

Outreach in a Box: Hot Glass & Careers

GLOW (Glass Learning Opportunities Workshop)

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Introduction

What is [Outreach in a Box](#)?

Outreach in a Box is a program that allows you to take materials science education to wherever you are! Outreach in a Box outlines all of the details and steps you need to bring one of our popular programs to your community, your way. From t-shirt designs to budget planning, Outreach in a Box is your guide to materials science education on-the-go.

What is GLOW?

GLOW, Glass Learning Opportunities Workshop, is a program that combines hot glass demonstrations with a career panel. The idea behind GLOW is that students can learn about hot glass while also learning about the science behind it. The career panel, composed of local industry professionals, can also introduce students to future opportunities in the ceramics and glass industry and inspire them to pursue it.

Who can use this resource?

This guide to GLOW is best suited for middle to high school teachers, especially those who teach at a STEM-focused school or who teach subjects such as chemistry, materials science, or engineering.

It is also well suited for ACerS sections who want to organize a fun and engaging outreach event in their local communities.

Timeline

Timeframe	To Do
5-6 months out	<ul style="list-style-type: none"> ● Locate local hot glass shop and learn their public demonstration guidelines. ● Tour the studio and talk with the coordinators about the spaces needed for the GLOW event. At a minimum, there will need to be enough space for a class of students to observe the hot glass demo and a room for the career panel. ● Determine how many students or classes will attend your GLOW event. We recommend trying to organize three to four groups of 25-30 students. ● Connect with the school and teachers you are interested in attending this event. As a note, this can be one of the most complicated parts of organizing a GLOW event, as schools are limited by schedules and obtaining the appropriate permissions. ● Reserve the time/space at your local hot glass studio.
4-5 months out	<ul style="list-style-type: none"> ● Investigate funding opportunities from local companies or community foundations and begin writing a proposal for funding, if applicable.
3 months out	<ul style="list-style-type: none"> ● Reach out to local industry professionals (3-4 works well) from local universities, national labs, or companies in the area to sit on the career panel. Aim for a diverse group of individuals and jobs. ● Locate possible undergraduate or graduate student volunteers to help with the event. PCSA, GGRN, and MA students work well for this. If you need help connecting with these groups, email foundation@ceramics.org. ● Coordinate student transportation with the school. Many times, school buses will be available to the school for a very affordable field trip rate. ● Start thinking about a t-shirt design. You will likely need to coordinate the appropriate logos of the studio and/or any funding agency for inclusion on the shirts. Contact us for a t-shirt design example.
2 months out	<ul style="list-style-type: none"> ● Gather t-shirt sizes of volunteers for ordering t-shirts. Determine if any volunteers have dietary restrictions for snacks. ● Inform students/guardians of the GLOW event and obtain necessary field trip forms for parents to sign (per the school's field trip policy).

6 weeks out	<ul style="list-style-type: none"> ● Confirm the transportation for the students to get to the glass studio. ● Order t-shirts. As a rule of thumb, order one extra shirt in an XL in case of last-minute volunteer changes. ● Confirm the attendance of the career panelists who are able to attend. Email them the confirmation for the date of the event, location, and some sample panel topics. ● Confirm the attendance of the volunteers and determine the roles they will play during the event. Organize what they need to bring the day of the event (e.g., a professional camera). ● Confirm booking with the hot glass studio.
1 month out	<ul style="list-style-type: none"> ● Using the GLOW curriculum, teachers should start teaching glass-focused lessons leading up to the event. ● Order items for take home kits. Print Jolly Rancher inserts.
3 weeks out	<ul style="list-style-type: none"> ● Assemble take home kits. ● T-shirts should have arrived. Distribute to volunteers, if possible.
Two days before event	<ul style="list-style-type: none"> ● Gather all materials for the day of the event including volunteer snacks, take home kits, shirts, nametags, etc.
Day of the event	<ul style="list-style-type: none"> ● Arrive early! Coordinators should be first on scene to arrive at least one hour before students. Volunteers should arrive at least 40 mins early. ● Provide snacks and water to volunteers. ● Set up a career panel table and chairs. ● Write name tags for each volunteer. ● Go over volunteer roles and make sure everyone understands the flow of students. Having a designated person to be solely in charge of timing the rotations is helpful. ● Once students arrive, have the coordinator greet them and explain the flow of the day. Collect photograph release forms from teachers.

Budget

- **Venue:** Renting a glass studio can vary widely. Private studio rentals can cost thousands of dollars per session. Look for local science centers or non-profits that align with your

educational mission (e.g., The Pittsburgh Glass Center, Glass Axis, The Works in Newark, OH). A good rate is \$8 per student. If your event serves 100 students, then the cost of the venue would be around \$800.

- **T-shirts** for volunteers: \$12-15 per shirt with 10-12 volunteers, ~\$200
- **Student transportation:** School buses are usually around \$200-\$300 for the day, but need to be arranged well in advance.
- **Food** (snacks + end of day meal): You'll want to keep your volunteers' energy up throughout the event by providing snacks and drinks (~\$150) and then a thank you meal and a reflection session at the end of the day (varies by location, but should budget \$20-\$25 per person)
- **Take home kits:** To deepen the learning experience, you will want to provide take home kits of the Jolly Rancher Pull for each of the students. For the kits, you will need the following items:
 - [Jolly Rancher Pull Insert](#)
 - Wooden dowels
 - Plastic bags
 - Jolly Ranchers (4 per bag sorted by color)

What to budget for your GLOW event

Generally, you will need to budget for the cost of renting a glass studio, student transportation, t-shirts for your volunteers, snacks and a meal for your volunteers and career panelists.

How to budget for your GLOW event

We've found that running a successful one-day GLOW event typically costs around \$2,500-\$3,000.

Volunteers

Who makes a good volunteer?

A good volunteer is ideally a graduate student, like an ACerS PCSA delegate. They should be comfortable being a leader and take on the role of a volunteer without needing step-by-step instructions.

A good volunteer should also be comfortable talking to students who are younger than them and have an energetic, positive mindset. They should *want* to be there! Look for someone who has experience with volunteering, outreach, being a camp counselor, or any other experience that would lend well for an event catered to middle and high school students.

You should try to avoid volunteers who are shy or soft spoken. Students are excited about GLOW events, so it takes a strong voice to get the many middle and high school students to understand the directions the volunteers are giving them.

List of Volunteer Roles

- Hot glass audience member to ask science questions during the demo.
- Each group of students should have a volunteer assigned to them to follow them throughout the experience.
- Photographer: Ideally, a volunteer with a DSLR camera. A quality cell phone camera would also work.
- Designated timer: It's helpful to have a person keeping track of the times for each group and helping to facilitate the rotation of the students.
- Sometimes you can find a group of volunteers to perform additional science demos. In the past, we've had glass breaking and neon demos. In the past, we have utilized graduate student volunteers for this.

Volunteer Shirts

Volunteers should be wearing the same shirt so that they are easily recognizable and approachable.

Career Panel

Who makes up a career panel?

The career panel should be composed of three to four individuals who work in the materials science (ceramics, glass) or engineering field. Typically they can be located at universities, local companies or national labs. Aim for a diverse career panel, both in terms of the individual and the job.

How do I assemble a career panel?

To locate participants for your career panel, we recommend researching what local universities or schools are near you. Look into their departments, specifically focusing on materials science or engineering. See if any of the faculty specialize in ceramics or glass.

Another route to explore are different companies that have jobs related to materials science or engineering. To narrow down results, search for companies that were founded in your state and see if they have different branches. For example, Owens Corning, the world's largest manufacturer of composite materials, was founded in Toledo, Ohio, and has numerous locations throughout Ohio.

ACerS has a vast network of ceramic and glass professional members. Please feel free to reach out directly to us at foundation@ceramics.org for help with making connections in your local area.

When do I contact career panelists?

We recommend reaching out to potential panelists at least two to three months before your scheduled event. This will allow them to make necessary arrangements to attend and prepare before.

What should I tell them to expect?

When making arrangements with your career panelists, be sure to let them know how many students will be in attendance, what schools they will be coming from, how old they are, and any other relevant information. Give them a loose schedule for the day so they know when and where they need to be. Let them know that they will be discussing their career and giving advice to students who may be interested in (or unaware of) the opportunities that materials science has to offer.

It will be important to ask the participants to practice talking to young audiences. They should use language that students will understand and will sometimes need coaching. We would recommend holding a virtual meeting before the day of the event to practice as a group.

Connecting with Students

How to find students for an event?

One way to find students for an event is to search for local middle or high schools in your area. We've found that hosting about 90-100 students per event works well, which is about four classes. Groups of 25-30 students are ideal.

Some school districts have science coordinators who lead the science teachers in a district. See if you can find this person and email them to see if they know of any teachers in their district who would be interested in attending your GLOW event. Also, reaching out to a superintendent or school principal directly could work.

Another way to find students is to reach out to local Girl or Boy Scout groups, homeschool co-ops (groups of people who homeschool together), or looking into private schools. Some schools may even have a STEM or STEAM focus, which would be ideal.

Finding students for the event can be one of the most challenging parts of running a GLOW event, so you will want to get confirmation from the students as soon as possible.

Additional Resources

- View the GLOW Curriculum: [Questions to ask before, during, and after the visit](#)
- [Apply for a Kit Grant](#)
- [Apply for a Project Grant](#)
- [Photography release form](#)
- Blog post examples for post-event write up: [Pittsburgh Glass Center](#)

If you run a GLOW event, we want to hear about it! Please take pictures and send feedback to foundation@ceramics.org