



A Presenter's Guide to the Essence of a Memorable Teen Science Café

Welcome to the wonderful world of teen science cafés! We are truly grateful for your willingness to inspire teens with stories of new science and technology discoveries. Sharing your discoveries and new ideas with a teen audience is a unique experience and merits a different approach than the typical technical presentation. What we offer is training in storytelling, questioning techniques, and improvisation skills that will help you in better communicating your science to teens, as well as your managers, funding agencies, policy makers, and the media. One unexpected benefit of sharing with the teens is that their questions have given many presenters a new perspective on their own work, making the teen café a win-win for all.

To prepare you for the teen café experience, we describe below the elements that contribute to the essence of a teen science café and the critical role you can play in changing the lives of teens.

Introduction

Teens are growing through a unique and important time in their lives—transitioning from childhood to adulthood. They are in the process of defining who they are and how they fit into the world. Teens need safe, secure, and trusting relationships with peers and adults to help them explore new challenges and opportunities, as they become independent adults. Science cafés can be an important element of this exploration period in teens' lives.

Teen science cafés open the eyes and minds of teens to the importance of understanding how science, technology, engineering, and mathematics (STEM) affect their lives now and into the future. These programs have been shown to positively increase teens' interest in STEM and STEM careers. Teens often come away from a Café experience with new understanding about how the basic science they learn in school applies to solving real life challenges.

One of the most effective ways for this to happen is for teens to learn more about the day-to-day work of STEM experts, and to see first hand the passion they have for their work. Your personal story describing the journey you have taken to arrive at your current career is a critical element of a café. Teens are interested in how you advanced from your first job in high school to the career you have today. They will enjoy stories about the twists and turns in your career and the people who helped you find your path to success. They also are interested in learning about careers in your field requiring varying levels of education. These stories help teens envision the opportunities and steps they will need to take on their own journey.

Format of a Teen Science Café

There are three elements of a teen science café.

- Socializing and eating to create a welcoming and comfortable atmosphere.
- Teens and a presenter engaging in lively conversation about the topic of the program and sharing personal stories about experiences in doing the science or engineering that has shaped his or her career. A wide-ranging discussion can go back and forth between the presenter and the teens, and – if it's a really good evening—among the teens as well.
- An active learning experience aligned with the topic. Done before the conversation, it helps the teens digest the new ideas and formulate better questions for the presenter. When done after the conversation, teens may have critical new information that allows them to dig into the activity more deeply. Thus, the order of doing the activity and the conversation should be based on the topic and knowledge needed for the activity.

In a typical 90-minute café, this usually works out to a presentation of 15 or so minutes, an activity for 10 to 40 minutes, and the remaining time for discussion.

Creating a Welcoming Environment for Conversation and Learning

A sense of community is a very important part of teen science cafés. Each element of the café program has a purpose for creating a comfortable and welcoming environment for conversation. Successful teen science cafés include a warm welcome from peers, with teen leaders often staffing a welcome table. Welcome table teens work to learn new names, orient newcomers, and generally make peers feel comfortable. Snacks or a meal are part of the café with the goal of having everyone eat together and engage in conversation. Icebreaker games that include the presenter are a fun way to begin a café event. Simple games related to the topic, such as trivia, can get teens working and talking together. This kind of start to the café engages and lends comfort to the participants, making the environment feel safe and secure for conversation.

It is ideal for you, the presenter, to mingle at the welcome table, join in the food line, and participate in the ice breaker. It provides a way for you to informally engage with the teens in advance of the presentation and to establish a personal connection with some of them. What might you talk about? Share stories of your life or inquire about their activities and aspirations. Setting out specimens, graphs, data, images, etc. that draw the teens to browse and engage with before the program is another strategy to stimulate initial conversations and to spark interest and questions.

The Audience

A typical audience in a teen science café is 13-18 year old teens. The 13 year old might have taken Algebra and a General Science class. The 18 year old might have completed Calculus II and a number of Honors or Advanced Placement courses. This is a very wide range of knowledge and maturity. What they share in common is delight in good stories and getting the big picture on what we know and what we seek to know about a new discovery. Thus, presentations should be at an overview level, addressing big questions, posing challenges, and leaving the fine details out, unless they are critical. It should convey concepts that everyone in the audience can understand, yet will leave the audience intrigued and wanting to know more. You might tie the topic to a basic concept most of the audience will have learned in school. Those who are more advanced in their knowledge will understand more deeply the science behind the idea, but the explanations should be within reach of all.

The Presentation

Teen participants want passionate, enthusiastic, relaxed, and humorous speakers who naturally show their love of their work and can communicate its relevance. OK, that is a tall order, but just be your lovable self and you will hit all the bases.

Your experience should be entirely different from the one-way presentation typical at a professional meeting. We seek a story of science. Opening the event by describing it as a conversation and inviting the participants to interrupt with questions sets the stage. It is important to ensure that a majority of the time is given to the comments, thoughts, and opinions of the participants. Teens learn more through this reflection, and you will often gain new insights about their understanding and perspectives on your work. A hands-on activity developed with the café adult leader will supplement the conversation.

Your role is to unravel an intriguing topic, typically your current work and its implications or limitations in a broad context. You will want to pose an unanswered problem, opportunity, or challenge. Then, provide just enough information for an interesting conversation, and not so much that you have answered all of their questions. Focus on conveying a very memorable single idea that answers the question on the minds of the audience—Why should I care about this? For example, a scientist from Africa doing research on genetically modified plants shared an insight that motivated his work. His opening statement

was, “In America, people eat food for pleasure. Where I am from, people eat food to survive.” It set the stage to think about GMO foods in a different light.

To reach the teen audience, put yourself into the mind of the teen that knows little about the nitty-gritty details of your topic, but is interested in the bigger picture of its relevance. It is not necessary to go back to the basics of a topic, as sometimes presenters are tempted to do. Teens come to a science café because they are interested in the particular topic, or simply because they are interested in science. Whichever group they fall into, they are interested. Then, imagine how he or she is processing your words into mental images. Gather feedback along the way by posing questions or challenging the audience with a provocative statement frequently. Their responses give you clues to what they know and how to adjust your delivery.

Ideally, presentations are short, ~15 minutes, and do not include a PowerPoint. It may seem intimidating to present without the crutch of PowerPoint, but the benefits are tremendous. It allows for more free flowing storytelling and conversation, keeps the audience focused on you and what you are saying, and allows you to be flexible and responsive to the audience’s interest.

If PowerPoint is needed, the focus should be on imagery to help teens visualize an object or process, interpret graphs or maps, or to pose open-ended questions they might discuss and ponder. Skip the bullet points that remind you of what to say. Remember, you are the expert and conversations are never about bullet points. If you forget a point, you can bring it up later when it becomes relevant.

While you will share new ideas on a current science topic, the magic of a science café happens when it is assumed that everyone present has an important perspective to add to the conversation, and the opportunity to do so. Engaging all participants brings out many different perspectives and new dimensions to the topic. Science cafés are an informal and low-risk way for you to share your knowledge and passion with the public, while hearing the public’s views of the topic. Cafés have influenced public understanding of societal implications of new technology or discoveries, while altering the way scientists’ think and talk about their science.

Audience Involvement

Conversation

Generating conversations about science and technology is the unique and defining characteristic of science cafés. Topics do not necessarily have to be controversial to stimulate conversation; however, the discovery, invention or application has to have unknown consequences or effects.

You can stimulate the conversation by presenting new and provocative ideas that intrigue and challenge the audience. Or, you might present a hypothetical, but realistic future outcome of the work and engage the audience in exploring how that would change their lives. The presentation should not answer every possible question, but rather present some big ideas that open the door for questions and discussion. Intermittently pose open-ended questions to the audience to get them to consider next steps, alternative ideas, unexpected consequences, or opportunities that may arise in the near or far future. What if? How might this affect other things in the world? If you could choose, would you want x or y? Doing this early in the presentation conveys to the audience that you want to have a conversation, not a lecture.

You can use the think-pair-share method to get teens to talk to others at their table about values, concerns, choices, etc. Using small groups of two or three teens, have them discuss a question or idea within their group for a minute or two, then have them share their collective response with the entire audience. This is a less threatening and more inclusive way to get conversation flowing.

You will want to be consciously deflecting questions back to the audience to get them thinking of solutions. This is where improvisation comes into play. Rather than critique teen ideas directly, pose more questions (what do you think?) to get discussion of the perspectives, reflections, ideas, and values from the audience. In cafés, the audience and presenter learn from each other.

Interactive Learning

A highlight of teen cafés is the interactive learning activity. This moves the café program from a more formal academic discussion to a more playful participatory event. Team competitions or group activities can create the opportunity for personalized learning. Activities can include examining artifacts to answer a question, handling or observing live animals, competitive team games such as cyber security or robotics challenges, “jeopardy-like” quizzes, and even whole body activities where students themselves can for example simulate animal movements or behaviors.

Many scientists have no experience in developing and leading a hands-on type learning experience related to their work. However, your science café leader will work with you to create a suitable activity. The activity may focus on the Most Important Thing, a tool or process key to the topic, analyzing data or problem solving, or a simple demonstration of a discrepant event that challenges their “common sense”. There are many existing hands-on activities for out of school programs that may be adapted for your topic too.

Getting it Right: Practice

The key to success for a teen café is a rehearsal of the event with teen leaders and the presenter. This informal gathering is an opportunity for you to share your presentation, identify jargon or ideas that might stump the teens, and to work through the hands on activity. Engaging with the teen leaders gives you a small intimate group experience of a café with immediate feedback. And, once the teen leaders have a sense of the hands-on activity, they can help others during the actual café. While this takes a bit more time, our presenters routinely tell us that the rehearsal was a fun and very helpful experience for them.

The Teen Science Café Network is a community of practice that is passionate about creating opportunities for teens and experts to explore through stories, conversation, and activities how science and technology innovations are changing our world. Teen science cafés are free and open to all interested teens.

