/Coloring Contest and Schedule of Events; 2 Basket/plastic buckets of giveaways for booth visitors (examples: tattoos, stickers, note pads, etc.)

- On the second table: One Gecko overlay on table – Set-up two activities for booth visitors and set-up incentives that you will give away for doing the activities. Use bowl or basket to hold incentives for completing the activities.
- **One-table setup:** One official tablecloth, gecko overlay/runner, two plastic flyer holders, business card holder with cards, two colorful baskets for booth visitor giveaways; sign up form on clipboard with pens for E-NEWS sign-up; Sign-In/Sign-Out sheet for Volunteers and Students, Schedules of Events, Fun Books, Art/Coloring Contest and Celebrate My Drive flyer, Festival Surveys with Pencils, large pull-up banner to the side of table; hang Gecko banner from fencing or back of tent area, or location in close proximity to booth, if available. Set-up one activity for display on the tabletop...Cricket, Alloy Metal activity, Gum/Chocolate Experiment; Goggles, etc. Place a basket/bucket of incentive items.

Upkeep of booth and materials

- **Preserve cleanliness of tablecloths and overlays.** Make sure tablecloths and overlays are clean and are free of wrinkles as much as possible. If needed, either wash and dry the tablecloth and refold and/or wipe off the overlays before the next event. Pack each up carefully in order to avoid bunching up the fabrics and to avoid unsightly wrinkles.
- **Keep materials on table organized and tidy.** Periodically restack, organize and restock materials on the tabletops.

Organization of materials and activities

- **Pack up all materials in an organized fashion with like materials together in the Festival cart upon completion of each event.** Return all utilities to Utility bucket; properly fold table coverings, roll banners and return to provided banner tubes; carefully disassemble the pull-up banner and return to banner casing; store all materials and protect from excessive heat, cold or dampness.
- **Review event details in advance.** Prepare directions to event, review Festival carts in advance to ensure you have all materials needed for the size and type of event you will work; ensure you have the proper banners and pull-up signs and accompanying hardware for each event. Check in at Festival booth 30 minutes in advance of the event start. Team Leads, check in one hour in advance of setup deadlines, check in on behalf of the team and begin booth setup, and prepare event assignments for workers.



SURVEY PROCESS

The short survey that the Festival distributes at each event is critical to the future planning and success of the program. The more surveys that are properly completed, the better.

Responsibilities

- **Prepare surveys for daily use.** On blank survey(s), write in the *event name* and *date*.
- **Set out materials.** Clipboard, pencils, survey packets (30-50 each), incentives for survey completion (notepads, wristbands, etc.), basket to hold incentives.
- **Secure parent/guardian permission for those under 18 years of age to submit survey.**
- **Practice survey pitch.** Potential ways to approach the public:
 - “Howdy! This is a short (10-question) Festival survey so we can measure how we are doing and do an even better job for Arizona. Would you take just a minute to complete? We have a small gift of our appreciation for your help.”
 - “Ahoy there! We have a quick survey for event attendees—and a prize for those who complete it. Can we count on you?”
- **Upon completion of surveys,** return *completed surveys* to *Completed Survey Envelope* in STREET Team member’s cart and *return any Unused forms to the Blank Survey Envelope* in same cart. Each week, the Team Lead will use the self-addressed, stamped envelopes to mail the completed *Attendee Survey Forms*. Survey returns are critical to measuring Festival outcomes.

STREET TEAM AND VOLUNTEER BENEFITS

- Qualify for prizes and scholarships (see “Scholarship Information”)
- Receive custom, award-winning T-shirt
- Attend and experience amazing, fun events
- Create a network of new friends
- Develop references and expand your portfolio
- Become a member AZ STEM Community
- Share your knowledge and expertise
- Develop personal, social, and professional skills
- Explore new academic and/or career paths
- Strengthen community outreach
- Earn community service hours
- Be part of the Festival’s recognition and awards celebration



- Become recognized at school (Jr. STREET Team)
- Street Team member and volunteers – opportunities to present blog and other articles on STEM and Innovation and receive bylines for published works.
- Recognized on Arizona SciTech official website for those participating year-round.
- 18 and over Professional Development: Attendee as guest of AZ Tech Council for *approved* Lunch & Learn Workshops and Biz Mixers throughout the year (*excludes special invitation events or presentations*). Must RSVP to Lee Goldstein 48 hours in advance: lgoldstein@aztechcouncil.org

SCHOLARSHIPS

Arizona SciTech offers scholarships to Jr. STREET Team Members who have documented more than 20 volunteer service hours at events. Members need to maintain an accurate log of their service hours. Scholarship applicants should submit a 350-word personal statement (PDF format) on the general topic of STEM in Arizona to Jeremy Babendure (see “Staff Contacts”).

TABLE ACTIVITIES

Jumpy Crickets

Materials:

- 1 set of 7 crickets
- 1 tray with lid
- 1 placard with prompt

How to Engage:

- Place the crickets upright on the open tray in full sun. Crickets will become activated, making small jumps and skitter around in the tray. The placard, with the question prompt, can be displayed anywhere nearby, if desired.
- Move your body or the tray in order to cast a shadow over all or some of the crickets so that they stop jumping. It is best if the tray can be placed in such a way that people passing by will cast their own shadow, and hopefully notice the change in activity on their own.
- Draw attention to the change in movement. Ask, ““Why did they stop? Why’d they start-up again? Why are those moving, and those aren’t? What’s making them move?””

Explore:



- Listen to the explanations given.
- Test the theories as able.

Explain:

- Probe for clarifications, such as prompting definitions from the participants of: movement, energy, work, solar energy, solar cell, motor, etc.
- If time, draw attention to the construction of the photovoltaic cell, pointing out the differences in materials, coloration, metallic looking stripes
- If time, show the dismantled cricket to elicit better explanations of what occurs, resulting in the cricket movement

Elaborate:

- Point out that the sun is 93 million miles away, yet still provides power to the planet to grow all the plants, warm the atmosphere, evaporate water and often interrupt our radio and electronic signals in the atmosphere.
- What two parts of our body recognize the energy from the sun? (**Eyes and skin**) Explain that sunlight arrives as radiant energy, then energizes, every molecule it touches on earth. This energy often just makes the molecule vibrate, making it warmer, but sometimes a chemical reaction occurs.
- Describe electricity as electrons jumping across the wires until they trigger the motor in the cricket. In a photovoltaic cell, there are two chemicals that are perfect for electron jumping, and all they need to start the reaction is some radiant energy – which comes from the sun. These chemicals don't change, or become less powerful as the electrons continue to jump, like the chemicals in a battery do.
- What are examples of chemical reactions activated by the sun's radiant energy? (**Photosynthesis in plants, Vitamin D production in the skin of animals, and photovoltaic cells - solar cells. Water changes phases from liquid or solid to vapor, but this isn't a chemical reaction – it's just due to separation of the vibrating molecules**)
- Ask if there is any cost associated with making the crickets work. Will we need to replace any batteries to keep them working? (**No – the chemicals in the photovoltaic cell are not depleted from electron flow**) If we wanted to use high powered light bulbs as an energy source to stimulate the electron flow in the crickets' photovoltaic cell, we could also get the crickets to jump. Would there be a cost associated then? (**Yes, for the electricity used to power the light bulbs**)

Background Information:



<http://science.howstuffworks.com/environmental/energy/solar-cell1.htm>

<http://www.astronomynotes.com/starsun/s3.htm>

<http://education.nationalgeographic.com/education/news/power-sun/?ar a=1>



Shape Memory Alloy Wire

Materials:

- Lidded tray containing battery powered circuit with push button connection and shape memory alloy wire.
- Placards with prompts and additional information
- Secure extra batteries in your supplies as batteries drain with significant use.

How to Engage:

- Remove the tray lid straighten the wire upright by pushing the button, allowing the first flow of current through the wire. Display the placards (The one with the prompts can sit inside the tray, behind the wood piece for display.)
- Encourage participant to bend the wire loops over (try to discourage twisting the wire).
- Then encourage participant to push the button to see what happens.

Explore:

- Ask the participant to identify the energy source, which is the chemical structure in the battery
- Ask the participant to identify the flow of energy, which is the electrons that travel from one end of the batteries to the other end, through the wire route.

Explain:

- Ask for possible explanations of what would cause the wire to change shape when energy flows through (***any initial explanation is encouraged***)
- Electricity can cause things to heat up. (Examples: ***a hair dryer, an electric cooktop, a spark plug sparking combustion in a car engine***). These are examples of energy transfers, electrical energy to heat energy.
- Explain that the one type of wire is called 'Shape Memory Alloy' wire. What is 'shape memory' describing? (***The 'memory' of the original shape***)
- What is an alloy? (***a blend of metals***)

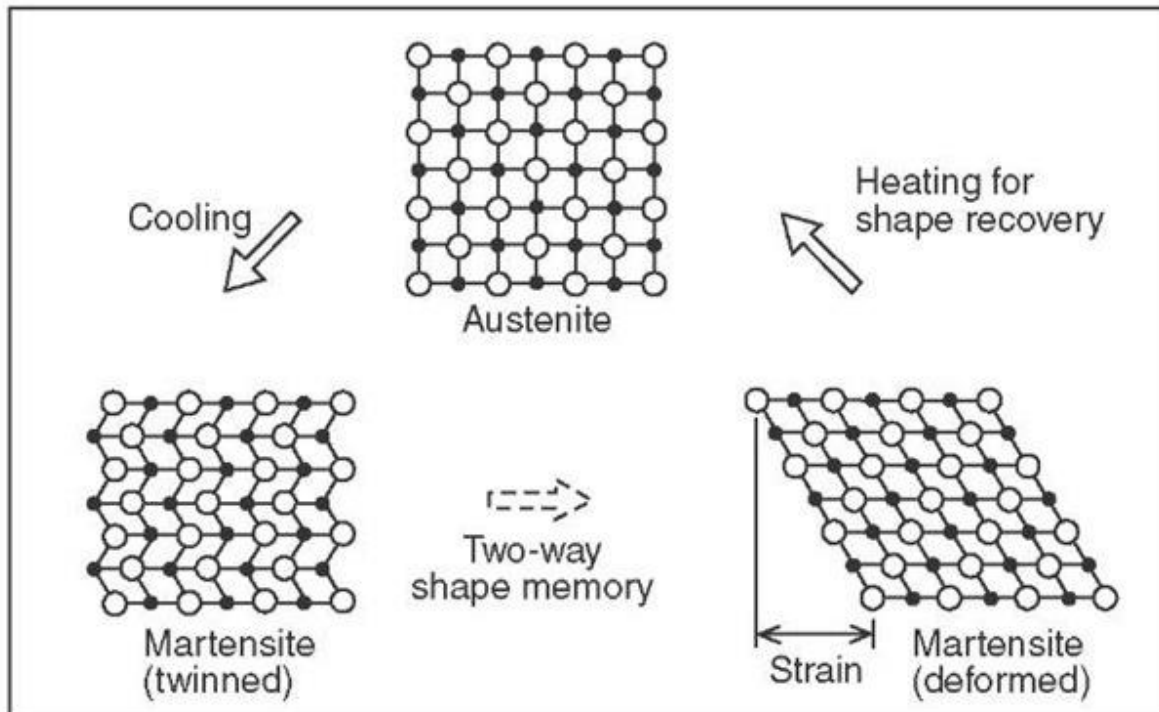
Elaborate:

- A shape memory alloy is a material formed of two or more metals (alloy) that remember an original shape after being heated, even when the wire has been deformed.
- All materials are made of molecules, and these molecules clump in particular formations. The shape of these molecular formations is often highly dependent on the



temperature of the material. Think about water, water vapor, and ice. Or candle wax heated. Or silicon in sand, or when heated to form glass and microchips.

- The wire is an alloy, or blend of nickel and titanium. The molecules in a nickel and titanium alloy are staggered in a diagonal pattern when the wire is at room temperature. When the alloy wire is 'deformed' from its original shape, the molecules adjust sideways, creating a linear diagonal formation. When heat energy is added to the deformed wire, the molecules separate slightly, due to being energized. Once the molecules separate they fall back into their staggered formation, which returns the entire material to its original shape.



Background Information:

<http://web.stanford.edu/~richlin1/sma/sma.html>

<http://smart.tamu.edu/overview/smaintro/simple/definition.html>

<http://www.explainthatstuff.com/how-shape-memory-works.html>

<http://what-when-how.com/materialsparts-and-finishes/shape-memory-alloys/>



Chocolate and Gum

Materials:

- Bags of chocolate kisses, enough for one per participant
- Packages of wrapped sugar peppermint chewing gum, enough for one-half per participant (sugar free gum doesn't work as well – but can be used if preferred)
- Ice chest with ice for keeping chocolate cool, if needed
- Container to collect wrappers

How to Engage:

- Encourage participants to begin chewing a half sized piece of gum for 30 seconds, then place a chocolate kiss in their mouth as they continue chewing.
- Get participants to specifically describe what seemed to happen

Explore:

- What remains in their mouth?
- Have they ever experienced this before? Have they experienced anything similar?

Explain:

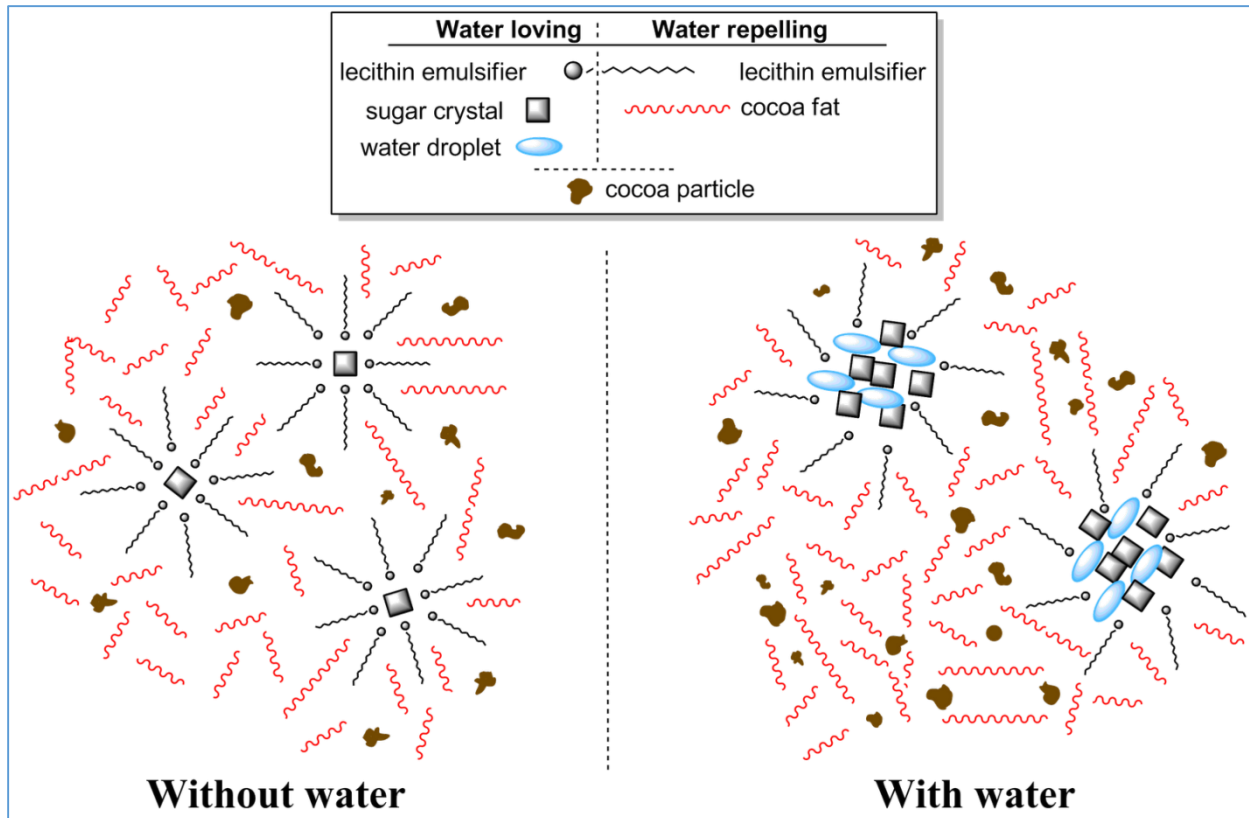
- What are the properties of gum that make it typically last? (Encourage any explanation)
- What are the properties of chocolate that make it melt in your mouth? (Encourage any explanation)

Elaborate:

- Water is polarized, so it only dissolves other polarized substances, like sugar. **Is there sugar in the chocolate and in the gum? (Yes) What is the main liquid in our saliva? (Water) Does the heat in your mouth also contribute to the gum dissolving? (Yes)**
- The polymer in chewing gum is polyisoprene. It is formed of nonpolar chains. **Will the water in our saliva dissolve the polymer in the gum? (No)**
- **What are the ingredients of chocolate? (Sugar, Cocoa, Cocoa Butter, and an emulsifier)** *If the sugar is dissolved by our saliva, what substances remain?* Below is a graphic that shows how the sugar crystals in chocolate are attracted to water – the water in our saliva is basically extracting or removing the sugar from the cocoa fat. The emulsifiers go along with the sugar/water mixture that we swallow as we chew.
- **So what remains in your mouth as you continue to chew the gum and chocolate together? (Cocoa and cocoa fat)**



- Polyisoprene's non-polar chains are long and straight, and any other substance with long and straight non polar chains can slide in between the polyisoprene chains. Based on this experiment, do you think the chains that compose cocoa fat are polar or nonpolar? (nonpolar)



Background Information:

<http://www.establish-fp7.eu/field-collection/field-item/377>

<http://pubs.acs.org/doi/abs/10.1021/ed100503p>

<http://www.fooducation.org/2009/02/chocolate-part-1-why-it-seizes-with.html>

<http://chocolate.mit.edu/science/>



Build your own mini-hovercraft



1. Cover the hole on the CD with double-sided duct tape.
2. Cut hole in the tape.
3. Place bottle cap over the hole.
4. Blow up balloon, pinch closed and place over the bottle cap.
5. Release!



REQUIRED FORMS

JR. STREET TEAM (5 FORMS)

STREET TEAM VOLUNTEER (2)

GROUP FUNDRAISING VOLUNTEER (2)



Jr. STREET Team and STREET Team Volunteer - Agreement form

(For Jr. STREET Team, Parent/Guardian signature required)

I, _____ (*full name in capitals*),
agree to be a volunteer with *Arizona SciTech* and commit to the following:

1. To help *Arizona SciTech* fulfill its vision and mission;
2. To perform my volunteering role to the best of my ability;
3. To adhere to the organization's rules, procedures and standards, including health and safety procedures;
4. To maintain the confidential information of the organization and its clients;
5. To meet the time commitments and standards undertaken, other than in exceptional circumstances, and provide reasonable notice so that alternative arrangement can be made.

I understand that violations may subject me to dismissal.

Volunteer signature: _____

Date: _____

(Jr. Street Team) Parent/Guardian signature: _____

Date: _____



Jr. STREET Team and STREET Team Volunteer - Code of conduct form

(For Jr. STREET Team, Parent/Guardian signature required)

The Arizona SciTech Festival offers a variety of voluntary activities designed to enhance learning while allowing participants to earn community service hours. As community ambassadors, festival participants must conduct themselves in accordance with the policies contained in this handbook.

An individual may lose eligibility for Festival events and benefits for any of the following:

- Abandoning assigned post without permission from supervisor or Festival STREET Team Leader.
- Possession, use or purchase of tobacco products by or for under-18 staff.
- Inappropriate attire (refer to “Best Practices: Presentation and Attire”).
- Profane, incendiary or malicious language or behavior during an event.
- Possession or use of (or impairment from) alcoholic beverages.
- Possession or use of (or impairment from) illegal drugs or the unauthorized possession or use (or impairment from) otherwise lawful drugs.

Volunteer signature: _____

Date: _____

(Jr. Street Team) Parent/Guardian signature: _____

Date: _____



Jr. STREET Team - Photo release form

To be completed by Parent/Guardian

_____ ***I grant permission*** for my child/dependent to be featured in films, videos, audio recordings, photographs or other digital media that may be published at any time on Arizona SciTech social networks or web pages.

_____ ***I do not grant permission*** for my child/dependent to be featured in films, videos, audio recordings, photographs or other digital media that may be published at any time on Arizona SciTech social networks or web pages.

Name: (Please Print) _____

Signature: _____

Date: _____



Jr. STREET TEAM – Transportation authorization and emergency contact form

To be completed by Parent/Guardian

Jr. STREET Team Member: _____ **Date:** _____

If the Jr. STREET Team Member is younger than 16, it is required that I arrive at least 30 minutes prior to the start of the event, and that I return 15 minutes prior to the end of their shift to sign them out. This will help monitor student service hours and insure student safety. If the Jr. STREET Team Member has a driver's license and provides his or her own transportation, the Jr. STREET Team Member is responsible for managing attendance and punctuality.

Signature: _____

My child/dependent has my permission to work for the Arizona SciTech Festival and will abide by the rules and regulations set forth in this handbook. I release Arizona SciTech from responsibility for illness or injury incurred in relation to an event.

Signature: _____

EMERGENCY CONTACT INFORMATION:

(Please provide the name of two contacts)

Name: _____ Phone: _____

Name: _____ Phone: _____



Jr. STREET Team – Medication authorization form

To be completed by Parent/Guardian or Physician

Student's name _____ Date _____

Name of medication _____

Purpose of medication/diagnosis _____

Prescribed dosage _____ Time _____

Parent's/Physician's recommendation (check where applicable):

____ Medication will be carried by the student.

____ Medication may have adverse effects (explain)

Special instructions/comments:

I request that my child be allowed to take the above medication, according to the stated instructions, during their time working as a Arizona SciTech Jr. STREET Team Member.

I further understand that it is solely the responsibility of my child, and not Arizona SciTech Festival, to verify that the medication being taken is the correct medication and is being taken properly.

Parent/Guardian signature: _____

