

NOVA scienceNOW

SCIENCE CAFÉS EVALUATION

This information is taken from a report completed in May, 2007 by Goodman Research Group, for NOVA scienceNOW with the support of science cafés from across the US.

A total of 22 Café Organizers, 51 Scientists that have presented at a Science Café, and 149 Café Attendees participated in Web surveys to provide this information. NOVA scienceNOW emailed the Web surveys to Café Organizers and Café Scientists. Café Organizers emailed the Web surveys to Attendees, who were offered a \$10 gift certificate to Amazon.com for their participation.

TABLE OF CONTENTS

The Perspectives of Café Organizers.....	Page 1
The Perspectives of Café Scientists.....	Page 4
The Perspective of Café Attendees.....	Page 8

THE PERSPECTIVES OF CAFÉ ORGANIZERS

Attendance at Science Cafés ranges dramatically:

- Two Cafés typically include 16-25 attendees
- Six Cafés typically include 26-40 attendees
- Three Cafés typically include 41-55 attendees
- Two Cafés typically include 56-74 attendees
- One Cafés typically include 74-90 attendees
- Six Cafés typically include 91 attendees or more

Science Cafés have a loyal following, with most reporting that at least half of their attendees come on a regular basis.

Organizers were asked to share their opinion about what keeps Attendees coming back to their café. Having the opportunity to interact with Scientists (n=10) and the topics featured at Cafés (n=8) were the characteristics mentioned most often. Others believed the venue (n=5), interest in learning (n=4), and the group discussions (n=3) were the characteristics that brought repeat attendees. Two mentioned that a community has formed as a result of their Café. Responses included:

- *“They like the opportunity to discuss science topics with an expert and learn more about the topics.”*
- *“I would guess it’s that the topics are just incredibly compelling – things people want to know about. Also, it’s a fun night out in the city.”*
- *“Great venue (beer and food), excellent speakers, growing [camaraderie] among participants.”*
- *“The engagement with the material and the opportunity to learn about science and society at a broader level.”*

Perceived Effectiveness of Science Cafés

The majority of Café Organizers believe that Cafes are very or extremely effective at engaging the public in science (the top two ratings on the scale), but they also note that they may be preaching to the choir.

When asked to explain the rating they had selected, organizers noted increasing attendance rates, audience participation during presentations, and feedback they had received directly from Attendees.

Organizers who provided a lower rating believed that the Café model is effective but also noted that they are not yet reaching the general public. One Organizer summarized this issue by saying, *“I think cafés are very effective at engaging the public that attends – the challenge is encouraging participation.”* Others noted that Cafés need to be more effective at engaging *“the more disenfranchised parts of the community as well.”*

Café Organizers who have used NOVA scienceNOW video in a Café gave these events high marks in each area rated:

Organizers' ratings of NOVA scienceNOW cafés					
	Poor	Fair	Good	Very Good	Excellent
Engaging audiences	0	0	1	4	5
Providing necessary background information to increase comfort with science topics	0	0	0	7	3
Setting the mood	0	0	2	3	5
Encouraging audience involvement	0	0	3	4	3

Organizers' Advice about Cafés and Café Resources

The vast majority of Organizers (95%) provide scientists with information to help them prepare for their Café presentation. Most provide an overview of the Café format. Several mentioned that they set parameters around the length of the presentation, and some forbid certain presentation formats such as lectures. A minority of the Organizers reported taking a more hands-off approach in guiding presenters. A range of the responses received is presented below:

- *“We share the evenings’ format with them and help them to understand that it is designed to encourage informal discussion with [a lot] of question and answer as opposed to a forum or more formal presentation. In some instances the scientists will provide focus options and we will select the area that we feel the attendees would like to be addressed.”*
- *“*Background of audience *Importance of lay language *Minimal use of visuals *Emphasis on the importance of dialogue.”*
- *“Guidance is essential! I even give it to "high-ranking policy makers." I send all potential speakers a concept paper in advance, before I even "book" them, to be sure they understand the "ground rules" before they agree to [be a] speaker. This includes goals, target audience, and format. Format includes: 10-20 min max for remarks, no [PowerPoint] but props ok, and open Q&A.”*
- *“It's VERY minimal. I think part of the fun of this kind of event is that it's not micro-managed by me or anyone else. I like to let the speakers do their thing in whatever way will best allow the presentation to shine. This has allowed a lot of interesting variety over the years. I let them decide if they want to bring visuals, handouts, props, or nothing at all. What I do recommend is that they prepare their talk in 2 parts, one for before the break and one for after. And I ask them to use their [judgment] in taking questions from people; if someone is babbling on too long or not making sense I ask them to say something like, "Let's talk about that during the break," to save the other attendees from having to sit through a lot of nonsense.”*
- *“I tell them the format, explain why the[y] cannot use visual aids. I have them come early so they can get used to the space and we can mike them properly. I also try to get some beer into them.”*

The Organizer Survey also asked respondents to select the presentation features that they would and would not recommend using in the Café environment:

- The vast majority of the Organizers endorsed Q and A sessions.
- Most Organizers recommended group discussion and the use of videos/DVD.
- Some organizers endorsed lecture presentations, but a greater number recommended avoiding lectures in a science café.
- The same percentage of Organizers endorsed and recommended avoiding the use of trivia.

One of the final questions on the survey gave Organizers the opportunity to share their final advice for people who are interested in starting a Café in their area. Five suggested that new Organizers learn from the work of those who are already involved in the movement. Others noted the importance of choosing scientists and/or topics wisely (n=4). Four believed it was important to identify co-organizers and partners to share the responsibility of running the Café. Responses included:

- *“The one area that I would caution new planners in is trying to make sure that the scientist communicates well and can be engaging with the general public.”*
- *“Study existing public information; attend a café in another area if possible.”*
- *“Follow the proven format. Keep it simple. Communicate the goals & audience clearly to potential speakers. If possible, use only proven speakers who you know can talk at lay-level, at least until your café is off the ground and a reputation is established. (Then you can take a few more risks, but always give clear guidance to speakers BEFORE they commit to participating, and given them an "easy out" in case they decide a free-wheeling Q&A isn't for them--for example.)”*
- *“Go with ScienceNow. [Begin] with public discussion of local interest [controversy].”*
- *“Select your expert and topic carefully to help ensure a positive experience.”*
- *“Offer a variety of topics, find hosts who are dynamic and able to engage the general public, encourage conversation format.”*
- *“Find an existing organization to support you financially and logistically. We work on a grass roots basis and it takes a lot of time.”*
- *“Be prepared for a lot of work. Get others to [volunteer] help.”*
- *“Plan well for the first one: host opinion leaders that are known in town, chose a sexy and timely topic, invite the media and be interviewed. Press articles/radio interviews will help for fundraising.”*
- *“Find a roomy neighborhood venue with staff who can support you; advertise by word of mouth; recruit at least a total of 3 co-organizers to help with the volunteer workload; get connected with local universities and industry.”*
- *“Be clear on your objective. Work out location, how to attract speakers and audience.”*

THE PERSPECTIVES OF CAFÉ SCIENTISTS

The majority of the Scientists (90%) who completed the survey had been recruited to serve as a presenter by the Café Organizer. Scientists agreed to become involved as a presenter for a number of reasons (see Table 5), with the most frequently cited reason being a desire to educate and engage the public. Others thought it would be fun or stated that it was important to them to provide outreach to the community.

Reasons Scientists Agreed to Participate in Science Cafés	
Educate and/or engage the public with science (n=19)	<ul style="list-style-type: none"> - <i>It is very important to provide up-to-date-science and scientific research to the public and to demonstrate its importance to society and our being as a nation.</i> - <i>I believe that it's important for scientists to communicate effectively with the public.</i> - <i>I thought it was a great way to shed light on what has become a rather confusing topic (stem cell biology) for the layperson.</i>
Personal benefits (n=12)	<ul style="list-style-type: none"> - <i>Sounded fun</i> - <i>I like to share the excitement of science with a general audience.</i> - <i>I thought it would be a good experience.</i>
The importance of outreach (n=10)	<ul style="list-style-type: none"> - <i>To represent my university.</i> - <i>Outreach is very important. I try to do one thing like this each year.</i> - <i>I have always thought public outreach is a good idea; I have always thought I would be good at it; I also think it is a good way to raise money for a department.</i>
Interested in the Café model (n=7)	<ul style="list-style-type: none"> - <i>I had read about the European version and it sounded like a terrific idea.</i> - <i>To publicize one of my recently published popular science books, and to see how this experiment in science for the citizen really worked.</i> - <i>Because I think it important to bring science to the public, and this struck me as a novel and interesting way to do so.</i>

Scientists also shared what they would do differently if they were to present at another Science Café. Of the 27 Scientists who would make a change to their presentation:

- 12 would make the presentation more interactive.
- 6 would change the scope of their presentation by sharing less information overall, spreading the information provided over two Cafés, or presenting on a different topic.

Scientists' Satisfaction with Their Science Café Experiences

Scientists rated how satisfied they have been with their Café experiences, using a five-point scale from 1 (*Not at All Satisfied*) to 5 (*Extremely Satisfied*). Overall, 88% of scientists were *very* or *extremely satisfied* with their Science Café experiences.

- 39% were *extremely satisfied*,
- 49% were *very satisfied*,
- 10% were *generally satisfied*,
- 2% were *a little satisfied*, and
- None of the Scientists reported being *not at all satisfied* with their experience.

Favorable impressions were also evidenced when scientists were asked whether they were interested in presenting at another Café in the future; the vast majority (92%) responded in the affirmative.

Approximately one-third of the Scientists (38%) believed that presenting at the Science Café changed how they think about talking to a general audience about their work. These changes included how to structure a presentation for the general public, and the importance of interacting with the audience. Responses included:

- *“My audience loved cow flatulence as a source of green house gases - so maybe it did not change the way I think about talking to a general audience, but it reminded me that you often don't know which examples you use will appeal, and you need to be flexible about how the crowd's interest will morph from one thing to the next, regardless of what you think is interesting.”*
- *“It is [important] to gauge audience understanding and be able to modify a talk/presentation on short notice.”*
- *“You have to realize how specialized you are as a scientist. It is hard but extremely important to avoid jargon. Good analogies and examples are most useful. A clear, exciting and straightforward story is crucial.”*

Scientists shared the benefits of presenting at a Science Café. In response to the question, some respondents focused on the benefits to themselves, while others focused on the benefits to attendees. Examples of each type of response are presented below:

Perceived Benefits of Presenting at a Science Café	
Interacting with the public (n=21)	<ul style="list-style-type: none"> - <i>Nice crowd. Interested kids. Who could ask for more?</i> - <i>Chance to connect to the public.</i> - <i>Intersecting with inquisitive members of the general public</i> - <i>engaging in intellectual conversation</i> - <i>The presenter has a good chance to enjoy give and take...</i>
Professional development (n=17)	<ul style="list-style-type: none"> - <i>Prepares you to talk with legislators about global warming....</i> - <i>Feedback on how to talk with the public.</i> - <i>Makes the speaker a better [communicator] of science...</i>
Public education (n=16)	<ul style="list-style-type: none"> - <i>It is a chance to clear up misperceptions of otherwise confusing science, particularly with controversial subjects which have come to be very important for the general public (e.g. global climate change, stem cell research).</i> - <i>I was able to bring my research to the community where it will hopefully help people</i> - <i>Getting the facts about hydrogen to the public.</i>
Outreach and exposure (n=12)	<ul style="list-style-type: none"> - <i>Good community relations and good publicity for your department.</i> - <i>Exposure</i> - <i>Good for outreach, which is important.</i>
Promoting a positive image of science and scientists (n=6)	<ul style="list-style-type: none"> - <i>Better image of scientists</i> - <i>You get to share your interest and enthusiasm with the public, help them understand why what you and others do is of value to them...</i> - <i>... let them (and you) see what it means to do science/how it matters.</i>

Perceived Effectiveness of the Science Café on Attendees

In addition to the benefits outlined in the previous section, Scientists also answered a series of questions that focused specifically on their impressions of how the Cafés influence attendees. First, Scientists rated the perceived effectiveness of Science Cafés at engaging the public with science, using a five-point scale from 1 (*Not at all effective*) to 5 (*Extremely effective*), and scientists were asked to explain the rating they selected. Over two-thirds (69%) believed that Science Cafés are *very* or *extremely effective* in this regard.

- 22% believed Science Cafés are *extremely effective* at engaging the public with science,
- 47% believed they are *very effective*,
- 20% think they are *generally effective*,
- 10% think they are *a little effective*, and
- 2% believe that Science Cafés are *not at all effective* at engaging the public with science.

When asked to explain the rating they had selected, 47% of the Scientists provided positive feedback about the Café model. They noted the audience's interest in the presentation they made, the effectiveness of the informal setting, and the importance of having a venue that permits direct communication between scientists and the public.

Responses included:

- *"I am amazed how many people want to come and learn about science. If Science Cafés can do that, they are extremely effective."*
- *"Participants commented that it was [non-intimidating] and very informative. They were also impressed to see a scientist admit uncertainty and/or engage in ethical dilemmas since the general impression is that science is precise and dispassionate."*
- *"A relaxed atmosphere and a chance to interact with people with some expertise, in an informal setting, lets people respond more directly to ideas."*
- *"With blogs, websites, newsletters and email, science cafes have a profound way of reaching a public which no other medium really has. Direct communication with 50-100 people, has unknown ripple effects, but they effects are long-lasting and tangible..."*

As with the Organizers, some Scientists (39%) expressed concerns about the Café model. Most felt that Science Cafés have limited reach and believe that those who do attend are a self-selected group that is already predisposed to science. In the words of one scientist, *"I think they can be extremely effective for those who attend, but people have to choose to attend to get that benefit. Often, those who attend already have a predisposition to learn about the subject and are in effect going out of their way to do so. It may be rather like preaching to the choir. So the effect on society is limited, and may have little impact on those it would most benefit society to influence."*

Scientists' Final Advice

The most frequently mentioned piece of advice among the 47 Scientists who had advice for other presenters was to be responsive to the needs of the audience throughout the presentation. This included assessing their level of engagement and fielding and encouraging questions. The next most frequent advice was for the presenter to *relax* and *have fun*. In addition, many scientists gave advice about the level of knowledge to expect among attendees, as well as how to tailor one's presentation to meet these needs. For example, some wrote "*keep it simple*," advised against using scientific "*jargon*", and suggested "[making] *a bridge between everyday life and what you are talking about*."

THE PERSPECTIVE OF CAFÉ ATTENDEES

Demographic Profile of Follow-Up Attendees	% Respondents	
Age	17 and under	<1%
	18 – 34 years old	42%
	35 – 49 years old	28%
	50 – 64 years old	24%
	65 and older	6%
Gender	Male	46%
	Female	54%
Groups of Particular Interest	Studying in a science-related field	9%
	Working in a science-related field	27%
	Both studying and working in a science-related field	22%

Approximately half of the respondents (48%) had been to more than one Café. They shared a number of reasons why they had returned. Almost half (49%) cited Café topics as a reason they returned and over one-third (35%) provided as part of their response positive feedback about the Café. The speakers/scientists (21%) and informal venue (18%) were also reasons that people have chosen to return to the Café. Similar numbers of people also mentioned learning (17%) and/or the social aspects (15%) of the Café as reasons. Representative responses included:

- *“Fascinating speakers; thought-provoking subject matter; great question-answer segments with other wonderful guests.”*
- *“I enjoy the talks, the setting, the beer.”*
- *“I find the subjects interesting and I like the atmosphere.”*
- *“I find the discussions engaging and interesting. It makes me feel in touch with the scientific community. It is a good excuse for me to keep in touch with my friends.”*
- *“I love to learn and the Science Café provides interesting, relevant topics – most are well presented and most are in pleasant surroundings.”*
- *“Interesting topics with good speakers and presentations.”*
- *“Opportunity for dialogue, meeting other like-minded individuals.”*

All Follow-Up Attendees were also asked to share their favorite aspects of the Café by selecting up to three of ten choices. Over half of the Attendees’ selected *learning new information*, the chance to have an *interaction with a scientist*, and the *topics* as their favorite things about the Café.

As a final measure of feedback about the Science Café, all Follow-Up Attendees were asked whether they had recommended the Café to others. Over three-quarters (81%) reported that they had recommended the Café.

The Influence of the Science Cafés on Attendees' Science Interest and Learning

Follow-up Attendees rated the Café's effectiveness in increasing their interest in science, using a five-point scale from 1 (*Not at All effective*) to 5 (*Extremely effective*). They believed that the Cafés were *generally effective* at increasing their interest in science (mean rating = 3.13). More specifically:

- 7% reported that the Café had been *extremely effective* at increasing their interest in science,
- 29% believed the Café had been *very effective* in this way,
- 41% said the Café was *generally effective*,
- 17% reported that it had been *a little effective*, and
- 6% believed the Café was *not at all effective* at increasing their interest in science.

Follow-Up Attendees also rated the extent to which they feel Science Cafés are effective at engaging the public in learning about science (using a five-point scale from *not at all effective* to *extremely effective*). On average, Follow-Up Attendees reported that the Cafés are *generally to very effective* in this regard (mean rating = 3.42).

- 16% believed Science Cafés are *extremely effective* at engaging the public in learning about science,
- 33% rated the Cafés as *very effective*,
- 30% gave a rating of *generally effective*,
- 20% rated the Café as *a little effective*, and
- 1% believed the Science Cafés are *not at all effective*.

The Influence of the Science Cafés on Science-Related Behavior

To assess the extent to which the Science Cafés had encouraged attendees to pursue other science activities, Follow-Up Attendees were asked to report which, if any, of seven activities they had completed as the result of attending a Café. The two activities carried out by most were discussing café topics with others and trying to stay current with cutting-edge science topics. The vast majority of Follow-Up Attendees (92%) had completed at least one of the activities listed.

Ways that Follow-Up Attendees Had Continued to Engage with Café Content		
	% who had done this activity	% who had not done this activity
Discussed Café topics with family, friends, or colleagues	83%	17%
Tried to stay more up to date on cutting edge science topics in general	71%	29%
Read a newspaper article about a topic you learned about at a Café	66%	34%
Read a science magazine about a topic you learned about at a Café	50%	50%
Visited Web sites other than the NOVA scienceNOW site to learn about a Café topic	48%	52%
Visited the NOVA scienceNOW Web site to learn more about a Café topic	27%	73%
Read a book about a topic you learned about at a Café	26%	74%