



Developing a Science Café Program for Your University Library

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Abstract

The Science Café is a national movement that attempts to foster community dialog and inquiry on scientific topics in informal venues such as coffee houses, bookstores, restaurants and bars. The California Polytechnic State University, San Luis Obispo, Robert E. Kennedy Library staff have taken the Science Café model out of bars and cafes and into the university's library. They have created an outreach opportunity as the campus community comes together to share and discuss faculty research, student work, and outside speakers' knowledge. The Science Café programs encourage open, easy-to-understand conversation exploring scientific and interdisciplinary topics in an attempt to build connections among disciplines. Cal Poly's Science Café is unique as it is one of the first to be held in an academic setting and the only Science Café within 200 miles of the campus. The program's development is described below.

Introduction

Science Café events take scientists out of their labs and create a forum where they communicate their work in an accessible way to non-scientists throughout a community. Within the Science Café trend, some are connected with a university or research facility, but most events are off campus. The program was modeled after

- Café Scientifique (www.cafescientifique.org/),
- Ask a Scientist (www.askascientist.org/),
- NOVA scienceNOW (<http://www.pbs.org/wgbh/nova/sciencenow/>)

- Science Café (<http://sciencecafes.org/>).

The objective of the Science Café program, by definition an informal learning environment, is to foster understanding and appreciation across the socio-intellectual division between science and society (Nielsen 2005). Science learning programs like these, which take place in schools and science-rich institutions and include organized activities that feed or stimulate science specific interests, have been found to positively influence academic achievement for students (Bell et al. 2009).

The Science Café concept encourages scientists to make science more accessible to society (Mutheu & Wanjala 2009). The Cafés seem to have hit a "sweet spot" in adult science education, offering access to cutting-edge discoveries and the scientists who make them, minus the notes and tests required in school (Ferris 2007).

As the program was being developed at Cal Poly, other Science Café organizers provided feedback about the concept of having the program on campus as opposed to a venue off campus. It was suggested that an off-campus setting helps foster dialogue and discussion by bridging the gap between experts and the community at large, in an informal and comfortable setting, while an on-campus setting could be perceived as intimidating. After much consideration, it was decided that the target audience would be the Cal Poly campus community (though off-campus community members would be welcomed) and the Science Café would be held in the library's new Learning Commons café. The library's café offers food and coffee for attendees (helping to make the library space inviting and comfortable) and it is an on-campus, neutral space shared by all.

The Cal Poly Science Café's informal speaker series was expanded to the arts, humanities, and sciences. The purpose was to encourage open, easy-to-understand conversations that explore a variety of topics and interdisciplinary interactions. An additional goal was to recapture the fun associated with learning that students often lose beneath the pressure of papers and grades.

A working group developed a program plan which included a vision statement, series program descriptions, informal learning objectives (that support the university's learning objectives), and described the ultimate goal of the program as supporting participants' opportunities to learn about cutting edge research in an accessible format. An advisory committee of faculty and key campus administrators was established to ensure general campus support and guarantee that topics and speakers would adequately represent the expansive interests across campus. Students were given the opportunity to contribute through various activities, including crafting the Science Café logo and participating as event speakers.

Researchers and scholars on campus were encouraged to participate, by promoting the venue as one in which they had the freedom to share scientific research and knowledge, provide outreach to non-majors, and comply with research grant outreach and retention/promotion requirements. Off campus researchers were invited to campus to share their enthusiasm for science and gauge public reaction to their research, or in some cases, to speak at the Science Café in addition to their participation in other events on campus.

It has been possible for the Cal Poly Science Café to organize events without major expenditure on speakers or marketing. Connections with faculty, students, and the community led to excellent moderators and speakers without paying honoraria or travel expenses.

A variety of topics have been presented in various formats as part of the program, with speakers ranging from established national speakers to Cal Poly faculty and students:

- The inaugural event (January 2009), **Improbable Vehicles**, was a panel presentation by Cal Poly faculty, staff and students on methanol-powered motorcycles, a Cal Poly-built electric car and human powered vehicle, and Cal Poly's annual process to produce a Tournament of Roses Parade float. There were over 70 attendees.
- The second event, **Darwin 200**, held on Darwin's 200th birthday, included a presentation, *The Galapagos: Not as Darwin Saw Them*, by a Cal Poly professor, comments by "Darwin" (the Dean of the College of Science and Mathematics in costume), and birthday cake. This event had a gate count of more than 120 attendees including faculty, students, and staff, and people loved interacting and taking pictures with "Darwin."
- The third Café, **The Science of Type**, featured an external speaker, Christopher Slye, an Adobe Systems type designer, discussing typographic design and technology. This event had the lowest attendance with only 25 attendees, with most of the attendees from one class. This low attendance was probably due to inadequate promotion of the event.
- The fourth event piggybacked on the presence of a national speaker being hosted by the Kinesiology Department. **How Mindless Eating Works in Government** was a conversation with Brian Wansink, a best selling author and former executive director of the USDA's Center for Nutrition Policy and Promotion. This event had over 60 attendees and was an informal talk given before a formal ticketed speech on campus.
- The fifth and last event of the 2008-2009 school year was **nanocafé...is small the new big?** It was a hands-on event. It included demonstrations of nanotechnology products, the building of a large nanotube model from balloons, and discussions led by Cal Poly faculty and a UC Berkeley science educator. It was part of a larger national event, NanoDays. This program was deemed the most successful event by students, staff and faculty due to the heavy role students played in the preparation and implementation of the program even though it did not have the largest head count of all events (there were about 70 attendees).
- The 2009-2010 school year topics included: **Is It Still a Book?**, an informal discussion with Cal Poly Graphic Arts faculty focusing on what makes a book a book, ranging from Kindles to art books; **Agriculture. Community. Education.** with a Cal Poly Organic Farm staff member; **Jurassic Beer: the Making of a 45 Million Year Old Brew** with a Cal Poly Biology Professor Emeritus who had discovered a live yeast trapped in ancient amber while searching for bacteria to be screened for pharmaceutical properties, and ultimately used the yeast to brew beer for commercial sale; **The Great Pacific Ocean Garbage Patch** which discussed the debris at the center of the North Pacific Ocean, shared by a scientist and a teacher (a Cal Poly alumna) who recently traveled to the Garbage Patch as part of a graduate-student led scientific research expedition, SEAPLEX; **The Science and Art of Taking a Risk** with a Cal Poly Business faculty member, exploring what it means to take individual and societal risks, how to measure those risks, and how economics, engineering and psychology envision risk differently; and a survey of the ethical and practical issues of the **Ethics of Human Enhancement** with a Cal Poly Philosophy professor.

Assessment

The goal of the Cal Poly's Science Café is to provide opportunities for participants to learn about cutting edge research in an informal setting. In addition it provides presenters a venue to share their research with a general audience. Participant feedback has been invaluable as a source of information, allowing organizers to learn constantly and make adjustments to

programming.

Assessment of this program has been challenging due to its informal nature. Though it is crucial to get feedback, in the spirit of the program, it was deemed inappropriate to have written assessment tools at the end of the programs. Since the inception of the program a number of tools have been offered to presenters and participants to provide feedback: comment cards located on tables around the event, posting to the Science Café blog, commenting on the Science Café Facebook page, etc. Additional information was received via e-mails and word of mouth.

Feedback from comment cards, blog postings and Facebook comments has been very limited, although the feedback has been positive. Quotes include: "This is great, creating a forum for people (especially non-biology majors) to have a listen to what Darwinism is"; "great information, ideas and story"; "excellent idea" [nanotechnology]; "bucky balls rock."

In order to more actively solicit feedback, participant and presenter surveys were deployed online in late Fall 2009 to gather data on their perspectives of the program. The survey questions were loosely based on the data presented in a NOVA science [NOW Science Cafés Evaluation report](#) completed in May 2007 by Goodman Research Group. The participant survey consisted of questions that focused on the influence of the Science Café on participants' science interest, learning, and behavior and the presenter survey focused on their personal experience regarding the Science Café.

Science Café Presenter Survey Results

For most Cal Poly Science Café presenters this was their first experience with any Science Café. Over 70% of the presenters had never attended or been involved with a Science Café. Almost 90% had only learned of Science Café because organizers contacted them. The primary benefit of participating at the Science Café for all presenters was the opportunity to educate the community about their scholarship (Figure 1).

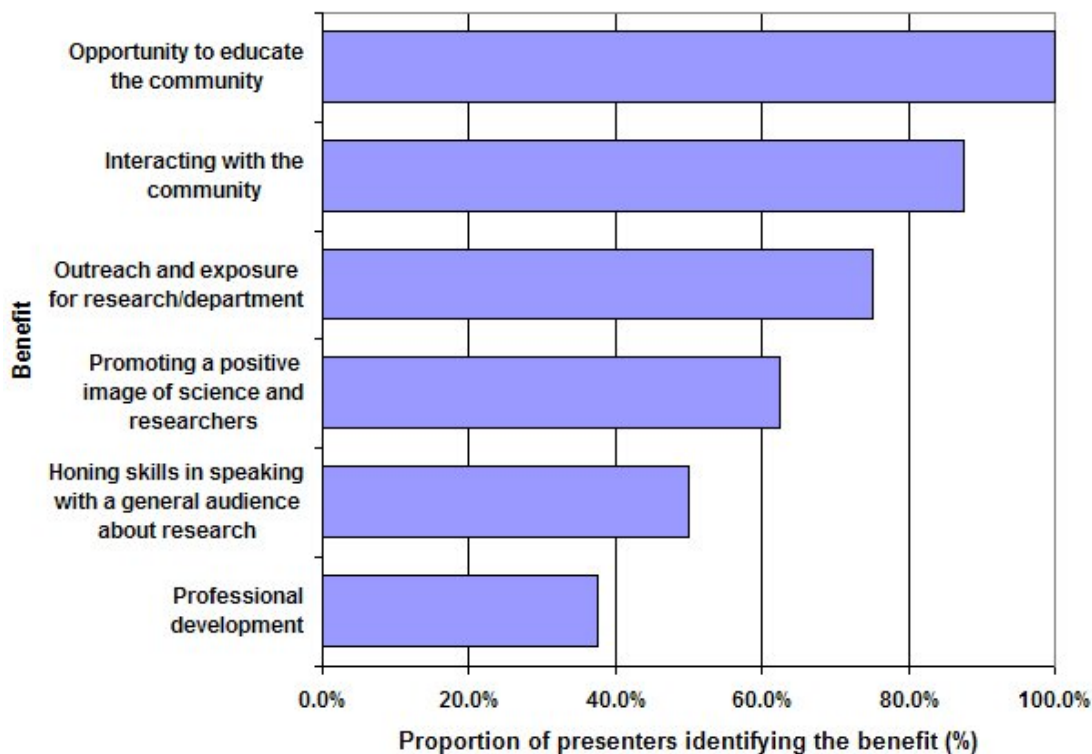


Fig. 1. Proportion of Science Café presenters identifying given benefits of Science Café participation. Presenters answered the question, “What were the benefits of presenting at the Science Café?” as part of an online survey following their participation. Presenters checked boxes corresponding to each benefit that applied and were free to select any number of choices (n=8).

Though only slightly more than half of presenters would be interested in presenting again (63%), they were likely to recommend presenting to a colleague (75%). This corresponded with 88% of presenters ranking their overall satisfaction with their Science Café experience as a 4 or 5, on a 5-point scale with 1 being not at all satisfied and 5 being extremely satisfied.

They were asked if they would do anything differently if they were to present again. There were only a few comments, e.g., “I would”:

- scale down my presentation and use more interactive elements to draw the audience in
- shorten the presentation
- get a solid handle on the amount of time available
- present in conjunction with a class, and have the class lead the discussion

Science Café Attendee Survey Results

The printed promotional materials and word of mouth were the most successful means by which the attendees heard about the Science Café. The combined web presence of the Library’s web page, Facebook page/ad and blog were also identified by attendees as additional sources of information (Figure 2).

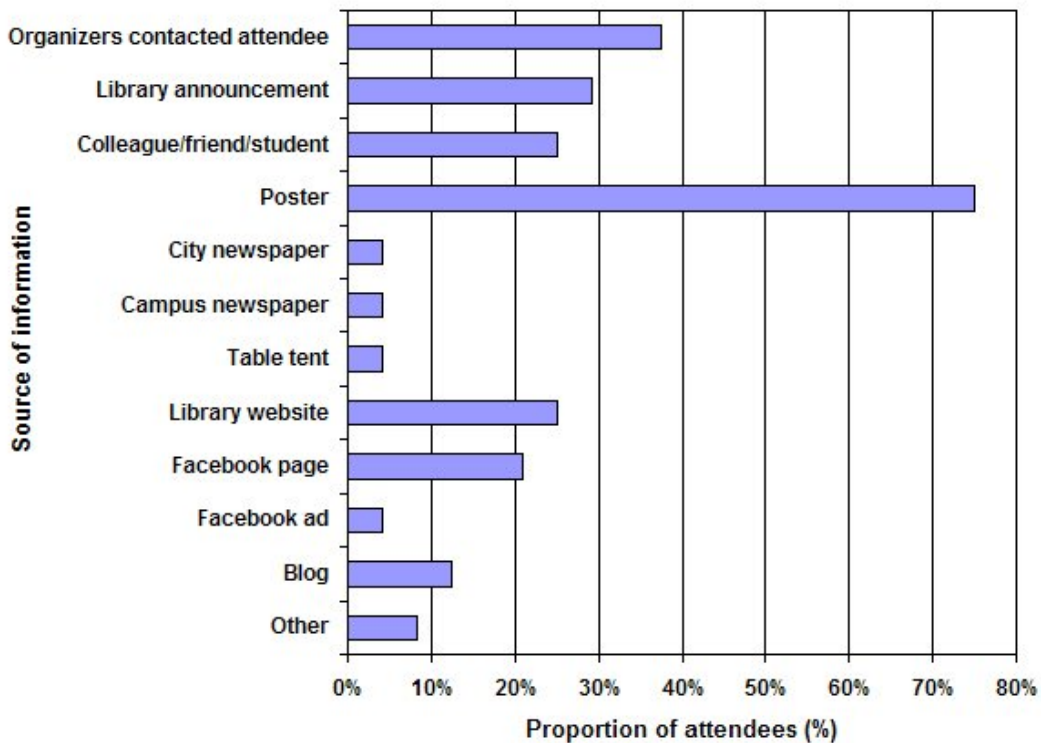


Fig. 2. Proportion of Science Café attendees who identified given sources of information in response to the question, “How did you find out about the Cal Poly Science Café?” Attendees responded as part of an online survey following the Science Café and were free to select any number of sources (n=24).

The majority of attendees were intrigued by the topic and half were interested in learning something new (Figure 3). After attending a Science Café program, almost 85% of attendees discussed the content with friends, family, or colleagues. In addition they visited web sites and independently read more about the topic through books, newspapers, and scientific journals. Overall satisfaction with the programming was extremely positive with more than 85% of all survey attendees reporting they would attend another Science Café and would recommend attending to another person.

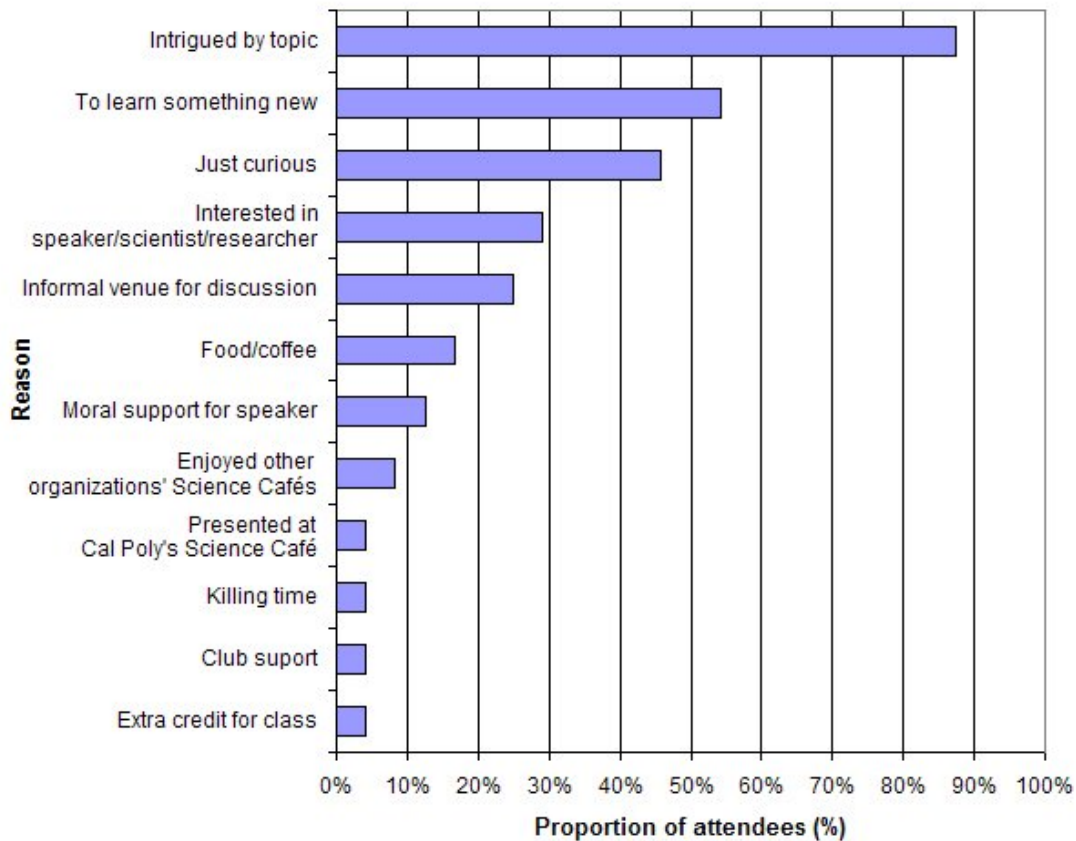


Fig. 3. Proportion of Science Café attendees who identified given reasons in response to the question, "Why did you attend?" Attendees responded as part of an online survey following the Science Café and were free to select any number of sources (n=24).

Attendee Interview Results

In addition to the online surveys, a small representative sample of attendees, including students, staff, faculty and community members, were interviewed in Spring 2010.

There were a number of important pieces of data that was not captured in the online survey. Attendees said that they: took away basic key concepts from the programs but depending on the topic some of the theories were difficult to understand; felt that organizers needed to promote an environment that was less intimidating so they would feel more at ease to participate in discussion and ask questions; found that food was the biggest contributor in making the physical space informal. In addition, only half of interviewees said that they were familiar with the University's Learning Objectives and that one of the goals of the Science Café was to support those objectives.

Overall Findings

After reviewing all available feedback, there were a couple of consistent points of program success and areas that need improvement. The programs that had food and an element of "fun" (i.e., students explaining their human-powered vehicle, a visit from Charles Darwin, using balloons to understand nanotechnology, etc.) generated the strongest positive comments from participants via all feedback channels. However, it is clear that the organizer's expectations of the presenters and the presenters' expectations of the programs' format often did not match. This communication might be improved by providing presenters a formal set of guidelines which outline the program format in detail, invite them

to attend a Science Café before they present and/or provide them a video of "exemplary" past presentations. This issue was echoed by most attendees, as their comments for improvement of programs surrounded the lack of some presenter's interaction with the audience and their poor presentation style.

Best Practices/Advice

- Join the Science Café coordinator network at <http://network.sciencecafes.org/> to gain perspective on national Science Café trends, funding opportunities, locating scientists/speakers, evaluation guidance, and promotion ideas and helpful tips.
- Create a vision and planning document that describes the purpose, goals and structure of the program, tailored to your university including the budget and staffing requirements needed to build a sustainable program.
- Form a working group consisting of individuals with the organizational and planning skills necessary to be responsible for all the details critical for a successful event.
- Form an Advisory Board to cultivate campus ownership, consisting of representatives from a variety of departments and administrators to help generate interest and promote engagement across campus and assist with program improvement.
- Create opportunities for student participation (i.e., student speakers, graphics, etc.).
- Identify an informal and inviting venue that creates an atmosphere that is comfortable, friendly and non-intimidating.
- Schedule the events at a consistent time and place and with some regularity (e.g., with at least two events per quarter or semester). The total program length should be approximately an hour but no longer than 90 minutes. It may begin with a brief media clip (e.g., video clip, theme music), or with a conversation starter or activity as an introduction.
- Define topics that will appeal to your campus community, spectrum and parameters.
- Identify researchers/speakers who feel comfortable speaking to non-experts.
- Make it clear that this is not a traditional formal academic talk or lecture but a short talk of <20 minutes that invites audience participation. Organizers should strongly state that PowerPoint is discouraged and limit any PowerPoint "presentations" to images only. (Note: The Science Café organization network has information for speakers, at <http://sciencecafes.org/presenters.html>)
- Advertise and promote the event to insure a large participant turnout. Advertising can include the campus newspaper, residence hall fliers, campus posters, sandwich boards outside the library, event announcements in local newspapers and publications, Facebook and Twitter posts, blog postings, a Science Café events listserv, the library and campus web site, the national Science Café web site, word of mouth, viral advertising, announcements by professors in class, text messages to students, etc.
- Develop methods for feedback and evaluation including paper comment cards, blog postings, Facebook comments, word of mouth, e-mails, and online surveys. (Cal Poly Science Café advertising posters, photographs, video, Facebook posts, surveys, etc. are available for review at: http://lib.calpoly.edu/learningcommons/science_cafe/)
- Be prepared to have the necessary resources to support the program. The immense success of the Cal Poly Science Café and its high cost in staff time during the first year precipitated the hiring of a half-time contractor with previous Science Café and event coordination experience to take on responsibility for the second year of the program, increase outreach beyond the campus community, and identify external funding opportunities to expand the program.

Discussion

The Science Café program at Cal Poly's Kennedy Library has been a successful collaboration between the library, campus community and researchers. The library is gaining visibility and credibility by: sparking conversations across and beyond the Cal Poly

community; creating an intellectual ambiance that is relaxing and stimulating; fostering a spirit of open, friendly, and inclusive discussion; creating opportunities for student participation; and engaging students and faculty outside of the classroom.

There has been extensive discussion in the profession about the role libraries will fill in the future and how this role will be fulfilled. As libraries extend their identities beyond traditional library boundaries and present as both physical and conversational spaces, they expand the value of the library and change patron perspectives while maintaining the mission of the library to promote and support learning. Science Cafés hosted by libraries are an effective example of this transition and a means of engaging a community.

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