22nd Annual Visitor Studies Association Conference

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For What It's Worth: Wrestling with Relevance, Public Value, and Impact

Abstracts

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2009

The VSA Conference Abstracts provide overviews of all poster, panel, and paper sessions presented at the conference and are written by the presenters themselves. Past conference evaluation has indicated that these abstracts serve multiple purposes. Before and during the conference, the information provided in the abstracts helps conference attendees select which session to attend. After the conference, abstracts serve as both reminders of sessions attended and references. In keeping with the "green" movement, the 2009 VSA Conference Abstracts publication is available in an electronic format only this year, not as a printed handout. Abstracts from past conferences are maintained on the VSA website archive found at http://www.visitorstudiesarchives.org/conference.php.

As an electronic document, the abstracts are searchable by keyword using the search function within the PDF. We have also included two indexes, one organized by presenter name and one by session title. The abstracts are also grouped based on session date and time for easier browsing during the conference.

The 2009 VSA Conference abstracts were edited by Susan Foutz.

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Abstracts

11:20 a.m.—12:35 p.m.
Concurrent Sessions—One

The Millennials Are Coming: Understanding the Next Generation of Art Museum Visitors
Amanda Krantz

Presentation Goals
This presentation will share findings from a study of young adult visitors to the Isabella Stewart Gardner Museum conducted by Randi Korn & Associates, Inc. (RK&A) and will contextualize findings within current knowledge. The presentation's objectives are to:
- Help attendees understand Millennials and their visiting preferences for art museums and
- Help attendees link the study's findings and their own research and/or practice.

A few objectives of the study RK&A conducted of young adult visitors to the Gardner were to:
- Explore what young adults experience in the Gardner,
- Understand how young adults make sense of the Gardner (how it fits into their sense of themselves as individuals and as a social group),
- Explore how young adults view and experience works of art, and
- Explore young adults' use of Web 2.0.

Prior Perspectives or Theory
Young adult visitors to the Gardner consist of some Gen Xers but mostly Millennials. According to generational experts Neil Howe and William Strauss (2000, 2006), Millennials are the generation born between 1982 and 2002 and, as with all generations, have certain distinguishing characteristics. Through the characteristics Howe and Strauss identified, RK&A considered the study's findings and other research on young adult art museum visitors. Two distinguishing characteristics to be discussed are:
1) Millennials are known to be team-oriented.
   Millennials were encouraged to work and learn collaboratively in primary school and continue to embrace collaboration and teamwork in work and leisure. Thus, it is not be surprising to see young adults visiting art museums and attending after hours programming in groups so they can tighten peer bonds and learn together (Spousta, 2000).
2) Millennials are "active users of culture."
   As Howe & Strauss (2006) observe, Millennials are "active users of culture" and not "passive consumers." Compared to others, Millennials demand more from cultural organizations such as comfortable art museum environments in which they can converse and feel at ease (Henry, 2000). And, in the words of Greg Sandow (2008), young adults want "to be challenged and surprised."

Importance
Young adult audiences are important to art museums as they are future members and patrons; yet they have been a difficult audience to attract and maintain. Further, research on young adult visitors is in its infancy as the generation is still maturing, and distinguishing characteristics are still being identified.

References
Henry, C. (2000). How visitors relate to museums: An analysis of positive and negative reactions. *Journal of Aesthetic Education*, *34*(2), 99-106.
Howe, N., & Strauss, W. (2006). *Millennials and the pop culture: Strategies for a new generation of consumers in music, movies, television, the Internet, and video games.* Great Falls, VA: LifeCourse Associates.

Howe, N., & Strauss, W. (2000). *Millennials rising: The next great generation.* New York: Vintage Books.
Sandow, G. (2008). The anxiety of age. *Sounding Board: Perspectives and Strategies from WolfBrown, 23*, 4-5.
Spousta, C. (2000). *Culture, cocktails, mingling, meeting: The phenomenon of art after hours Programming.* Master's thesis, John F. Kennedy University, Berkeley, California.

Additional Information
To see the full report RK&A wrote for the Isabella Stewart Gardner Museum, visit randikorn.com:
http://randikorn.com/resources/young_adults.php

Family Learning in Interactive Galleries in Art Museums
Jessica J. Luke

Presentation Goals
This presentation focuses on current research investigating the value of family-based, interactive galleries in art museums. Specifically, the presenter describes a large-scale, 3-year study across three art museums designed to better understand who uses these galleries, in what ways, and how the experience impacts families.

Prior Perspectives or Theory
Much research has focused on family learning over the last decade, however, most of it comes from studies conducted in science centers and children's museums (Ellenbogen, Luke & Dierking, 2004). Relatively little is known about family learning in art museums, despite the fact that more than 90% of art museums nationwide offer specialized programming for families (Wetterlund & Sayre, 2003). In addition to programming, increasing numbers of art museums are targeting families through dedicated interactive galleries, intended to "hook" parents and children into the museum and offer them a place to explore, engage, and interact with each other around works of art (Adams & Luke, 2005).

Funded in 2007 by the Institute for Museum and Library Services, FLING (Family Learning in INteractive Galleries) is a research-based collaborative with three sites – the Speed Museum of Art, Louisville, KY; the High Museum of Art, Atlanta, GA; and the Frist Center for the Visual Arts, Nashville, TN. Across all three of these art museums, researchers are investigating the impact of dedicated, interactive galleries for families. Specifically, two research studies are being conducted within the FLING collaborative – one qualitative and one quantitative. This presentation focuses on the quantitative study, designed to answer four overarching research questions:

1. Who are the families who visit interactive galleries in art museums?
2. Why do families visit these galleries?
3. How do families situate their visit to an interactive gallery within their overall museum experience?
4. What do families value about their visit to an interactive gallery in an art museum?

Multiple methods are being used to answer these research questions, including face-to-face interviews and online questionnaires (N=800 per site).

Importance
Results from this study will provide insight into the learning expectations and outcomes for family-based galleries in art museums. The presenter will share methods and metrics for measuring the perceived value of interactive galleries for families, and highlight emerging results and their implications for the conceptualization and design of family-based galleries in art museums.

References
Adams, M., & Luke, J. J. (2005). *From heart to head to hand: A synthesis of issues and strategies raised at the From Content to Play Symposium*. Paper presented at the J. Paul Getty Museum Symposium, "From Content to Play: Family-Oriented Interactive Spaces in Art and History Museums," Los Angeles, CA.
Ellenbogen, K. M., Luke, J. J., & Dierking, L.D. (2004). Family learning research in museums: An emerging disciplinary matrix? *Science Education, 88*(1), S48-S58.
Wetterlund, K., & Sayre, S. (2003). *2003 art museum education programs survey.* Retrieved from http://www.museum-ed.org.

Perceptions, Relevancy, and Art Museum Visitation
Theopisti Stylianou-Lambert

Presentation Goals
This presentation includes a discussion on how people perceive art museums and how this influences their visitation decisions. After presenting a conceptual model which evolved from my PhD dissertation research, we will explore ways to make art museums more relevant to the general public by understanding how perceptions influence the kind of experiences visitors seek in an art museum and non-visitors avoid.

Prior Perspectives or Theory
Sociological as well as psychological approaches were employed in the previous literature in order to explain why some people choose to visit museums and some do not. From a sociological point of view, the groundbreaking theory of Pierre Bourdieu (1991) helped explain why people from higher socio-economic classes are overrepresented in museums. On the other hand, some claim that it all boils down to individual psychological attributes, such as personal motivations and needs, choice of lifestyle, previous knowledge, experience and interest, or valued leisure attributes. Despite the theoretical division between sociological and psychological approaches, a few notable exceptions have adopted an intermediate position, thus providing a more integrated framework for viewing museum visitation issues (e.g., Kelly, 1983; Merriman 1991). My research uses both sociological and psychological approaches to explore art museum perceptions.

Importance
This research offers a fluid and holistic conceptual model for understanding museum perceptions and their relationship to visitation frequency and art museum uses. While it supports other research findings (see especially Falk, 2006), it also expands the range of audiences studied.

The research analysis revealed eight different "*museum perceptual filters*" people use: the (a) professional, (b) art-loving, (c) self-exploration, (d) cultural tourism, (e) social visitation, (f) romantic, (g) rejection, and (h) indifference filter. It was proven that the interviewees' visitation frequency was intimately connected to the museum perceptual filters they used.

The discussion will address the following questions: Are art museums relevant to everyone? Are there any audiences that are extremely difficult to attract to art museums, and, if yes, why? Are there any audiences that are easier to attract, and, if yes, how? How can we make the art museum experience more relevant to existing visitors and increase visitation frequency?

References
Bourdieu, P., & Darbel A. (1991). *The love of art: European art museums and their public.* Cambridge: Polity Press.
Falk, J. H., 2006. An identity-centered approach to understanding museum learning. *Curator, 49*(2), 151-166.
Kelly, J. K. (1983). *Leisure identities and interactions*. London: Allen & Unwin.
Merriman, N. (1991). *Beyond the glass case.* Leicester: Leicester University Press.

Memories of Wildlife Tourism: From Experience to Action
Roy Ballantyne and Jan Packer

Presentation Goals
- This paper presents a qualitative analysis of visitors' extended open-ended responses to a follow-up web survey, administered approximately four months after a visit to one of four marine-based wildlife tourism venues in South-East Queensland (two where animals were captive and two where they were non-captive).
- By exploring the process through which wildlife tourism experiences lead to long-term changes in participants' behaviour, this research contributes to a better understanding of the ways these experiences make a difference in the lives of visitors and communities.
- The research reveals important elements of the wildlife tourism experience that need to be maintained and developed in order to strengthen the impact of such experiences on visitors' long-term adoption of environmentally sustainable practices in their everyday lives.

Prior Perspectives or Theory
The research builds on previous work that has demonstrated the positive environmental impact that wildlife tourism experiences can have by influencing visitors' behaviour during a visit and building visitors' capacity for longer term adoption of sustainable practices.

Importance
- Four levels of impact of the wildlife tourism experience were identified: Sensory Impressions; Emotional Affinity; Reflective Response; and Behavioural Response.
- A number of visitors reported that they had made deliberate changes to their everyday behaviour as a result of the wildlife tourism experience.
- By capitalising on the emotional affinity between visitors and the animals they are observing, encouraging a reflective response to the experience, and providing suggestions for manageable but meaningful behavioural responses that visitors can make, wildlife tourism operators can provide the conditions that are most likely to result in long-term behavioural change. These strategies will not only contribute to the sustainability of the wildlife tourism industry, but also build community capacity for sustainable living, thus making a positive difference to our changing environment.

References
Ballantyne, R., & Packer, J. (2005). Promoting environmentally sustainable attitudes and behaviour through free-choice learning experiences: What's the state of the game? *Environmental Education Research, 11*(3), 281-295.
Ballantyne, R., Packer, J., Hughes, K., & Dierking, L. (2007). Conservation learning in wildlife tourism settings: Lessons from research in zoos and aquariums. *Environmental Education Research, 13*(3), 367-383.
Ballantyne, R., Packer, J., & Hughes, K. (2009). Tourists' support for conservation messages and sustainable management practices in wildlife tourism experiences. *Tourism Management*.
Ballantyne, R., &d Packer, J. (2009). Future directions for research in free-choice environmental learning. In J. H. Falk, J. E. Heimlich, & S. Foutz (Eds.), *Free-choice learning and the environment* (pp. 157-170). Lanham, MD: AltaMira Press.

Mapping Many Voices – Self-Organizing Maps as a Tool for Creating Dialogue Among Visitors and Stakeholders
Mikko Myllykoski

Presentation Goals
The presentation analyzes a new kind of visitor feedback tool, a self-organizing map (SOM), which was tried out by Heureka, the Finnish Science Centre, when exhibiting *Scenes of Silence* (or *Dialogue in Silence*) in 2007-2008. SOM is a visualisation technique that shows multidimensional information on a two-dimensional map, enabling to get the big picture without losing nuances of the data. The presentation will evaluate the potential of this new technology in the light of the *Dialogue in Silence* experience, and how it should be further developed.

Prior Perspectives or Theory
When Heureka presented the powerful exhibition *Dialogue in the Dark* (2000-2001), the guest books were filled with thrilled comments, reflecting the immersive, emotional and transformative experience of being guided by a blind person in total darkness. The need to express was an obvious impact of the dark, but enlightening, experience.

For the other socially powerful experience, *Scenes of Silence* (or *Dialogue in Silence*), where hearing visitors are guided by deaf guides through a silent experience, Heureka wanted to widen and deepen the ways of collecting visitor feedback. We wanted to go further and set a platform for dialogue for visitors, non-visitors and the 'deaf ambassadors', the animators of the experience.

For this goal a virtual guest book was set up. It collected personal data – age, gender, level of sign language skills – and then asked the user about how she/he relates to silence, sign language, deaf people and hearing implants. This multidimensional information (answers to 8 questions) was then used to locate all the persons on an attitude map. The map showed the user his/her individual location in relation to all the other people who have answered the questions. The closer the people are on the map, the more similarly they have answered the questions.

Importance
The use of self-organizing map was designed to map the attitudes of the *Dialogue in Silence* visitors and to offer them a platform for communication among themselves and with the deaf guides of the exhibition. The attitude map attracted 2500 people, out of whom 1615 completed the whole survey and received their location on the attitude map. The sign language users, 281 people, formed quite a clear group on the attitude map. On the other hand, some of them were a bit in the margins and indicated the fact that the group is not totally homogenous.

Our next SOM application at Heureka, the *Science Changing the World* exhibition (opening April 2010), will invite visitors to share their opinions about ethical and societal issues deriving from modern research. In this application, opinion leaders (e.g. intellectuals, politicians and religious leaders) will serve as reference points on the attitude maps for visitors.

References
Karhu, P., Marttiini, M., & Myllykoski, M (2007). Mapping many voices: A platform for dialogue. In K. McLean & W. Pollock (Eds.), *Visitor voices in museum exhibitions*. Washington, D.C.: Association of Science-Technology Centers.
Kohonen, Teuvo (2001). *Self-organizing map*. (3rd edition). Springer Series in Information Sciences, Vol. 30. Berlin: Springer.

Additional Information
The *Scenes of Silence* exhibition at Heureka:
    http://www.heureka.fi/portal/englanti/exhibitions/past_exhibitions/scenes_of_silence/
The electronic guest book with the attitude map can still be used online:
    http://heureka.studiomind.com/
The SOM application was created together with StudioMind: http://studiomind.net/english.html
Dialogue in Silence (*Schattensprache*) experience is created by Andreas Heinecke and Orna Cohen:
    http://www.schattensprache.de/en/index.html

Promoting Label Readership: An Interactive Challenge
Cathy Hamaker

Presentation Goals
Exhibit developers are often confronted with grim statistics on label readership, which begs the question of why we write them at all if so few people are reading them. Despite some recent studies to the contrary, the entrenched idea that label reading is uncommon behavior leads us to tinker endlessly with point sizes, font choices, line breaks, and word lengths, all in an attempt to lure in the reluctant museum reader. This study was undertaken in hopes of gleaning information about how the

use of both interactive mechanics and relevant artifacts can affect label readership—and in turn, the visitor's learning experience—in a large children's museum.

Prior Perspectives or Theory
Researchers such as Lindemann-Matthies (2005) and Humphrey & Gutwill (2005) have shown clearly that interactivity facilitates learning. In object-based museums, "learning carts" provide a valuable way of engaging visitors directly with artifacts, promoting a successful learning experience (Bitgood & Cleghorn, 1994). However, not all museum spaces are staffed with facilitator/interpreters, and not all objects can or should be touched. Labels remain the most direct and basic tool for engaging visitors. Beverly Serrell's (1996) seminal work on interpretive label writing makes clear the still vital and central role of labels in exhibits. Falk and Dierking (2000) remind us that engagement and contexualization contribute to visitor meaning-making. It seems therefore logical that developers and curators explore all possible avenues of adding interactive components to the reading process itself, making the learning process more engaging for children and adults.

Importance
The labels in our exhibits at the Children's Museum of Indianapolis are the basis of communication and connection with our audience; they promote questions, discussion, and family interaction. Each avenue by which we encourage a family to discuss, think, explore, or ask while in our museum builds upon the educational experience we are providing. This study makes clear that adding a level of interactivity with objects increases desirable reading behavior for many visitors. Both adults and children are significantly more likely to engage with label text when interactive components are involved; this engagement is often physical or verbal, and therefore easier to track, categorize, and analyze in our summative evaluation process.

Is our content actually relevant and valuable to our audience? We cannot know if they do not engage with that content. By increasing label readership, we make it possible to gauge more accurately whether our exhibits achieve the impact we hope for—or whether, despite our best efforts, the material itself does not connect with our visitors in a meaningful way.

References
Bitgood, S., & Cleghorn, A. (1994). Memory of objects, labels, and other sensory lessons from a museum visit. *Visitor Behavior*, *9*(2), 11–12.

Falk, J.H., & and Dierking, L.D. (2000). *Learning from museums: Visitor experiences and the making of meaning.* Walnut Creek, CA: AltaMira Press.

Humphrey, T., & Gutwill, J.P. (Eds.). (2005). *Fostering active prolonged engagement: The art of creating APE exhibits.* San Francisco: The Exploratorium.

Lindemann-Matthies, P., & Kamer, T. (2006). The influence of an interactive educational approach on visitors' learning in a Swiss zoo. *Science Education*, *90*(2), 296–315.

Serell, B. (1996). *Exhibit labels: An interpretive approach.* Walnut Creek, CA: AltaMira Press.

Seen AND Heard: Defining Impact of an After-School Program
Kathleen Tinworth

Presentation Goals
School communities are recognized as a target audience in cultural institutions, with programs and partnerships developed specifically for this sector, yet little is known about the impact these efforts make and the value they hold for students, families, educators, and communities. This session chronicles an innovative after-school program and the custom-tailored, participant-driven evaluation approach utilized to get to the heart of its value, relevance, and impact. Session attendees will be encouraged to ask questions and share their own examples of how they examine museum value and impact in school communities.

Prior Perspectives or Theory
The Denver Museum of Nature & Science conducted an evaluation of a 24-week after-school program aimed at promoting and teaching the Museum's core competencies to local high-needs K-8 students.

Inspired by the work of Harvey, Hudson, and Tureff (2003), the study examined students' general interest in science learning and short-term science learning. In addition to learning outcomes, the evaluation was designed to model the Museum's renewed commitment to participant-led research and evaluation, promoting best practice aimed at truly ascertaining value and impact as defined by participants.

Quantitative and qualitative methodology included pre- and post-program surveys as well as focus groups and interviews with students, their families, and educators. A matched comparison group was also assessed. The results of the study suggest that the program has a confirmatory effect on students' interest in science, as well as boosting scientific learning in an after-school, informal education setting. This parallels the results of Harvey, Hudson and Tureff (2003). Additionally, participants themselves defined and related the relevance and impact of the program, demonstrating its public value.

Importance
Museums and other informal education settings have a strong role to play within formal education communities. Research and evaluation can help guide institutional decision-making and programming, as well as illuminate how effective, relevant, and important our institutions are to this sector so that best practice can be promoted.

References
Harvey, M.L., Hudson, B., & Tureff, B. (2003). Measuring the impact of interactive programs on science learning. *Visitor Studies Today!, 6(2)*, 1, 14-20.

Additional Information
http://www.dmns.org
http://community.dmns.org/

Measuring the Impact of Free-Choice Science, Technology, Engineering & Mathematics (STEM) Experiences on Girls
Lynn D. Dierking and Dale McCreedy

Presentation Goals
- Share initial findings from a research study investigating the long-term impacts of girls' participation in free-choice STEM learning programs, and their perception of the ways these experiences influenced their future choices broadly defined (careers and education, but also hobbies and habits of mind).
- Describe the "big idea" of the study: Phase 1 research designed to develop and test an approach that utilizes young women's own ideas and frameworks for thinking and talking about STEM impacts and identity. Findings from this research were then used to create a web-based questionnaire that is probing the long-term impact of free-choice STEM experiences on young women.
- Relate this study's goal of developing a model to document the long-term impact of free-choice STEM learning initiatives with the 2009 VSA conference theme (*For What It's Worth: Wrestling with Relevance, Public Value, and Impact*).

Prior Perspectives or Theory
This study is specifically designed to better understand how STEM experiences in informal settings influence the ways in which young women perceive STEM and how the contexts of home, family, and community influence this perception. Of special importance are efforts to understand why and how girls become involved in STEM learning in the first place and how participation in a free-choice/informal STEM program influences their identity and future participation in STEM practice. This set of questions and the fact that the Community of Practice (CoP) framework posits that identity and community are interconnected, makes CoP an ideal theoretical framework for this study (Lave and Wenger, 1991). The CoP approach considers a domain of knowledge (in this case, STEM learning);

the community of people engaged in its practice (i.e., girl and adult participants, as well as professional and amateur scientists and other facilitators of girls' STEM learning in the programs in which young women participated); and the shared activities in which they are involved (e.g., hands-on STEM activities, kits, museum experiences, summer camps, STEM research, mentoring opportunities and other program components). Utilizing the CoP lens, the study explores how participation within a free-choice STEM CoP leads to learning, broadly defined to include interest, engagement, and participation in STEM communities, hobbies, and careers, and how this learning relates to an individual's perspective about herself, her relationship to STEM, and issues related to gender.

Importance
This study is an effort to investigate the usefulness of the Community of Practice (CoP) framework for documenting the broad, long-term and strategic impact of free-choice STEM experiences on girls and thus represents one approach to this year's conference theme. It is hoped that this framework proves useful since by better understanding the processes and strategies that enhance opportunities for girls and women to meaningfully participate and achieve in STEM education, careers, and hobbies, this research has the potential to demonstrate the role that informal STEM contexts and free-choice experiences play in supporting girls' long-term STEM learning and achievement.

References
Clewell, B.C., &.Campbell, P.B. (2002). Taking stock: Where we've been, where we are, where we're going. *Journal of Women and Minorities in Science and Engineering*, *8*(3&4), 255 –284.
Davis, K. S. (2001). "Peripheral and subversive:" Women making connections and challenging the boundaries of the science community. *Science Education*, *85*, 368–409.
Fadigan, K.A., & Hammrich, P.L. (2004). A longitudinal study of the educational and career trajectories of female participants of an urban informal science education program. *Journal of Research in Science Teaching*, *41*(8), 835-860.
Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation.* New York: Cambridge University Press.
McCreedy D. (2003). *Educating adult females for leadership roles in an informal science program for girls.* Doctoral dissertation, University of Pennsylvania, Philadelphia.

Testing an Audience Development Model
Joe E. Heimlich and Woo Seok Seo

Presentation Goals
- Present the context and theoretical bases for testing an audience development model.
- Share the instrumentation and analysis process.
- Discuss the findings that challenge older assumptions.
- Dialogue about implications for practice.

Abstract
Most arts organizations are actively expanding their efforts to increase public participation in their programs as audience is a necessary condition of existence for these organizations. For any organization to develop sustainably, audience development is inevitable and to do so requires an understanding of audience opinions about, attitudes toward, satisfaction with, and intention to participate in the organization and its intended behavioral outcomes for the audience members.

The primary purpose of this study was to examine visitors to the different venues of a performing arts organization in order to facilitate audience development, differentiation, and management. Specifically, the two driving objectives for the researchers were 1) to provide the organization with evaluative data that better describe their audience, relate to behavioral outcomes, and provide insights into specific tactics and strategies for the organization; and 2) to test a model of audience intention using the performing arts organization as a convenience study.

Theoretically, the researchers wanted to challenge the consistent assumption in the performing arts literature (e.g., McCarthy & Jinnett, 2001) that reaction to the performance is the "end" of the audience member's relationship with the performance. Indeed, the idea of applying theory of change

to a performing arts organization and then using the performance venue as the medium to convey the messages could be of tremendous value to organizations facing financial challenges.

Empirical data were obtained from audience members who attended performances at four venues of the organization over the course of four months. Based on findings from one week of interviews during concerts, a self-administered survey including seven scales was created for completion by visitors approached prior to a concert and during intermission. A total of 475 audience members responded.

The presentation will include a brief overview of the context, the development of the instrument, and a summary of both the evaluation and SEM findings. Time will be devoted to the ways in which this study parallels findings from many museum studies and other cultural institutional findings. Many participants will be most interested in the implications from the study for practice and research and for those who study visitors to all free-choice learning opportunities.

References
Barlow, M., & Shibli, S. (2007) Audience development in the arts: A case study of chamber music. *Managing Leisure*, *12*(2&3), 102-119.
Engel, J.F., Kollat, D.T., & Blackwell, R.D. (1073) *Consumer behavior* (2nd ed). Oxford, England: Holt, Rinehart & Winston.
Falk, J.H., & Sheppard, B. (2007). Thriving in the knowledge age. Lanham, MD: Altamira Press.
McCarthy, K.F., & Jinnett, K.J (2001) *A new framework for building participation in the arts.* Santa Monica, CA: RAND.
Wiggins, J. (2004) Motivation, ability and opportunity to participate: A reconceptualization of the RAND Model of Audience Development. *International Journal of Arts Management*, *7*, 22-33.

A Critical Look at "Critical Appraisal"
Stephen Bitgood, John Kelton, and Renee Burt

Session Goals
The purposes of this session are to introduce the audience to critical appraisal, to describe its history, how and where it fits into the exhibition development process, and to suggest how the method can be used effectively.

In the current session, Bitgood will provide an overview and critical analysis of the method. John Kelton and Renee Burt will discuss specific examples of its application.

Prior Perspectives or Theory
Roger Miles and his colleagues at the Natural History Museum (London) (e.g., Miles, 1986) were the first to use critical appraisal in a museum setting. The technique was incorporated into an exhibit evaluation framework by Screven (1990), Bitgood (1990), and Bitgood & Shettel (1993). Over the past two decades the technique has been used by a few museums, science centers, and zoos with some success. Only a couple of studies have attempted to assess its reliability and validity in an effort to improve its predictive power.

Critical appraisal involves the selection of a knowledgeable, unbiased critic who has been given information on the goals and intentions of the exhibition design and who objectively assesses the content and/or presentation of the exhibition using criteria consistent with the goals of the exhibition as well as the empirical visitor studies literature.

Importance
Critical appraisal can be a cost-effective way to improve exhibitions and to pinpoint the obvious and potential strengths and weaknesses of design. Obvious design problems that could be identified include extremely long label text, unnecessary distance between an exhibit object and its descriptive text labels, glare, confusing circulation routes through the exhibition, etc. Many of these problems can and should be corrected before an actual visitor study is conducted. Following proven guidelines may be key to the success of a critical appraisal.

References
Bitgood, S. (1990). An overview of visitor studies. *Visitor studies: Theory, research, and practice, 3,* 7-15.
Bitgood, S., & Shettel, H. (1993). Zum forschungstand der vorabelevaluation. *Karlsruher Schriften zur Besucherforschung,* Heft, 4, 3-19.
Miles, R. (1986). Lessons in 'Human Biology" Testing a theory of exhibition design. *The International Journal of Museum Management and Curatorship, 5,* 227-240.
Screven, C. (1990). Uses of evaluation before, during, and after exhibit design. *ILVS Review: A Journal of Visitor Behavior, 1*(2), 36-66.

How to Measure Impact at Your Institution: A Dialogue
Jenny Heim, Theresa Esterlund, Giuseppe (Pino) Monaco, Amy Niedbalski, and Staci Willis

Session Goals
The goal of this session is to support and further dialogue among museum professionals about how to create an institution-wide system for measuring impact.
As a result of their experience in this discussion, participants will be able to:
- Identify key components and phases in creating an approach for determining impact;
- Raise their own questions regarding how to assess impact at informal learning institutions, in general, and at their institution, in particular;
- Share information about challenges they have faced or anticipate facing;
- Consider possible solutions to challenges and alternative models and;
- Continue to participate in an ongoing dialogue about issues in assessing impact.

Prior Perspectives or Theory
Current models for assessing impact include: Inspiring Learning for All/Generic Learning Outcomes by the Museums, Libraries, and Archives Council in the UK, the "THRIVE assessment" model by Falk and Sheppard (2006), and the more recently published model by the United Way (Hendricks, Plantz, & Prichard, 2008). Still, many questions remain unresolved and suggest new challenges and opportunities: How do we begin to implement these models? How do we reshape organizations that are already up and running? What resources do we need?

Importance
Increasingly, museum professionals are charged with measuring impact or are trying to advocate for creating a comprehensive system to measure impact. In this facilitated discussion, participants will: raise questions; hear focused case studies; and begin to identify common challenges, effective solutions, and key components in the iterative process of creating an institution-wide approach to assessing impact.

The session will begin with small-group discussions, facilitated by the presenters, in which participants will pose questions and identify challenges particular to their situations. The presenters represent organizations different in size and focus and are at varying stages in the process of setting up an institution-wide system for assessing impact. Following these small-group discussions, participants will come together to hear brief case studies from the four presenters who will use the questions generated in their small-group discussions to focus their remarks.

Within the framework of a new strategic plan, **Theresa Esterlund** will relate the process at Freer and Sackler Galleries to move towards a more intentional plan for visitor studies. Before fully engaging in measuring outcomes related to visitor experience goals, the Galleries are currently focused on internal professional development to build a shared vocabulary and understanding of visitor studies and on more clearly defining outcomes. She will outline steps taken to create and begin to implement this new system, including: evaluating current visitor information in light of strategic plan goals, determining what visitor data is needed before impact can be effectively measured, and shifting the emphasis for current and future visitor studies.

Pino Monaco will present an analysis of the current situation at the Smithsonian Institution (SI). Currently, the SI uses a web-based education data gathering and evaluation system for Smithsonian

museums to report outputs (types of educational offerings and number of participants). He will introduce a new plan to move the education departments toward measuring outcomes. Internal learning and growth is the first focus of this plan. Within this focus, Pino will discuss segmentation of the target audience, desired outcomes for internal growth, and steps implemented to achieve the outcomes.

In response to the Saint Louis Zoo's educational paradigm shift to generating affective outcomes, **Amy Niedbalski** will share the recent efforts of Zoo staff in implementing a systematic data collection method in order to assess educational program impact. She will explain the theoretical framework and methodology employed to use and adapt an impact measurement approach from another institution. Amy will also provide the indicators identified to measure program impact, and will discuss other relevant topics such as instrument refinement and intended modifications, institutional and staff commitment, and future plans.

Staci Willis will present the Saint Louis Science Center's system for assessing impact, with particular attention to the iterative process required to continually refine an institutional tool. Science Center staff members have been actively engaged in defining and measuring impact for about three years and in January 2009 launched their newest version. Staci will briefly present the Science Center's methodology, including the most recent refinements, and then discuss the key points in working with existing institutional systems to assess impact.

Following these presentations, session facilitators and participants will engage in a whole-group discussion around questions raised during the individual presentations and explore issues and patterns that have emerged. As the session concludes, we will gather contact information and lay the groundwork for continuing the conversation.

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Wavell, C., Baxter, G., Johnson, I.M., & Williams, D.A. (2002). *Impact evaluation of museums, archives and libraries: Available evidence project*. Aberdeen: The Robert Gordon University, Resource: The Council for Museums, Archives and Libraries. Retrieved from http://www.rgu.ac.uk/files/imreport.pdf on December 11, 2008.

Additional Information
Inspiring Learning for All website: http://www.inspiringlearningforall.gov.uk/
United Way website: http://www.liveunited.org/Outcomes/Library/

Thursday, July 23 (cont.)

2:00—3:00 p.m.
Concurrent Sessions—Two

Discussing the NRC's Consensus Study on *Learning Science in Informal Environments*
Sue Allen, Kirsten Ellenbogen, Michael Feder, Cecilia Garibay, Laura Martin, and Dale McCreedy

Session Goals
This session is an opportunity for the VSA community to respond and share perspectives on the recently published LSIE (*Learning Science in Informal Environments*) report.

Participants will come away with a basic familiarity with the key conclusions and recommendations of the report, as reviewed in brief presentations by six people who contributed to its writing. The

audience will then have the opportunity to participate in small group discussions to share their perspectives on topics such as:

- responses to specific findings in the report,
- how the theoretical framework of the document might be applied to their own work,
- possible connections between the report and other evaluation frameworks, such as the NSF evaluation framework (Friedman, 2008), and
- implications for practice and future research in the field.

<u>Prior Perspectives or Theory</u>
The report is the result of an intricate and complex Consensus Study process, in which interdisciplinary experts met together over a period of several years, reviewing evidence from a range of sources, including published literatures, white papers, and live presentations. The report reviews a number of theoretical frameworks to the learning of science in informal settings, and offers a unifying ecological framework that can be applied to a range of settings, activities, and learners. It focuses on six "strands" of learning.

Learners in informal environments. . .
1. Experience excitement, interest, and motivation to learn about phenomena in the natural and physical world.
2. Come to generate, understand, remember, and use concepts, explanations, arguments, models and facts related to science.
3. Manipulate, test, explore, predict, question, observe, and make sense of the natural and physical world.
4. Reflect on science as a way of knowing; on processes, concepts, and institutions of science, and on their own process of learning about phenomena.
5. Participate in scientific activities and learning practices with others, using scientific language and tools.
6. Think about themselves as science learners and develop an identity as someone who knows about, uses, and sometimes contributes to science.

A number of conclusions and recommendations may be of particular interest to the VSA community:

<u>Conclusion 13</u>: Currently there are not good outcome measures for assessing the science learning goals of informal settings. Conventional academic achievement measures (e.g., standardized tests of science achievement) are too narrow and not well aligned to the goals of informal providers.

<u>Conclusion 15</u>: LSIE literature is vast, but the quality of the research is uneven, in part due to limited publication outlets and incentives to publish.

<u>Conclusion 16</u>: Evaluation reports on particular programs provide an important source of evidence that can inform practice and the field more generally. Other kinds of research and data are needed.

<u>Conclusion 17</u>: An interdisciplinary community of scholars and educators share an interest in developing coherent theory and practice of LSIE. There are barriers to reaching this goal.

<u>Conclusion 18</u>: Ecological perspectives on informal environments can facilitate important insights about science learning experiences across venues.

<u>Recommendation 3</u>: Educational tools and materials should be developed through iterative processes involving learners, educators, designers, and experts in science, including the sciences of human learning and development.

<u>Recommendation 5</u>: Broaden opportunities for publication of peer-reviewed research and evaluation, and provide incentives for studies to be published.

<u>Recommendation 6</u>: Integrate bodies of research on learning science in informal environments.

Recommendation 7: Researchers and evaluators should use assessment methods that do not violate participants' expectations about learning in informal settings . . . address the science strands . . . provide valid evidence across topics and venues . . . allow educators and learners alike to reflect on the learning taking place in these environments.

Areas identified as fruitful for future research:
- Tools and practices that contribute to learning
- Learning strands
- Cumulative effects
- Learning by groups, organizations, and communities
- Supporting learning for diverse groups
- Media

Importance
This study is the first ever synthesis study of its kind to be conducted by the National Academy of Science and represents a major attempt to draw together evidence of learning from a broad array of academic and evaluation literatures. It should be of interest to many members of the Visitor Studies community, and worthy of discussion by academic researchers, evaluators, educators, and other practitioners interested in learning.

References
Bell, P., Lewenstein, B.V., Shouse, A.W., & Feder, M.A. (Eds.). (2009). *Learning science in informal environments: People, places, and pursuits.* Washington, DC: National Research Council of the National Academies. (Report can be viewed one page at a time at http://www.nap.edu/catalog.php?record_id=12190; project overview at http://www7.nationalacademies.org/bose/Learning%20Science%20in%20Informal%20Environment.html)
Friedman, A. (Ed.). (March 12, 2008). *Framework for evaluating impacts of informal science education projects* [On-line] (Available at: http://insci.org/resources/Eval_Framework.pdf)
Museums, Libraries and Archives Council. Generic Learning Outcomes (Available at: http://www.inspiringlearningforall.gov.uk/toolstemplates/genericlearning).

Dimensions of Public Engagement with Science: Building towards a Framework for Evaluation
Ellen McCallie and Christine Reich

Session Goals
Informal science educators have been experimenting with Public Engagement with Science (PES) for nearly a decade, yet what counts as quality programming and what are realistic evaluation characteristics are still elusive. This session seeks to collaboratively define evaluation impacts and indicators for PES activities in informal science education (ISE) based on a recent CAISE PES Inquiry Group report (McCallie, et al., 2009), the *Framework for Evaluating Informal Science Education Projects* (Friedman, 2008) and the recent National Research Council's *Learning Science in Informal Environments* report (Bell, et al., 2009).

Prior Perspectives or Theory
This session is premised on PES in ISE as "characterized by mutual learning – not one-way transmission from 'experts' to publics – among people of varied backgrounds, scientific expertise, and life experiences who articulate and discuss their perspectives, ideas, knowledge, and values. A PES activity may – but does not necessarily – directly inform the direction of scientific investigations, institutions, and/or public policy" (McCallie, et al., 2009, p. 18).

Importance
Together, the overarching conceptualization of PES in ISE and an evaluation framework will allow ISE professionals to be more explicit and consistent in developing programs and evaluating the impacts of PES activities. Thus, this working session seeks to gather those working or interested in PES to develop a matrix for evaluating PES activities. To do so, we will build off of Part 4 and Appendix D of the CAISE PES Inquiry Group report.

PES in ISE brings together those who generate scientific knowledge, those who affect its use, and those who experience it in daily life to discuss the social, cultural, and ethical aspects of science. In this way, PES in ISE moves beyond serving as a means for transmission of scientific knowledge or an acceptance of scientific authority. Instead, PES activities serve as platforms for discussion and negotiating knowledge to understand issues and make decisions. By incorporating PES into ISE, ISE organizations operate not only as storehouses and/or disseminators of knowledge, but as facilitators of the production of new knowledge and understandings through dialogue and interaction among publics, scientists, and policymakers. By contributing to broader cultural change – increased awareness, sense of shared responsibility and civic participation in science–PES strengthens ISE organizations as vital participants in our 21st century communities.

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Bell, P., Lewenstein, B. V., Shouse, A. W., & Feder, M. A. (Eds.). (2009). *Learning science in informal environments: People, places, and pursuits*. (Advance copy). Washington, DC: National Research Council of the National Academies.
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McCallie, E., Bell, L., Lohwater, T., Falk, J. H., Lehr, J. L., Lewenstein, B. V., Needham, C., and Wiehe, B. 2009. *Many Experts, Many Audiences: Public Engagement with Science and Informal Science Education. A CAISE Inquiry Group Report*. Washington, D.C.: Center for Advancement of Informal Science Education (CAISE). http://caise.insci.org/uploads/docs/public_engagement_with_science.pdf.

A Study with Museum Explainers and their Interactions with Visitors
Preeti Gupta

Presentation Goals
With the overarching goal of increasing the number of successful interactions between museum Explainers and visitors, this study is designed as a training and research project. In this session, evidence is presented on how this training is a powerful approach to developing agency in an Explainer, motivating them to re-examine their ontologies about learning and teaching, and use that knowledge to improve their interactions with visitors. Key ideas include issues of differentiated instruction in an informal setting, making assumptions about the prior knowledge that visitors bring to the interaction, and learning to gauge the intentions and motivations of a visitor for interacting with an exhibit. Other emergent patterns are negotiating the exhibition and visitors' agendas as related to learning at exhibits, and transitioning between multiple concepts often presented at exhibits.

Prior Perspectives or Theory
Paola Rodari and Maria Xanthoudaki (2005) state that by engaging visitors in conversations about the complex topics presented in exhibits, facilitators serve as human interfaces between the exhibit's intended purposes and the visitors' interests. Kos (2005) claims they are the direct link between the visitor and the exhibits. In order to prepare floor facilitators for active engagement with diverse visitors, museums put significant amounts of effort and energy in training.

At the New York Hall of Science, Explainers who are paid, part-time college and high school students, and Explainer supervisors, are cooperatively researching their own practices with the intent to improve and increase successful interactions with visitors. By using a methodology of cogenerative dialogues (Tobin & Roth, 2006), all involved are able to work collaboratively and support each other in this endeavor. Cogenerative dialogues are structured conversations about shared experiences with the goal of improving the practice of teaching and learning. Each participant in the cogenerative dialogue has voice, and the conversations are structured to welcome multiple perspectives including contradictory opinions, develop solidarity and minimize power imbalances. Reflexivity (Bourdieu & Waquant, 1992), or becoming aware of the unaware, is a key outcome of participation in the cogenerative dialogues.

Importance
This research has great implications for museum trainers because it shifts away from the expert-novice model to a community of learners model, allowing us to reenvision new ways of structuring floor staff training. I also consider my study to be appropriate and timely for VSA's theme. As the role of informal institutions evolve toward a more visitor-centered, socially-relevant mission, the skills necessary to facilitate more meaningful interactions with visitors have increased dramatically and interactions require a more sophisticated brand of training, which allows greater self-awareness and self-reflection.

References
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Tobin, K., & Roth, W.M. (2006). *Teaching to learn: A view from the field*. Rotterdam: Sense Publishers.

The Past's Presence: Visitors' Experiences with Costumed Interpreters
Cheryl Kessler, Johanna Bromberg Craig, and Kathleen Tinworth

Presentation Goals
What makes history relevant and high impact? Costumed interpreters are a unique vehicle to facilitate personal relevance and meaning for visitors through conversation and demonstration. Each of the following three studies provides conference participants with new insight and perspectives on the diverse ways in which interpreters can enhance visitors' experiences in a variety of settings. Understanding visitor impact based on these experiences will inform best practices in outdoor history museums, science and nature museums, and any other venue that employs similar interpretive elements.

The first presentation will share the purpose, development, and implementation of interviews and the tracking instrument, organizational and logistical challenges encountered, and a few early finding of the IMLS-funded Outdoor Living History Project. In the second presentation, we will address how costumed interpreters might maximize public benefit by providing cultural-operational orientation across a visit, above and beyond any initial orientation a museum provides. The third presentation shares findings from an evaluation of first-person enactors in *Titanic*, revealing interaction with enactors heightened connections between the past and present, strengthened exhibition context, encouraged longer dwell time, and increased content gain.

Prior Perspectives or Theory
The recently concluded IMLS-funded Outdoor Living History Project focused on outcomes from visitors' experiences with 1st person, 3rd person, and Museum Theater formats. While specific outcomes and dwell time varied by format, the best practices employed by costumed interpreters created for visitors a sense of connection and shared or reinforced knowledge about how people lived in the past. The study involved two living history sites, two sets of interpreters from each site (one set for 1st person, another for 3rd person), four actors (for Museum Theater), a team of six researchers and the development of several complex instruments. Year 1 included a literature review, identifying and documenting best practices in the field through two tiers of interviews with living history professionals, and retrospective interviews with visitors at the end of their visit. Year 2 data collection involved four instruments: a tracking sheet, onsite interview, and two follow-up telephone interviews. The tracking instrument sought to capture a detailed, holistic picture of interpreter practice and visitor experience. Data collectors: 1) followed interpreters' techniques and check off best practices as they occurred; 2) tracked visitors as the moved throughout three areas of a historic house and kept a running narrative of their observed encounters/interactions with costumed interpreters and other visitors; 3) recorded visitor dwell time overall and for each area of the house; and 4) scored engagement and social interaction. A total of 255 visitors (n=87 1st person; n=82 3rd person; n=86 Museum Theater) were tracked on 11 weekends from June to October 2007.

Findings from a doctoral pilot study suggest visitors may need more than a typical orientation to make the most of their museum visit. Research on family meaning-making was conducted at a medium-sized outdoor living history museum in central Virginia over two months in the spring of 2008. Qualitative data was analyzed using Erickson's (1986) model of analytic induction. Results indicate a geographic orientation to the museum's buildings and layout, and a conceptual orientation to the museum's theme and content are not sufficient; there is a need for cultural-operational orientation to the behavior setting (Falk and Dierking, 2000) as well. Family interactions- within the group, with third-person interpreters, and with the museum environment- take on different characteristics as a family moves through the process of acculturation to the practices and environment in their initial museum visit. The type of questions asked by family members change and the quality of interactions they have with interpreters improve as they become acclimated to the particulars of the museum culture and context. What sorts of strategies can museums employ so family groups can have a high quality interactive experience right from the start of their visit?

In 2007, the Denver Museum of Nature & Science (DMNS) conducted an in-house evaluation examining visitor interactions with and responses to first-person enactors in *Titanic*, a temporary exhibition. Extensive in size, scope, methodology, process and approach, the evaluation looked rigorously and creatively at how live interpretation can be used in a museum setting. The study revealed that the program successfully captured visitors' attention and was a vehicle by which to engage them in personal, powerful, and unique ways. In particular, visitors were able to infuse their own constructs, narratives, and experiences into interactions with the enactors, creating relevance, meaning, and value in profoundly personal ways. Without prescribed steps or scripted interactions, visitors were able to self-navigate exhibition interpretation in a manner uniquely their own.

Importance
Utilizing empirical methods and statistical analyses to quantitatively and qualitatively address live museum interpretation as a vehicle to deliver content in compelling traditional and non-traditional ways opens discussion about participatory research and evaluation, visitor-led best practices, and enhancing informed decision-making for future exhibitions and programs.

References
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Falk, J. H., & Dierking, L.D. (2000). *Learning from museums: Visitor experiences and the making of meaning.* Walnut Creek, CA: AltaMira Press.

Additional Information
Denver Museum of Nature & Science http://www.dmns.org/

Understanding Kenyan Learners Through Jua Kali Visit Discourses
David Anderson and Samson Nashon

Abstract
Over the last 2 years, a research study headed by the University of British Columbia has worked with schools in Western Kenya to reform the school science curriculum in ways that mediate and contextualize science through local cultural artifacts and experiences represented in the everyday lives of Kenyan society. The current study's enacted reforms attempt to alleviate a very dated traditionally British model of curriculum and classroom pedagogy, in place since colonial times, which we believe works against the nature of ways in which Kenyan students naturally learn.

One aspect of these curriculum reforms has harnessed visits to the Jua Kali as a means to teach students key concepts embedded in subject disciplines such as chemistry and physics. The Jua Kali is a small-scale manufacturing and technology-based service sector found in almost every town and urban centre in Kenya; the products of which are prevalent items in Kenyan households. Mediating

the curriculum through the local students' traditional and contemporary cultural worlds is a more productive path to meaningful learning of science compared with incarnations that are culturally disconnected or irrelevant (Nashon, Anderson & Wright, 2007). Moreover, we believe that by understanding Kenyan students' natural harmonics of learning (the natural processes of learning) we can adjust the pedagogical environment to optimize the learning experiences of students.

The focus of the presentation is to report the outcomes of a research study that sought to understand the characteristic attributes of Kenyan students' ways of knowing and learning through a reformed science curriculum that embedded visits to the Jua Kali as the window to understand these attributes. Five key attributes will form the basis for more elaborate discussion about the ways of knowing that we regard as being akin to resonate (natural) frequency (harmonics) of Kenyan learners:

1. Students have a strong personal preference for learning and working together socially.
2. Students prefer opportunities to share their knowledge and learning skills in a way that makes togetherness a more effective learning entity.
3. Students adhere fundamentally to the notion of "Harambee" – (all pulling together), an entrenched national character that makes one Kenyan.
4. Students find it more effective and supportive of learning to mediate science in a variety of languages (Swahili, Sheng – a hybrid youth language of Swahili and English, and English).
5. Students found a deep sense of relief and reward in the changes to the science curriculum which emphasizes their traditional and contemporary cultural worlds.

We see the current K-12 education systems in Kenya as being stifled by an approach to teaching and learning (pedagogy) which is in many ways the anti-thesis of these natural learning harmonics of the Kenyan learner. Through this study we come to a deeper appreciation of the notion that the natural harmonics of learning are in fact culturally mediated and that harnessing these understandings will be key in the next steps in our on-going attempts to assist with the curriculum reforms in Kenya.

References
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Examining Families at Touch Tanks: Discussing Methods, Findings and What Comes Next
Jim Kisiel, Shawn Rowe, Joe E. Heimlich, Judy Koke, and Steve Yalowitz

Presentation Goals
For this session, not only do we want to present initial findings for a study of family interactions at a touch tank, but we want to "expose" the research process by inviting comments from our advisory board, as well as members of the audience. This gives attendees an opportunity to get involved in the interpretation and analysis of data, and it also allows us as researchers to "wrestle with relevance, value, and impact" and consider how our findings might inform deeper levels of analysis, as well as implications for education via such exhibits.

Prior Perspectives or Theory
Two questions that guided this investigation are:
- What kinds of talk and interactions with objects characterize visitor engagement with touch tanks?
- What factors play an important role in influencing engagement at touch tanks?

In this project we approach interactions with touch tanks as a type of "mediated action" (e.g., Wertsch, 1998). From this point of view, with its roots in sociocultural and cultural-historical approaches to cognitive development (e.g., Vygotsky, 1987; Leonti'ev, 1978), learning and development occur as a result of engagement in socially meaningful interactions that are mediated by physical and psychological tools including objects (such as live animals) and symbols (such as language or text).

To capture the details of these touch tank interactions (at four Pacific coast aquariums), families were recruited on site and then outfitted with wireless microphones and digital audio recorders. Participants typically spent between 5 and 20 minutes at the exhibit, and were recorded the entire time. In addition to field notes for each group, a fifteen-minute interview was conducted (and recorded) following each touch tank experience.

<u>Importance</u>
We found that families engage in a wide variety of activities at the touch tanks. Some activities, like *naming*, were quite common, but served multiple roles (e.g., drawing attention, positioning oneself as knower, accessing prior experiences, entering into scientific culture). Other activities, like *making and testing claims*, were less common, but suggested great potential for fostering scientific thinking (comparing, controlling variables, etc.).

As we work through this rich data set, we feel that it is important to obtain feedback from professionals who can help keep us focused on the task at hand (i.e., answering the original research questions), remind us of the limitations and opportunities that the data set presents, and provide a variety of perspectives, as experienced researchers and evaluators, that will ultimately make the study more meaningful for more people.

<u>References</u>
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Explorations in Collaboration: Geology, Informal Learning, and Grand Canyon National Park
Marcella Wells and Deborah Perry

Increasingly museums and other institutions of informal learning are being encouraged to engage in complex collaborative projects. At the same time, little guidance is given on effective collaborative relationships or potential pitfalls. This presentation showcases the collaborative process used on the *Trail of Time* project—a collaboration between three academic institutions, the National Park Services, and four consulting firms to create a major geology exhibition at the Grand Canyon.

The goal of this presentation is to explore:
- What we mean by collaboration.
- Factors that contribute to and detract from a successful collaborative.
- The role that systematic planning and organization plays in collaborations.
- The various roles and responsibilities required for successful collaborative projects.
- Some of the ways that personalities or the 'human element' play out in collaboration.

Conceptual Framework

Collaborations come in many shapes, styles, and sizes. Borrowing from the literature in process consulting (Schein 1987, 1988), this project acknowledges the underlying concept of "joint-ownership" as an important foundation for all collaboration projects.

Using the Wilder Collaboration Factors Inventory (Mattessich, et al., 2001), fifteen individuals from the *Trail of Time* core project team were surveyed about their perceptions of collaboration. Results indicated strong agreement with and significant consensus on variables such as *everyone in our collaboration wants this project to succeed.* There was far less agreement with and consensus about variables such as ro*les and responsibilities are clear* and *decision making processes are clear.*

While these findings point to the importance of organization and clarity as well as understanding the complexities of large project collaborative teams, they do not provide explanations for individual responses. For example, is the lack of consensus about appropriate time for the project work a function of not enough time or perhaps too much time?   Can the lack of clarity in roles, responsibilities, and decisions be explained by factors such as personalities, group dynamics, group size, complexity of the project, or novelty of project? Dierking et al., (1997) and Mattessich, et al., (2001), help explain some of the successes and challenges in the Trail of Time collaboration, although additional considerations are also relevant, including differences in cultures and the extent to which these influence both the processes and the outcomes of the project.

Importance

Projects to create exemplary visitor experiences require intentional and deliberate collaboration between planning, creative design, visitor studies and other functions. Concurrently, the scope and scale of the project, its unique nature, the diversity and personalities of the entities and people involved also influence the collaboration's success or effectiveness. The success of a collaboration, to some degree, will influence the degree to which informal learning projects are gauged successful by visitors. Evaluators and informal learning professionals need to engage in reflective practice and continued research to better diagnose, organize, and manage for collaborative success.

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Additional Information

More information about this project, including a full evaluation report and many evaluation briefs, can be found at http://tot.unm.edu/.

Thursday, July 23 (cont.)

3:00—4:30 p.m.
Poster Sessions

Evaluating Docent Teaching Practices
Sharisse Butler and Molly Kysar

Session Goals

Museums often struggle with defining aspirational yet realistic goals for one-hour student tours, as well as determining how to evaluate volunteer docent teaching practices on those tours. The Head of

Teaching Programs and the Manager of Visitor Studies and Evaluation at the Dallas Museum of Art have worked collaboratively to address both of these issues in a recent implementation evaluation. The findings from this study (including 52 one-hour observations) will be used to support docent teaching by directly informing docent training sessions. This poster session will emphasize the evaluation process and methodologies employed.

Prior Perspectives or Theory
Evaluation planning began with writing a program goal: "On docent-guided tours, students will experience the Museum as a comfortable place to visit and return to, discover that works of art are relevant to their lives, and begin to see their world in a fresh way." This goal and the program objectives are based in the Museum's teaching philosophy that prioritizes close and careful looking, experiencing wonder, making personal connections to works of art, and accommodating diverse learning styles. The docent program plays a central role in carrying out the Museum's mission: "To champion the power of art, embracing the responsibility to engage and educate the community, contribute cultural knowledge, and advance creative endeavor."

An important aspect of the success of this evaluation is the strong partnership between the practitioner and internal evaluator. As valued stakeholders, docents were also given a voice in the evaluation process. The deliberate decisions made throughout the process to work collaboratively are rooted in theories such as Michael Quinn Patton's utilization-focused evaluation (2008) that emphasize direct involvement of intended users for the purpose of increasing use and value.

Importance
Session attendees will:
- discover how one art museum articulated its goal and objectives for docent-guided student tours, and the theories which informed them;
- be introduced to a tool created for observing docents based loosely on the concept of tracking and timing observations;
- learn ways in which the evaluation was a true collaboration between the evaluator and practitioner;
- learn ways in which docents' voices were incorporated into the study and how docent buy-in was created; and
- learn about the potential impact of the DMA's 4th-grade docent-guided tours on the larger community.

References
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Additional Information
http://dallasmuseumofart.org/Dallas_Museum_of_Art/index.htm

RFID: A New Tool for Visitor Studies
Jui-Chen Yu and Hung-Jen Yang

Abstract
Finding new tools for better understanding visitors is always an important task for evaluators and researchers. Then, they can use these tools to improve practices in demonstrating public value and impact of museums. RFID (Radio Frequency Identification) is an emerging technology that is rapidly used in many fields to track patients or goods (Roberts, 2006). This study attempts to explore how this new technology can help for understanding visitor behaviors.

Inspired by Boisvert and Slez's works (1994, 1995), a RFID system has been designed and established to detect and record at which exhibits visitors stop (attracting power) and the amount of time that visitors spent at each exhibit (holding power) in the hall of Telecom History in Taiwan (THT) at National Science and Technology Museum. The RFID system used in this study consisted of a one-by-four 915MHz RFID reader and four antennas. In addition, the "Log Database Generator" software was developed to store raw data detected by the tag reader and transfer these data to the researcher's computer via the Internet for data analysis. The total cost for purchasing hardware and software was 440,000 NT dollars (approximately 13,000 US dollars).

From April to July, 2007, a total of 310 visitors at age 6 and older had participated in this study. After obtaining permission from participants, demographic information was collected and the tag was handed out before they entering the THT hall. All personal information was stored with code numbers to avoid tracing to any particular individuals. For analysis, all data were presented in frequency and percentage. Also, the relationship among visitor characteristics, exhibit tpyes, and attracting and holding power was examined.

The RFID system worked very well for collecting data by counting heads and allowed time for visitor studies without interfereing with visitors' activities or letting visitors feel the pressure of being followed. In contrast to traditional observations, it was took less manpower and time. But, RFID technology can not record how visitors engage with exhibits and others, especially their physical behaviors, oral conversation, and emotional reaction. So, the RFID system is better used in collecting quantitative data than qualitative data.

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Measuring Learning Outcomes in National Science and Technology Museum, Taiwan
Chi-Hsiang Wang

Abstract
This paper reports part of a three-year (2007-2010) research study funded by the National Science Council, Taiwan that investigates visitors learning outcomes at National Science and Technology Museum (NSTM). This study aims to contribute to the existing body of literature on measuring the impacts on the visitors in museum field and to increase public value of the museums, particularly in Taiwan.

The design and implementation of the research were based on the Generic Learning Outcomes (GLOs) framework developed by the Museum Libraries and Archives Council (MLA) in the UK (Hooper-Greenhill, 2004). GLOs are a set of measures for assessing the learning impact of museums on their visitors. It enables institutions to understand more about effectiveness of learning and learning impacts (Hooper-Greenhill, et al., 2003). Face-to-face and in-depth interviews were employed to find out the impact of each GLO on the visitors in the NSTM. Interview questions were selected and revised from the question bank developed by MLA. A total of 87 visitors were asked a series of open-ended questions after their visits. During the first phase of this research, 29 visitors were interviewed from December 2007 to March 2008, and during the second phase of this research, 58 visitors were interviewed from November 2008 to March 2009. The quantitative and qualitative findings have clearly demonstrated effects the NSTM has on the visitors.

However, compared to the result of GLOs-based research in the UK (Research Centre for Museums and Galleries, 2007), this first study conducted in Taiwan did not give us satisfactory findings.

Analysis of interview data indicated that Knowledge and Understanding category made the most significant learning impact on visitors in the NSTM. Little impact was produced in the other four categories. The preliminary findings may partially result from the lack of effective hands-on and interactive exhibitions in the NSTM. Cultural differences could be another reason affecting the results of the study. Generally speaking, Asian people tend to be more euphemistic and the respondents might not have expressed all their learning from the exhibitions while being interviewed. Furthermore, the recognition of learning, social, and cultural background in Taiwan might affect the visitors' responses and perspectives on social interaction and emotional learning.

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"Museum Fatigue" – It's More Than You think!
Stephen Bitgood and Renee Burt

Session Goals
"Museum fatigue" is a collection of phenomena that are poorly understood and rarely examined in an objective manner. This poster examines the meaning and misconceptions of "museum fatigue" and explores its relevance in designing an optimum visitor experience.

Prior Perspectives or Theory
When Gilman (1916) coined the term, "museum fatigue," and published his classic article, he helped create the myth that there is one phenomenon and it deals with physical exhaustion or tiredness. Robinson (1928) and Melton (1935) conducted a series of studies that essentially rejected the notion that physical exhaustion is the main cause of systematic decreases in visitor attention across a museum visit or within a single exhibition. Davey (2005) was the first to attempt a review of what we collectively call "museum fatigue." More recently, Bitgood (2009) identified several phenomena that appear to be part of "museum fatigue," critiqued some of the doubtful conclusions and assumptions that have been made, and suggested possible interactions among variables that might play a role. For example, visitors may systematically decrease attention to exhibits because they choose to become more selective in their attention in order to avoid a physical state of exhaustion. Thus, the physical state of exhaustion may interact with choice behavior.

Importance
 "Museum fatigue" is potentially one of the major factors that interferes with visitor learning and satisfaction. Understanding the phenomena that contribute to "fatigue" allows exhibition and museum designers/developers to plan visitor experiences that minimize or prevent "museum fatigue."

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Learning from Virtual Objects: A Touch-Screen Exploration of Maya Ceramics
Lynn Courtney and Paula Lynn

Session Goals
The Museum of Fine Arts, Boston (www.mfa.org) recently installed a touch-screen interactive in its Ancient Americas gallery that allowed visitors to explore detail in paintings on Maya ceramics from the collection (http://www.chedd-angier.com/mfa.php). This session offers the opportunity to consider how new media can be used to enhance the visitor's direct encounter with art as well as how the impact on visitors of such interpretive methods can best be measured. The summative study was conducted to characterize visitors' use of the interactive and measure its effectiveness in promoting key learning outcomes, including whether visitors who used the interactive spend more time with objects in the gallery; increase their knowledge about Maya religion, culture and, mythology; and gain an appreciation of the skill of Maya artists.

Prior Perspectives or Theory
Development of the Maya ceramics interactive was based on the premises that visitor learning is enhanced when interpretive methods promote increased looking (Housen, 2001), that individuals have a variety of preferred learning styles and modalities (Falk and Dierking, 1992), and that they want to direct their own learning (previous MFA research) and find "just-in-time" interpretation (Samis, 2007). These conditions contribute to increased *time on task*, generally accepted as "a condition for learning" (Donald, 1991). Maya ceramics, a primary source of information about Maya culture, presented a unique opportunity to study visitor learning from visual and hands-on interpretation in a new media interactive where the payoff for visitors would potentially be high.

Importance
An ongoing concern regarding the use of new media in art museums is that it will compete with the visitor's engagement with original artwork. In our sample the touch screen did not detract from visitors' engagement with artworks. In fact, those *users* who looked at artworks in the gallery spent slightly longer with the collection (.31 minutes for the total sample, 1.21 minutes for those interviewed) than did *non-users*. Of most interest for future new media interpretation is that *users* who encountered the interactive in the middle of their gallery visit spent nearly two minutes longer with artworks than *non-users*. In addition, *users* were able to articulate specific aspects of key learning outcomes, both subject groups made artistic and cultural associations, and *users* responded very positively to their experience with the touch screen. Finally, software in the interactive that tracked visitor usage provided rich data about numbers of visitors served (275 per week), time spent (3 minutes on average), topics selected, and preferred features.

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Evaluative Inquiry and Team Exhibition Planning in Art Museums
Ann Rowson Love

Session Goals
- In this poster session, the presenter will focus on methodological issues regarding use of an evaluation approach to facilitate an exhibition team, one that includes staff and community participation.
- Research/evaluation questions include the following: How can an evaluation process facilitate team exhibition planning? How might the findings obtained from using an evaluative inquiry process promote organizational learning, especially regarding inclusion of community members during exhibition planning?

- Team-oriented exhibition planning has been a common approach used by museums since the early 1980s, yet little research has addressed the nature and interaction among museum team members and their relationship to the final product - the exhibition. Furthermore, there is a lack of research/program evaluation pertaining to the relationship between the team approach and community input. This research addresses gaps in the literature through a collaborative evaluation approach called evaluative inquiry for learning in organizations to facilitate and understand the team curatorial process.
- Continued emphasis from AAM calls for further incorporation of community in all levels of museum planning and leadership thereby strengthening relevance and public trust. Community curators, or *non-traditional curators*, offer museums the opportunity to make exhibitions more relevant to visitors.

Prior Perspectives or Theory

Preskill and Torres (1999, 2000) articulated evaluative inquiry for learning in organizations. The authors proposed a process that involves three learning phases – individual, team, and organizational. The evaluator's role is that of both facilitator and co-learner. They conceived the approach as both constructivist (building upon knowledge) and transformational (changing behavior or beliefs) using dialogic, collaborative, and action orientations. According to the authors, the evaluation design is customized to the organizational context. Group members are selected to participate in the collaboration by the organization and include a variety of stakeholders such as staff members and audience members. The collaborative problem solving then leads to transformation and action through collective decision-making resulting in an art museum exhibition.

Importance

This work not only addresses the lack of systematic study of exhibition teams, but also addresses AAM's call to include community members in all levels of museum planning including curatorial endeavors. The evaluation method, a collaborative and qualitative approach, allows for an examination of community relevance during exhibition planning.

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Additional Information

The Ogden Museum of Southern Art – University of New Orleans: www.ogdenmuseum.org

Museum Studies, Western Illinois University: www.wiu.edu/museumstudies

Deeper Understanding of Visitors Using Psychographics at Conservation-Focused Institutions
Emily Meyer

Session Goals

This session will include the presentation of a study of visitors at The Columbus Zoo and Aquarium and The Franklin Park Conservatory. These central Ohio free-chioce learning institutions share a conservation focus. Currently, these institutions collect demographic data on their visitors, which yeilds a limited profile. The study consisted of a visitor survey which explored visitors motivations, values, and factors which determined a quality visit. Also explored are visitors' religious affiliations and gender identity. Data collection for this project is still being conducted. The presenter would be interested in hearing from professionals in marketing, education, and interpretation fields about how they could see this type of data being utilized.

Prior Perspectives or Theory

Marilyn Hood has made a strong case that demographic data serves little purpose in explaining museum visitation. Hood recommends that demographics create a framework for data anaylsis, but points out that only psychographic data explain why and how people visit museums. A museum that focuses its survey research on demographics is selling itself short (Hood, 1991). Falk's work on identities and motivations formed the backbone for this study. Falk created five identity-related motivations thru which visitors could be categorized by their primary motivation to visit (2006). Hood also points out that it is important to realize that visitors make choices about the institutions they patronize. Visitors seek a location where they feel comfortable (Hood, 1993) and where they feel they are receiving quality service (Augustyn & Samuel, 1998).

Importance

Discussion will also touch on how the results of this study will be utilized by participating institutions. Results might be used to better convey behavior messages (conservation or otherwise) to their visitors. Marketing departments may also use the information to tailor their efforts to target actual visitors or types of visitors rather than the entire central Ohio area. This study is relevant to conference attendees who work in marketing, education and interpretation departments at museums as it can give them ideas on how to better reach their actual visitors. Attendees can pick up tips on collecting psychographic data and its importance to their respective organizations.

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New Directions: Enticing & Training the Next Generation

Kris Morrissey, Kathryn Owen, Nick Visscher, Alex Curio, Julie Doherty, Karin Hoffman, and Jessica Newkirk

Session Goals

New Directions: Research, Service and Training in Visitor Studies is an IMLS-funded project that integrates academic work with field research to advance the practice of visitor studies. The poster session will discuss the goals of the project and the results of two pilot studies used as training experiences for graduate students.

New Directions Goals:
1) Prepare future professionals to enter museum careers associated with evaluation.
2) Prepare future professionals to value, understand, and support visitor evaluation.
3) Encourage professional dialog about the place of evaluation within museums.
4) Encourage a commitment to and integration of evaluation in ongoing practice of museums in the greater Seattle area.
5) Experiment with using media and technologies to more effectively and thoughtfully study the nature of visitor experiences

Prior Perspectives or Theory

The project draws on learning and educational theories, and is informed by literature in audience research, visitor studies, and training. The project draws heavily on the concepts and practices of mentoring, apprenticeship, and service learning.

<u>Importance</u>

As the field of visitor studies grapples with how to define itself as a discipline and how professionals are trained and recognized as "professionals," universities provide one path to develop the skills and knowledge necessary to be an evaluator. *New Directions* may be of interest to individuals interested in recruitment and professional preparation of future evaluators.

Graduate students in the *New Directions* project will present results of two pilot studies conducted in sites that served as laboratories – the Woodland Park Zoo and the Burke Museum of Natural History and Culture. The study at Woodland Park Zoo assessed visitor behavior within the *Orangutan Research Station* in the Zoo's *Tropical Asia* exhibit. Zoo visitor interviews offered in-depth assessment of exhibit interpretive elements and their influence on conservation attitudes and behaviors. At the Burke Museum, students conducted a summative study of the exhibit *Coffee: The World in Your Cup,* focusing on describing visitor behavior in the exhibit and assessing the impact of the experience on visitors' attitudes and behavior towards coffee consumerism.

Both studies provided the institutions with useful data on visitors' experiences within these exhibits; equally important is the fact that these studies enabled students to immerse themselves in the challenges of conducting evaluation in informal settings, learning about visitors, evaluation, exhibit design and themselves.

Friday, July 24

10:30—12:00 p.m.
Concurrent Sessions—Three

Effectively Evaluating the Various Forms of Museum Theatre
Sarah Cohn and Elizabeth Wood

Session Goals
By engaging members of the visitor studies field in a conversation around what is important to evaluators, to museums, and to visitors, the presenters hope to cultivate new thoughts, ideas, strategies, and interest in evaluating museum theatre that will help us all recognize its possibilities as an educative endeavor that can be used in all areas of informal learning. This conversation focuses on framing studies that capture visitor experiences and communicating with departments to bridge emotion and impact.

The presenters hope that the outcomes of this roundtable discussion will include a stronger understanding of how museum theatre can add value to visitor experiences, a list of references and preexisting tools to which evaluators can refer, an increased awareness of the possibilities for studying theatrical or interactive programs in the museum, and strong ideas, arguments, and pieces that participants can use to study their own theatre departments.

Prior Perspectives or Theory
The foundation of this interactive discussion is the work currently being conducted in two different museums using interviews, observations, surveys, and focus groups. The presenters are using participatory and utilization-focused frameworks for their evaluations as well as incorporating process use theory into the work. These frames have provided both benefits and obstacles that the presenters have had to work through as they engage actors in the process of constructively criticizing their work and their connection with the audience. The presenters will share their surveys, interview and observation protocols, and focus group structures for the group to discuss, critique, and build off of as they discuss alternative ways of studying such a complex experience.

Importance
Museum theatre is being adopted as an effective tool for emotionally connecting visitors to the information presented at various informal education centers such as zoos, museums, and science centers across the country. Aside from the foundational development of museum theatre as a technique, few in the visitor studies field have grappled with how to effectively evaluate this emotional, educational, interactive, and engaging form of informal learning.

The following questions will be explored in a roundtable discussion:
1. How do we go about framing our studies to most accurately capture and understand the visitors' emotional and educational experiences?
2. How do we effectively evaluate theatrical programs using these frameworks?
3. How do we engage departments or individuals in the evaluation process when they are uninterested or do not want to alter their "final product?"

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Performance, Learning and 'Heritage' project, University of Manchester, http://www.plh.manchester.ac.uk/

Do They Value Us? Attempting to Measure Public Value
Victor S. Yocco

Session Goals
The purpose of this program is to facilitate discussion on public value, specifically the who,what, when, where, why, and how of measuring public value. Results will be presented from a recent study conducted by the Columbus Museum of Art attempting to measure the Museum's public value to surrounding communities.

Prior Perspectives or Theory
The framework used to guide the project and the creation of the instrument was based on the results reported by Scott (2006), in which she identified three beneficiaries to the outcomes of museums: Society, Individual, and Economy. Based on the language that Scott provided from the participants in her study, a survey was created with 3 scales and 19 items to measure each beneficiary category.

Importance
Results will be presented from a pilot study that was conducted by the Columbus Museum of Art, which attempted to quantify the public value the local community perceives the Museum provides. The study sought to collect data from individuals who can be categorized as frequent visitors and those who are not.

The purpose of presenting the study will be not only to share the results, but to expose the instrument, method, and results to a critical peer review. In reviewing the literature related to museums and public value it does not seem that there is any one agreed upon method or instrument that has been published to use for measuring the value, monetary or otherwise, a museum provides to a community.

Results from the study that will be presented include the differences between scores given by the various groups of participants. For example, there was no significant difference in the mean scores for the three scales when comparing those who visit and those who have not. However, there was significant difference between the mean scores of members compared to non-members and females compared to males. Taken as a whole these results can help to determine how the Museum communicates with the local community in regards to the value provided by the Museum, and as a justification for the continued funding of the Museum using public dollars.

The study is relevant to the topic of the conference in that its focus was to define and measure public value for a specific institution. It is relevant to those who attend the conference in that the instrument and the results can be useful for all researchers and practitioners who attend the session.

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Preparing for Evaluation: Using Logic Models in Program Planning at a New Science Center
Heather K. Harkins

Session Goals
The purpose of this presentation is to share how programs have been planned and developed in order to be evaluated at a new science center opening in the spring of 2009. This presentation offers a unique glimpse into program planning, implementation, and evaluation at a new science center.

Prior Perspectives or Theory

In the fall of 2008, staff members at the Connecticut Science Center (opening June 2009) began to plan for program evaluation. The first step was to construct logic models for each program. Logic models are a graphical illustration of inputs, outputs, and outcomes (Taylor-Powell, Steele, & Douglah, 1996). At this time, the program models for most programs (gallery floor, school groups, teacher professional development, theatre and youth) have been constructed to the point where they are feasible and workable. These plans will be implemented in the summer of 2009, and monitored and adjusted as needed.

At our institution, and according to the Taylor-Powell, Steele and Douglah model, impact is defined as the long term outcome of our programs. At this time in our science center's history, we seek to examine how effectively our activities (outputs) are positioning us in relationship to our intended outcomes. We are focusing on process evaluation. In the very near future, we plan to focus on the immediate (short term) results of participating in our programs. Eventually, we anticipate the ability to examine impact.

Importance

This presentation will be about using logic models as the foundation for the *entire* internal evaluation process at a new science center. Logic models are commonly used to visualize and plan an evaluation, however, this science center has employed logic models to assist with the overall planning of the programs with an eye toward evaluation. Pitfalls along the way will be openly discussed.

While the purpose of the presentation will be to share *the process* of developing these logic models in the context of this science center, there are additional activities set to occur in the near future which will also be discussed. Namely, we will be using the logic models to develop evaluation questions, decide on data collection methods (protocols and instruments) and methods of analysis. It is hoped that this roundtable session will begin an ongoing dialogue around these ideas among the attending members from the visitor studies community.

References

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Additional Information

www.ctsciencecenter.org

What Did You Say? Facilitating Conversations in Planning and Evaluation
Bridget Basta

Session Goals

- To discuss the roles evaluators and developers can play in project planning.
- To discuss how to create an open, respectful, and collaborative environment among project teams.
- To discuss how to effectively facilitate discussions around project planning, including big ideas and goal setting, incorporating new team members into the planning process and introducing new evaluation practices.
- To create a space for developers and evaluators to share lessons learned from their own experiences.

Questions to be addressed:

- How can demonstrating relevance, public value, and impact be achieved when developers have different interpretations and descriptions of what their program/exhibit does?
- How can conversations to create a shared understanding be facilitated effectively?

Prior Perspectives or Theory
With the initiation of a capital campaign to support the development of new permanent exhibition and program projects, the Museum of Science and Industry, Chicago, determined that it was important to create a team focused on the integration of exhibit and program development to best serve our audiences. After internal assessments of development practices/processes across projects, it was found that each project had a unique approach to development and with staff working on multiple projects, consistency in understanding what was meant by goal, big idea, evaluation, etc., was rarely found.

In efforts to bridge this gap, the Evaluation & Planning team sketched out the ideal development process to specifically meet the needs of their institution and attempted to put it into action. But as integration began, we quickly realized that not only were we effective in leading evaluation efforts, but as staff who were not so closely tied to the creative development, we could help facilitate the process for team, so all could be equally involved.

For facilitation strategies we have tapped into creative problem solving practices, where post-it notes and "brain dump" brainstorming session have helped teams be open and share ideas without the threat of ideas being rejected from the moment of suggestion. We have tapped into evaluation practices, such as team video review of staff implementing programming, allowing staff to see differences between delivery style, think big about what are they really trying to do, and how can they learn from one another to best reach those goals. We have also tapped into traditional facilitation practices like creating "parking lots", agreed upon guidelines to brainstorming sessions, and dot voting. We have found that by providing opportunities for valuing individual perspectives within the collaborative process, there is much less confusion and back-tracking within the project.

Importance
We have found that in order to be effective in evaluation practices there are many other needs that can sneak up and need to be taken care of along the way. And if one can take care of these needs, the conversations around relevance, public value, and impact are much easier to have, and ultimately positions evaluators as equally valued members in the teams they work with.

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Issues in Joint Evaluation: Bridging Western and Indigenous Approaches
Jill Stein

Session Goals
As presenter at a roundtable session, my goals are to build a discussion around key ideas, challenges, and issues in joint evaluation. Based on the evaluation of *Cosmic Serpent*, an NSF-funded project focused on bridging Indigenous and Western worldviews, this session will not be about reporting results, but sharing what we have learned so far about the process of conducting a joint evaluation and drawing out key points for discussion. The presentation aims to:
- Share key issues in the joint evaluation process, such as:
  - The time and commitment involved in consensus-building with multiple partners;
  - Defining roles and responsibilities that balance leadership with cooperation, balance, and equality;
  - Finding ways to jointly interpret data using two paradigms, making choices around consensus building vs. presenting multiple meanings and conclusions;
  - Increasing access, legitimacy, and trust within both communities as a result of the partnership; and

- Recognizing the overlaps and connections between two paradigms, rather than viewing them as distinct and separate.
- Raise questions such as: Why conduct a joint evaluation? How might this approach support more relevant evaluation? What are the potential challenges and obstacles to conducting joint evaluation? What are some models for combining multiple perspectives in evaluation?

Prior Perspectives or Theory

The presentation draws upon theoretical frameworks from Indigenous evaluation, developmental evaluation, and collaboration evaluation. An Indigenous evaluation framework aims to create validity and reliability by being grounded in community values and Indigenous ways of knowing (LaFrance, 2004), focuses on holistic thinking (Cajete, 2000), and values respect, reciprocity, and relationship (Christensen, 2002). The project also uses a developmental evaluation approach (Patton, 2005) to provide guidance and reflection that is continuous, real-time focused, and flexible. We also draw from collaboration evaluation models, focusing on the extent to which the project's approach is perceived as an avenue for creating and sustaining connections, collaboration, and mutual trust, respect, and understanding between various stakeholders (Dierking, et al., 1997; Mattessich & Monsey, 1992).

Importance

The session will be useful to VSA participants because it addresses a relatively little explored approach towards evaluation that can potentially increase our ability to be culturally responsive and relevant as evaluators. The discussion focuses on the benefits, challenges, and lessons learned from this type of evaluation partnership, and encourages participants to address the limitations and assumptions we make as evaluators. Joint evaluation offers one model for increasing relevancy and "ecological validity" within the context of the communities in which we work.

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Rigorously Categorizing Museum Offerings: Practical Applications for Cluster Analysis
Toni Dancu and Josh Gutwill

Session Goals

This presentation will provide an overview of cluster analysis methodology and its utility for systematically defining categories of exhibits, in the context of an applied example. In the spirit of VSA's recent dialogue theme, the talk will conclude with an audience discussion of their experiences with this and other categorization methods. Together, we will brainstorm future uses of cluster analysis in visitor studies.

Prior Perspectives or Theory

Museum researchers and evaluators often need to determine whether different groups of exhibits elicit distinct visitor reaction, but defining those exhibit groupings can be difficult. In visitor studies, it is common to differentiate types of exhibits in a subjective or theoretical manner (e.g., Borun, et al., 1998; Humphrey & Gutwill, 2005). However, this process can also be undertaken statistically. Cluster analysis is one method of systematically categorizing exhibits (or other museum offerings) into distinct types, allowing for clearer definitions and more focused investigations.

The example project described during the presentation is the Exploratorium's Geometry Playground, an NSF-funded exhibition development and research project focused on creating and studying immersive exhibits. In defining "immersive" exhibits, we found a variety of descriptions and examples in the literature (Bitgood, 1990; Gilbert, 2000; and Gyllenhaal, 2002), but needed to identify the particular type of immersive exhibits that best fit our project goals. This presentation will describe the steps we undertook to identify five different types of immersive exhibits: conducting a literature review, identifying the defining aspects of a multitude of immersive exhibits in the field, distinguishing common attributes and rating our list of exhibits on those attributes, and navigating several decision points during the analysis. We will also describe how the results of our cluster analysis helped the Geometry Playground team focus on a particular type of immersive exhibit, namely Whole Body Interactive Immersives.

Importance
This session will provide researchers and evaluators with a systematic method for grouping museum offerings. The discussion will provide applied examples to help ground the methodology. A group brainstorming activity will identify ways in which cluster analysis may enhance visitor research. Finally, a list of cluster analysis resources will be provided for anyone interested in further exploring this method.

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Building Institutional Knowledge Across Evaluations
Anna Lindgren-Streicher

Session Goals
- Present a case study of how project-specific evaluations can result in findings that are applied to build a body of knowledge for the institution or field.
- Engage presentation participants in discussion of how project-specific evaluations can be leveraged to build off of each other and build institutional knowledge.

Prior Perspectives or Theory
This presentation will share results from a series of evaluation and research projects focused on programs and exhibits that engaged visitors in engineering design at the Museum of Science, and will use this progression of studies as a case study of using research and evaluation to build institutional knowledge. The first study of engineering design was an evaluation of *Design Challenges*, a facilitated program that engages children in a hands-on engineering design activity. As this evaluation was taking place, the Museum also developed a major traveling exhibition which focused on science and technology themes.

Based on the evaluation findings of these two projects, two further studies of the *Design Challenges* program were undertaken. Grounded in socio-cultural theories of learning (Vygotsky, 1980; Engestrom, Miettinen, & Punamaki, 1999), these two studies examined how chaperones and museum educators interacted with children at the activity. Results from these studies, as well as studies documenting best practices that promote family learning (Borun, et al., 1998) are now being used to

shape upcoming exhibits about engineering and invention, as well as future studies in the subject area.

Importance
For many evaluators, studies are focused on evaluating the impact of a single project. However, these project-specific evaluations can result in a series of findings that are applicable only to the project at hand, and do not build a larger body of knowledge for the institution or field.

As a part of the Museum of Science's technology and engineering education initiative, the institution's internal Research & Evaluation Department is involved in a series of projects that have taken place across different departments with different end products, but we have aimed to leverage results across different studies and projects to build institutional knowledge. This presentation will cover a series of studies, all of which focused on engaging visitors in engineering design, and use them as a case study illustrating how a knowledge generation model was used, and share techniques that will be useful for other evaluators or educators who wish to engage in similar efforts in their own institution.

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Believing What We See: Use of Video in Museum Exhibits
Jennifer Borland and Saul Rockman

Session Goals
We will provide a brief summary of some of the most relevant findings with regards to video use in museum exhibits and also present a collection of original findings that we have been gathering for the past five years. Specifically, we will address environmental factors such as the arrangement and characteristics of the viewing area, as well as factors related to the video programming itself, e.g., length and format.

Prior Perspectives or Theory
Evidence suggests that videos can help capture museum visitors attention. Furthermore, videos may also hold visitor's attention for longer periods of time, and therefore lead visitors to spend greater amounts of time in a particular exhibit or gallery. However, getting people's attention with a video, does not always equate to holding people's attention, thus making the task of providing information via video clips more challenging for exhibit designers.

Importance
Surprisingly little research exists on how museum visitors interact specifically with video installations in exhibits. We suspect that more information has been gathered and shared in an informal manner as part of museum or exhibit evaluations, but clearly far fewer of these reports have made their way to the pages of professional journals or other publicly available sources. Our session seeks to provide an opportunity for researchers and practitionners to review published findings and discuss findings of their own.

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What Does a Museum Mean? A Narrative Approach to Museum Impact
Philipp Schorch

Session Goals
Drawing on a long-term narrative study of global visitors to the Museum of New Zealand Te Papa Tongarewa (Te Papa), this paper offers a theoretically informed qualitative perspective to explore and substantiate such abstract concept as "museum impact." The analysis is carried out through a hermeneutic interpretation of visitors' meanings which is embedded in a multifaceted theoretical framework. The aim is to gain a holistic picture of the museum experience, which synthesizes specific individual as well as broad socio-cultural perspectives, by combining agency with discourse and fluid identities with interpretive communities. I argue that the impact of museums is best understood via the meanings visitors make and negotiate in the long-term. This provides critical insights into what a museum visit *means* and how its impact is negotiated within time and space.

Prior Perspectives or Theory
Even advanced research methods such as formative, front-end, and summative evaluation are of provider-oriented nature and guided by the museum or researcher's "system of relevancy" (Wengraf, 2001). Results are solely compared to predetermined museum goals and fail to consider visitors' actual experiences. In doing so, both museum and visitor research perpetuate the old reformist agenda of cultural institutions and pedagogic forms of democracy. The arbitrary and artificial dissection into neatly isolated subcategories such as "perceptual," "cognitive," and "affective" is another tendency that ignores the complex and subjective nature of any human experience. Instead, I argue that there is constant interdependence, simultaneity and interpretation within the human experience and that, in Hennes' (2002, p. 14) words, the "world is composed of things connected together by myriad interrelated webs of meaning."

Importance
Silverman (1995, p. 162) reminds us that "humans share a basic need to express the meanings we make by telling them, often in the form of stories." Several scholars have argued for this inherently human capacity of making sense and meaning of life experiences via narratives. Bruner (1990, p. 56) concludes that "the typical form of framing experience (and our memory of it) is in narrative form." The biographical narrative approach therefore represents the most suitable methodology to understand meaning-making processes among humans. While the narrative approach is recognised as the most appropriate mode in museological representation and education for facilitating meaning making among visitors (O' Neill, 2007; Roberts, 1997), it has rarely been used as a visitor research method (Allen, 2002; Paris & Mercer, 2002) and thus requires further attention within the social sciences in general as well as visitor studies in particular. Studies into the long-term impacts of museum experiences have been conducted within a learning or education context but narrative and biographical approaches are now required (Anderson, Storksdieck & Spock, 2007).

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The Roles of Evaluation in Training Scientists in Public Communication
Elisa Israel, Todd Gieseke, Christine Roman, Staci Willis, and Bryan Wunar

Session Goals
Science museums are becoming increasingly involved in training research scientists as public communicators. A vital component of these programs is the inclusion of evaluation methodologies as training tools to improve the scientists' understanding of public audiences. Highlighting two NSF-funded science communication programs, a collaboration between the Saint Louis Science Center and Washington University in Saint Louis, and a collaboration between the Museum of Science and Industry and the University of Chicago, this session will explore how the inclusion of evaluation techniques have strengthened such programs.

Panelists will describe the two programs with particular emphasis on the roles that evaluation has played in each, both as a training tool and to describe the impact the training has had on the students. Practitioners will discuss the value of these types of partnerships with universities as well as the rationale and value for using evaluation as a training element. Evaluators will address the techniques used both for the training and the overall evaluation of the program. Following formal presentations, two concurrent small group discussions will focus on the perspectives of practitioners and evaluators, respectively. Participants will have the opportunity to switch discussion groups halfway through the discussion portion. While these programs specifically address the training of scientists, the panelists believe that the use of evaluation techniques as training tools is applicable to other disciplines in which content experts receive training in public communication. Attendees with similar experiences at other institutions and with other content areas, such as art or history, will be encouraged to share their perspectives in the small groups.

Background
At the Saint Louis Science Center, evaluators and content development staff are working with Washington University graduate students under a grant from NSF-IGERT (Integrated Graduate Education and Research Training). This grant supports an interdisciplinary program of graduate studies relating to brain research, covering neuroscience, psychology, and biomedical engineering, of which training in science communication to general public audiences is one element. Science Center staff developed the science communication training program, which consists of a series of workshops followed by a student-led development of a highly engaging, interactive educational program for general public audiences that highlights brain research.

In Chicago, the Museum of Science and Industry has partnered with the University of Chicago's Center for the Presentation of Science (CPS) to create the MSCOPE project. This program teaches graduate students how to present scientific results in science museums. The students are trained in and participate in the presentation of scientific knowledge to a broad public. The specific goals of MSCOPE include:
- Enabling the presentation of science, including both the results of up-to-the-moment scientific research and basic science, to a broad public.
- Teaching graduate students about the presentation of science, especially the conceptual design of museum exhibits.
- Helping museums more effectively present scientific material, especially using computerized methods.
- Developing new career paths for students.
- Expanding museums' audience base, especially in attracting additional under-served audiences.
- Building greater diversity in the groups taught by the physical sciences division of the University of Chicago.
- Building a working collaboration that can be replicated. In MSCOPE, each year a team of Chicago graduate students from several different disciplines would spend nine months working and learning together.

A key element of both training programs involves utilizing evaluation techniques. Students learn and apply techniques of front-end and formative evaluation to better understand their audiences as they develop their educational programs.

Importance
Science literacy and an understanding of current research have become necessary to be an active, informed citizen in today's society. As such, it is critical to connect research scientists and the general public. Science museums are uniquely positioned to be this bridge. Students in these training programs develop new skills for communicating their research, not only to the general public, but to their colleagues as well. As one IGERT student commented, "While learning how to present neuroscience to the public, I was constantly reminded that good communication skills are critical for presenting science to any audience - even to other scientists." Furthermore, visitors who participated in the IGERT students' program demonstrated that they not only learned about the brain, but had positive interactions with the student scientists. As one visitor noted, it was "hands on fun and learning. Everyone is exciting and interesting and passionate about their topics."

The use of evaluation methodology as a training tool is a critical element that provides students with a first-hand understanding of the public audience. Students in both programs have developed successful exhibits and programs, demonstrating the strength of these programs overall and suggesting the potential for applying this model in fields beyond science.

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Additional Information
For more information on the MSCOPE program, visit: http://mps.uchicago.edu/
To listen to two IGERT students discuss their research on a St. Louis radio show, visit http://www.kmox.com/pages/1812409.php and go to the story called, "Jon Grayson: The Real World of Brain Research".

Connecting Pupils, Curriculum and Informal Learning Environments
Theano Moussouri

Presentation Goals
This session will examine how mobile and web technologies can be used to connect pupils, curriculum, and informal learning environments. It will present results from a formative and summative evaluation study carried out at the National Maritime Museum in London, UK. The goal of this hand-held learning resource is to help teachers and museum educators design learning activities and resources that connect pupils to learning both in the classroom and in the Museum. Using a constructivist approach to learning, the hand-held resource allows Key Stage 3 (KS3) pupils to take charge of their own learning by locating and identifying the objects and information that is relevant to their on-gallery task and, from these, drawing the knowledge relevant to the follow-up task(s) back at school. This helps pupils make their own paths to learning by utilizing different learning environments (both formal and informal), tools, people, and resources. Formative and summative evaluation was carried out with the aim to: 1) ensure that the new learning resource meets its goals, 2) identify any problems teachers and pupils had using the mobile phones, 3) measure the outcomes of pupil learning and 4) make suggestions for improvements.

This session aims to share some insights into the integration of mobile and web technologies into museum programming. It will present key points that need to be considered when thinking of using such technology. It will also present findings that demonstrate how different contexts, tools, and recourses can produce different learning outcomes.

Prior Perspectives or Theory
The evaluation design took into account the different physical and social contexts in which the hand-held resources was going to be used as well as pupils prior knowledge and expectations of their visit. Similar studies were consulted and key findings were used to enrich the framework used to analyze the data. In particular we investigated three aspects of the use and understanding of the hand-held recourse:
- Technology: ease of use and any advantages and/or disadvantages associated with it;
- Communication: whether the intended learning outcomes were achieved, using the Generic Learning Outcomes Framework; and
- Interaction and contribution: whether this resource can facilitate interaction and thoughtful discussion and contribution.

Importance
Our world is becoming increasingly mobile and mobile applications are developed to facilitate learning. This session aims to contribute to the body of knowledge that is currently being built on how best to use mobile technologies to support learning.

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The "Enhanced" Fieldtrip: Study of Audience Values and Institutional Impact
Scott Burg, Meg Burke, and Lorie Topinka

Presentation Goals
The California Academy of Science's *Enhanced Museum Visits for Students* program launched in Fall 2008 as a pilot program open to 4th and 5th grade students attending schools in the San Francisco Unified School District. In addition to free exploration of the museum, the program offered teachers and students an Academy-designed activity on the morning of their visit; free bus service; free lunch for all students, teachers, and chaperones; a single-use family pass for each student to return to the Academy with their families; and a t-shirt for each student, allowing them free entry to the Academy through August 2009.

Rockman et al (REA), a San Francisco-based research and evaluation firm, conducted a formative evaluation the *Enhanced Museum Visits for Students* program. The program was designed to deliver a "unique and awe-inspiring museum experience" for 4th and 5th grade San Francisco students, and enhance and extend the impact of the class visit by supporting an ongoing connection between the Academy and each student and their family. In addition, Academy staff planned to build "a personalized relationship with each teacher that would grow to a multi-year, ongoing relationship."

The aim of this evaluation was two-fold: 1) to collect feedback from teachers and students regarding their satisfaction and engagement with the program, and 2) to look at the logistics (food, transportation, scheduling, etc.) involved in implementing the program. Data gathered from this evaluation informed the full implementation of the program beginning in January 2009.

REA conducted a mixed-method evaluation of the *Enhanced Visits* program that asked the following questions:
- What did teachers think of the *Enhanced Visits* program?
- Did teachers find the workshops valuable?
- How does the *Enhanced Visits* program compare with visits to other programs/institutions?

- Did students like the program activity and the museum?
- What did students find engaging?
- How can the Academy improve the program?
- Logistically, how well is the program organized?

REA gathered information about these questions through the following methods: 1) pre- and post-visit teacher and student surveys, 2) observations of eight class visits (split into 15 groups) and follow-up interviews with those teachers, and 3) interviews with Academy staff and program contractors (food service, transportation) about program logistics.

Our session will focus on the following topics:
- Methods and strategies employed by Academy staff to design, implement, manage, and sustain a multi-faceted field trip experience for 4th-5th grade students and their teachers.
- Examples of ongoing continuous program improvement implemented as a result of rigorous formative and summative evaluation activities.
- Methods for development of custom evaluation instruments and protocols aligned to the unique nature of the Academy field trip experience and characteristics of participating students and teachers.
- Elements necessary to ensure management and coordination of internal and external program logistics

Importance
In this current economic climate when both museums and their visitors are facing difficult financial decisions, it is even more imperative for museums to create new ways to provide and demonstrate "value" to the public. Evaluation data emerging from the first year of operation of the *Enhanced Museum Visits for Students* program indicated that there were several operational and interpretive areas that would benefit from additional Academy staff and volunteer training or change in thematic focus. The data also provided empirical evidence of what aspects of the program were most valued by the various stakeholders—the teachers, students, chaperones, parents, and Academy staff—and which had the greatest impact and return on investment for the Academy. The evaluation also provided insight on planning and implementation of key logistical elements that are critical for a successful museum visitor experience. This type of knowledge is invaluable and essential to management of any type of museum as asset allocation decisions are made, especially in times of financial challenges. The evaluation also clarified the roles and impacts of the different stakeholders themselves and provided a foundation for informed targeting of specific groups from an institutional perspective.

Enhancing the value of the museum experience, especially with onsite educational programs, can be enhanced by assessing teacher and student expectations of that experience in advance of the visit. This knowledge can be applied when developing and implementing programs to meet, and potentially exceed, the expectations of these stakeholders. Soliciting feedback before, during, and after the field trip provides stakeholders an opportunity to become active participants in shaping their museum experience. Elements of this field trip strategy can be applied to the creation of enhanced educational activities for audiences of different ages.

Chinese Museum and School Reforms – Understanding Perceptual Barriers to Bridge the Divide
David Anderson, Changyun Kang and Xinchun Wu

Abstract
The current political and social backdrop in China that is characterized by rapid educational reforms to the K-12 education system, rapid growth in the number of museum institutions, and Central Government policy which encourages collaboration between museums and school has the potential to be fertile ground for meaningful engagement between museums and schools. Notwithstanding, unlike many Western K-12 education contexts, school field trip visits to museums and cultural

institutions are generally not a tradition of Chinese K-12 school-based education. The Chinese Government has realized the value of collaboration and the integration of the school and informal learning contexts and has launched projects to promote the integration of the school and museum systems.

This presentation reports on the scope and details of one of five different studies conducted and supported by the China Association of Science and Technology (a semi-government body that has oversight for all science and technology museums in China), the Beijing Normal University and the University of British Columbia to realize school-museum collaborations by developing local solutions to the divide within the Chinese cultural context. The study employed a hermeneutic phenomenology methodological approach (van Manen, 1990) in that it sought to interpret the perceptions (cultural schema) peculiar to stakeholder groups - school teachers, museum staffs and science educators – around the concept of use of the museum to support school curriculum. The specific locus of the phenomenon was concerned with the stakeholders' perceptions about the interface between school and museum education. The hermeneutic phenomenology approach employed was concerned with human experience as it is lived having a view of people and the world as indissolubly related in cultural, in social and in historical contexts (Laverty 2003).

The outcomes to be discussed demonstrate that strongly entrenched cultural views and long-standing practices among stakeholder groups are obstacles to meaningful collaboration despite Central Government policy and educational reforms, which encourages such engagement (Kang, Anderson, & Wu, In Press). Moreover, each stakeholder group tends to over-emphasize the counterparts' responsibilities, neglecting their own duty to reform their professional practices, and overstate their own difficulties and challenges. Thus, we discern a resistance for change from within the respective cultures of the stakeholder groups, particularly from within teachers and university science educators. The data demonstrates multiple tensions and perceptual barriers between the school and museum systems with different formats, different bureaucracies, and different philosophies. The cultural values and perceptual views of stakeholder groups were discerned with the purpose of promoting mutual understandings and ultimately the development of effective, locally-based model enabling meaning of collaboration in support of K-12 education in China.

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The Role of Emotion in Free-Choice Learning
John H. Falk, Katie L. Gillespie, Lisa-Anne D. Kelly, and Amy Niedbalski

Session Goals
Although emotions are a critical component of free-choice learning there are currently no agreed upon methods for talking about and measuring emotions in informal settings. Session objectives are:
   a) Provide a primer on what we currently know about emotion from both theoretical and practical perspectives;
   b) Describe the critical importance of understanding the role of emotion in free-choice learning; and
   c) Present three research studies aimed at measuring and operationalizing this critical variable.

The three studies to be presented are:
   • A study conducted at two Pacific Coast aquariums sought to determine whether visitor emotion could be reliably measured in free-choice settings and whether emotion varies based on the type of learning activity. Emotion was triangulated using 1) a validated self-reported measure

of emotion, Russell's Affect Grid, in conjunction with a survey of visitor's subjective assessment of their experience; 2) pulse rate measures of physiologic changes; and 3) videotape focusing on visitors' nonverbal indicators of emotion. Baseline indicators of the emotional experience of the aquarium visit allow investigation of the potential impacts on learning, similar to a study conducted at the California Science Center (CSC).

- A CSC exhibit, *Goose Bumps: The Science of Fear*, was developed to help visitors learn about fear and experience it in a safe environment through an interactive "Challenge Course." The challenges were of a highly emotional nature, above that of traditional exhibits, which provided an ideal opportunity to investigate the role of emotion on cognition. A randomly selected sample of *Goose Bumps* (*GB*) visitors were interviewed, as were CSC visitors who had not seen *GB*. Visitors from both groups used Russell's Affect Grid to report levels of emotion. Results from initial interviews indicated that visitors found *GB* more arousing than the science center but not more pleasurable. Delayed-post interviews conducted four months later showed more evidence of science learning among *GB* visitors than those in the control group. Thus there was evidence that elevated emotional arousal positively affected cognition and memory.
- The strategic direction of the Saint Louis Zoo calls for a conservation education paradigm to ensure visitors can more easily make connections with animals and the natural world. Practical applications of operationalizing and assessing Affective Transformation (AT), or the relationship between visitors' emotional experiences and conservation attitudes and behaviors, were researched within the context of a zoo educator professional development (PD) program. Findings from analyses of PD session video recordings and PD participant interviews indicated that the following factors contributed to building understandings of AT triggers (experiences that influence attitudes or behaviors) and indicators (evidence for the ways in which visitors respond to triggers): 1) using conservation psychology as a theoretical underpinning, 2) PD designed to solicit the zoo educators' input on the development of AT models, and 3) staff members' personally transformative experiences. Growing understandings of AT allowed zoo instructors to embark on research studies about targeted triggers. The institutional effort towards understanding AT recognizes the importance of measuring affect from multiple angles including intercept studies, online forums, field journals, and focus groups.

Prior Perspectives or Theory

- Affect is often mentioned in the literature as an important variable within the learning process, though there are only a few studies of affect within free-choice contexts (e.g., Meredith, Fortner, & Mullins, 1997). This has not prevented many science centers, museums, zoos, and aquariums from claiming affect as a major value and outcome of their experiences.
- The aquarium and science center studies draw upon Russell's (1979) model of emotion, which states that a person's emotional state is the combination of two dimensions: the level of alertness (arousal) and the degree of pleasure (valence).
- AT models draw upon conservation psychology, the study of the role of the relationship between humans and nature in environmental sustainability (Saunders, 2003).

Importance

- Recognition of AT triggers and indicators is an important component of (re)developing educational programs in order to meet affective goals. Practitioner research studies illustrate the vital role of involving practitioners in investigating affective elements of their programs.
- Although cognitive processes were long considered to be separate from emotion, current research has indicated that these processes are inextricably intertwined. In fact, emotions have been linked to both decision-making and memory (Damasio, 1995). Thus, there is critical need for a better understanding of the role of emotion in free-choice learning. Emotions are likely impacting the experiences with which visitors choose to engage, the memories they make, and ultimately the learning that takes place.
- Until we understand the complex construct of emotion, it will be necessary to consider multiple theoretical approaches. However, application of visitor and educator studies such as these that consider the role of emotion in free-choice learning, ultimately provide opportunities to improve visitors' experiences.

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Friday, July 24 (cont.)

2:15—3:30 p.m.
Concurrent Sessions—Four

Rethinking Institutional Models: Cross-Pollination of Museum and Community Engagement Practices
Matthias Waschek, Betul Ozmat, Leslie Scheuler, and Lisa Harper Chang

Abstract
Can art be a factor in community building? Is it possible to evaluate projects that explore this question, and if so, how ? Can seemingly disparate institutions, such as those dedicated to the arts and those dedicated to social work, collaborate to produce meaningful output and outcomes for a community?

In fall of 2007, The Pulitzer Foundation for the Arts and the Brown School of Social Work at Washington University in St. Louis partnered to explore questions of the social relevance of art and how social work and all that it encompasses (e.g., evaluation, community work, case work) could unite with a museum-like arts institution to play an active role in the revitalization of a community. The current efforts developed through this partnership are founded on the principles of social inclusion and basic concepts of community building, i.e., promoting the formation of relationships within the community to strengthen the social network.

An example of the programs created by the partnership took place in the fall of 2008. The Pulitzer Foundation for the Arts, in partnership with Grand Center, Inc., the Brown School of Social Work at Washington University in St. Louis, the St. Louis Symphony Orchestra, and three other area arts institutions (St. Louis Art Museum, Contemporary Art Museum St. Louis, and White Flag Gallery) presented the Light Project and accompanying Community Light Project. Both projects were inspired by the work of Dan Flavin, whose work was on display in the Pulitzer with the exhibition, *Constructed Light: Flavin*. As the fluorescent lights of Dan Flavin spilled out of the building, the Pulitzer decided to spill out of its doors for the first time, jointly commissioning outdoor light installations from contemporary light artists. A main goal of the project was to explore the impact of symbolic value on a struggling urban environment—to begin defining what relevance art, and in this case contemporary art, has in today's society. Further exploring this theme, the Community Light Project sought to connect members of the immediate neighborhood to these light installations and the work of Dan Flavin through work in the schools, featuring a curriculum that incorporated music and light. This culminated in a festival featuring drums constructed by area students that lit up when struck, compositions of percussion music with the students, and outdoor light installations created by four area schools in response to the Light Project installations. Through both the Light Project and the Community Light Project, the Pulitzer sought to engage new community members and enhance all community members' personal relationship with art, while beginning to carve a new role for itself in the urban environment as an agent of revitalization and social inclusion.

The outputs of the aforementioned Light/Community Light Project are easy to identify. The outcomes, however, are somewhat less obvious. It was of great interest to all of the partnering institutions to learn more about the impact these projects had on the immediate neighborhood and on the St. Louis community overall. Thus, the perfect opportunity for social work expertise to influence museum practice arose, and an evaluation plan was developed under the guidance of an external evaluator, who holds an MSW and a PhD in Social Work and also has extensive experience evaluating arts education and outreach initiatives. To begin understanding the impact of this program but to also establish a baseline of information against which future efforts could be compared, a mixed-method model of evaluation was proposed and implemented. These methods included the collection of both quantitative and qualitative data through observation, intercept interviews with participants in Light Project and Community Light Project events, focus groups with various stakeholders (including teachers and students from the participating area schools), and stakeholder interviews.

This interactive session will feature representatives from the institutions who founded this partnership, the Pulitzer Foundation for the Arts and the Brown School of Social Work, the external evaluator who plays in integral role in developing the evaluation efforts involved in this partnership, and the manager of community engagement, whose position is the manifestation of this partnership. The discussion will be moderated by the representative from the Brown School of Social Work and will ideally provide an opportunity for all attendees who are interested in the potential of the cross-pollination of museum and social work practices to start a dialogue with the presenters that will continue beyond this session.

Additional Information
Pulitzer Foundation for the Arts Community Engagement Programs:
> http://www.pulitzerarts.org/events/collaborative-programs/
George Warren Brown School of Social Work, Washington University in St. Louis:
> http://gwbweb.wustl.edu
LS Associates: http://www.ls-associates.net

Different than Other Settings? Visitor Studies in Art Museums
Juliette Fritsch, Judy Koke, Barbara Palley, and Joe E. Heimlich

Abstract
What role does visitor studies play in art museums? This session convenes a much-needed conversation at VSA, to attend to the specific context in which many of its members are working. Visitor research is newer in art museums than in other museum settings and thus has had less time to demonstrate its utility. Yet, in an environment of financial stress art museums are looking more carefully at attendance and impact, giving visitor research an opportunity to demonstrate its utility to a field that formerly found it an interesting tangent.

This session is designed to provoke discussion and build a collective understanding of opportunities and challenges of visitor studies in art museums, given the nature of learning in the arts and the institutional culture of art museums. To set the stage for rich conversation, three presenters will each share a case study of visitor research at their respective institutions. Presenters represent a range of museums, professional roles and experience:

Judy Koke, **Deputy Director**, **Education and Public Programming, Art Gallery of Ontario**:
Museums are often looking for new ways to attract audiences and better strategies for meeting visitor needs. The Art Gallery of Ontario recently transformed itself both physically and philosophically across 110 galleries (http://www.ago.net/transformation). Koke's team of interpretive planners worked to integrate current research from the broader museum field to an art museum setting, and are currently engaged in research to assess which visitor segments are

well served or not. Koke will speak to the organizational acceptance of the research in planning, as well as in building a shared language about audience research within the Gallery.

Barbara Palley, **Landau Fellow**, **Museum of Modern Art (MoMA):** Though in its nascent stage at MoMA, visitor studies have brought evidence of the range of visitor experiences, offering a means of internal discovery and consciousness about the implications of our practice. Palley will present a study of a special exhibition that shows that interpretation aids rather than subverts direct experiences of works of art, which has soothed curators' fears of doing works of art injustice. This has focused attention on the craft of interpretation and away from the either/or situation of interpretation or silence. The research represents a collaboration between the curatorial and education departments, taking a line of inquiry that is at the intersection of each departments' work: How does the visitor response to the exhibit relate to curatorial intentions? This study will demonstrate the potential role of visitor studies to bring reflection, intentionality, and visitor research to the interpretive endeavor at MoMA.

Juliette Fritsch, Head of Gallery Interpretation, Evaluation and Resources, V&A London: How do visitors perceive the relationship in galleries between high-tech interpretive devices and objects? A concern for educators and interpretation managers in art museums is that interpretive devices, particularly those that are digital or screen-based, are perceived by visitors as distracting or competing with objects. Evaluation on visitor usage and impact of the interpretive devices dispels this (e.g., Summative Evaluation of the V&A British Galleries and Islamic Middle East gallery). However, the internal assumptions amongst staff regarding the impact of high-tech devices on appreciation, perception, and understanding of objects have never been interrogated. Fritsch will present a case study of a small-scale qualitative investigation that aimed to advance understanding of visitors' engagement with high-tech interpretive displays in relation to perceptions held by museum staff. http://www.vam.ac.uk/res_cons/research/visitor/index.html

The discussion portion will explore questions that arise from these three settings in particular, as well as the art museum in general. Key questions and ideas may include:
- While curators in science and natural history museums are active in knowledge production and the academic world, their exhibitions are considered a public education tool. In art museums, most exhibitions represent recent art historical scholarship– it is critiqued by other experts and represents that individual's thinking – rather than as a tool to reach a lay audience. In what ways can visitor studies increase awareness of exhibitions as a communicative tool?
- How is the nature of visitor studies inherently similar and different in an art museum than in other contexts? Is the methodology comparable or does it preclude other considerations?
- Art museums were historically slow to visitor research. To categorize visitors and response types seemed reductive and disrespectful of the "art experience." How can the successful application of research findings make a case for the utility of visitor studies?

The aim of this conversation is to share collective knowledge about the challenges and opportunities for visitor studies in these settings and to raise provocative questions that might inspire and guide work in these settings. Differences amongst art museums in their commitment to visitor learning and research will be acknowledged.

Investigating Parent-Child Metacognition
Kirsten Ellenbogen, Sarah Cohn, David Anderson, and Greg Thomas

Presentation Goals
Session panelists will present the design and outcomes of a research study on parents' metacognition and views of learning within the context of a mathematics exhibit. Attendees will gain an understanding of:
1. Prior research that frames metacognition as an individual's knowledge, control and awareness of his/her learning processes.

2. What parents knew about how they and their children thought.
3. The ways in which metacognitive knowledge influenced parents' interactions with their children during a moderately complex simulation task at a mathematics exhibit.

Prior Perspectives or Theory
Despite the considerable increase in investigation of science learning in informal settings such as museums, the investigation of parents and children's metacognition in such settings is still in its infancy. Metacognition is a process that has the potential to improve learning processes and consequently learning outcomes. Since Flavell's seminal work (Flavell, 1976, 1979) there has been continual interest in and research into how to develop, enhance, and measure learners' metacognition. One reason for the constancy of this research agenda is the possibility that learning processes can be developed and improved. It is often argued that the importance of metacognition lies in its potential to explore, explain, and ultimately to improve learners' thinking and learning processes (White, 1988; Thomas and McRobbie, 2001).

Importance
In this study, parents reported metacognitive knowledge of the thinking and learning processes of themselves and their children. This knowledge influenced parents' interactions with their children. Parents were aware that this metacognitive knowledge influenced their interactions, and thought this was an appropriate approach given the child and the museum environment.

This study was conducted at the Science Museum of Minnesota at the Math Tracks exhibit (http://www.smm.org/exhibitservices/history/experiment/gallery/7/). Math Tracks is part of the *Handling Calculus* exhibition and is designed to help museum visitors understand the relationship between slope and motion. Visitors can move objects along a track to produce different motions on a graph that is projected onto a large screen above the track. The object can be manipulated to change the graph or the graph can be manipulated to move the object along the track. The study included 14 dyads, each consisting of one parent and his or her child. The children's ages ranged from 8 to 14 years old. The dyads took part in a simulation task exploring the concepts of acceleration, velocity, displacement, and time. The task required them to initiate and control the movement of objects representing vehicles or animals along a track by varying the shape of the projected graph linked to the objects' movements. The dyads' actions and dialogue during the task were audio and video recorded from both a front and rear perspective. Immediately following the task the dyads were interviewed using a stimulated recall protocol about their thinking and actions during the task. Questions asked in the interviews related to how and why they engaged with each other as they did, what they were thinking as they engaged with the task, and how their thinking was similar and different to the thinking they used in other situations. Some of the key outcomes include:
1. Parents' beliefs and values about learning influenced the behavioral and cognitive patterns of engagement for both parent and child at the exhibit.
2. Pre-existing perceptions of expertise affected behavioral and cognitive roles for both parents and children. Parents' shifting perceptions of their own expertise throughout the experience was reflected in shifts in scaffolding.
3. Children were aware of their parents' expertise at the start of the activity and this influenced expectations about their own behavior, as well as their conversation (This was not true for eight year olds). Parents reported an awareness of their children's scaffolding more frequently than children reported an awareness of their parents' scaffolding.
4. Parents engaged in identity-building behavior that (based on the interviews) were consist across home and museum experiences. Most parents claimed to tailor their conversation and behaviors to suit the perceived learning characteristics of their children.

Enhancing and documenting science learning in museums is an increasing priority. This research adds to the literature regarding metacognition in science museums by suggesting that, (a) parents' interactions with their children in museums are influenced by their metacognitive knowledge, and (b) parents are aware that interactions with their children are influenced by their views about learning processes and see this as a reasonable educational role for themselves. These findings have implications for exhibit and program development in science museums.

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White, R. T. (1988). Metacognition. In J. P. Keeves (Ed.), *Educational research, methodology, and measurement* (pp. 70-75). Sydney: Pergamon Press.

Additional Information
Kirsten Ellenbogen and Sarah Cohn at the Science Museum of Minnesota:
www.smm.org/researchandeval/
David Anderson at the University of British Columbia:
http://m1.cust.educ.ubc.ca/faculty/david_anderson.php
Greg Thomas at the University of Alberta:
http://www.uofaweb.ualberta.ca/secondaryed/thomasg.cfm

Effectively Researching Early Childhood Learning
Alice Stevenson

Presentation Goals
The New York Hall of Science recently completed a research project documenting early childhood informal learners and came across the many challenges of evaluating this age group (an ever growing demographic at the Hall). The project looked specifically at the kinds of psychomotor, language, and social skills that 3- and 4-year-old visitors are using and acquiring at exhibits in the Hall's *Preschool Place*. Data was gathered through observation with rubrics, interviews with children and adults, and a focus group.

In this session participants will weigh the challenges and rewards of research that looks specifically at early childhood informal learning in museum spaces; talk through different data collection methods; and compare the different goals and outcomes for research vs. evaluation projects. Participants will take away next steps for their own evaluations of this audience.

Prior Perspectives or Theory
This research project grew out of evaluations in the Hall's re-envisioned *Preschool Place*. This 2,000 sq. ft. exhibition combines programmatic and free-play space with exhibits developmentally appropriate for children ages 6 and under. Previous evaluation examined attendance numbers, child engagement, and overall enjoyment, but we wanted to look closer at how and what children were learning at the exhibits.

We were influenced by Edward Chittenden's research of participants in the Science and Nature program at the American Museum of Natural History, in particular his use of adult interviews to gain insight into their child's learning.

Importance
Early childhood and *Preschool Place* visitation has been steadily growing at the Hall for the past 5 years. Much effort has gone into evaluating and researching the exhibits and visitors in the rest of our institution - this is the first of many steps to focus in on this growing demographic.

Research focusing on the episodic early childhood visitor and informal learning is a burgeoning field. When an institution looks at its youngest visitors it often looks at enjoyment, attendance, or cites

anecdotal stories. Evaluation of programs and exhibits for early childhood can often leave out research that examines what kind of learning is happening.

Early childhood subjects offer a variety of challenges for the researcher/evaluator: they can be pre-verbal, pre-literate, learning informally, and episodically visiting. By focusing on the kinds of learning our early childhood visitors are experiencing in science centers we can more effectively argue for the relevance of the early childhood science programs and exhibits within which these young visitors are growing developmentally, cognitively, and socially.

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What Does it Mean? Strategies for Communicating Research Implications
Jessica Sickler, Preeti Gupta, and Bill Leon

Session Goals
Visitor research and evaluation generates findings, theories, and implications with tremendous potential to help museums increase their community relevance and impact. This information, however, often presents a challenge when it needs to be translated into practical, actionable considerations for professionals to implement across their institutions and in daily decision-making. Yet such integration of research and practice is an essential step for visitor studies to have a substantial impact on practice.

The purpose of this session is to bring together professionals from all aspects of museum work, including those who conduct visitor studies and those who use the results, to discuss how researchers, evaluators, and practitioners can improve dissemination to provide clear implications and strategies for practice.

Prior Perspectives or Theory
To kick-off discussion, panelists will briefly share several examples of strategies used to transform research or evaluation findings into practical and accessible publications, documents, trainings, and tools. These examples are not the focus of the session, but meant to spark new ideas and discussion among the group.

Practitioner Workshop for Implementing Research Findings: Why Zoos and Aquariums Matter
At the conclusion of two research projects that examined the public value of zoos and aquariums, a full-day workshop program was developed to share research results with zoo/aquarium professionals. Rather than focusing on data, the workshops and supporting materials presented brief summaries of take-home findings and engaged participants in discussions of how those findings might address existing challenges in their home institutions. Workshops resulted in individual action plans of strategies and resources to achieve goals.

Program Assessment Tool, Guidebook, and Coaching: Science Career Ladders and Reinvesting in Youth
An international network of science centers that are consciously implementing career ladders to nurture the development of young employees is using a guidebook and assessment process to review 30 aspects of program design and institutional capacity based in research and evaluation on best practices. Through guided self-reflection and cross-institutional collaboration, they are identifying and documenting what they do well and developing action plans to improve what they want to change.

The project is based on a similar one (for Reinvesting in Youth) that has been implemented for organizations addressing the needs of youth entering the juvenile justice system and which has demonstrated an ability to help youth-serving agencies improve their effectiveness and thus their results for the youth and the communities that they serve.

Self-Published Handbook: Thinking about Dolphins Thinking
At the conclusion of an exhibit development project that focused on the cognitive abilities of dolphins and extensive evaluation efforts, the project team (including specialists in technology, exhibit development, animal behavior, and visitor studies) wanted to share with the field the process used of translating evaluation findings into design strategies. This resulted in a self-published booklet outlining the purpose and design of the project, particularly evaluation findings directly fed into exhibit development at each stage of the project. In contrast to journal articles written from these same findings, this document directly addressed the needs of exhibit designers and educators.

Internal Institutionalization of Research Findings: CLUSTER
As the New York Hall of Science has partnered in a research project to prepare secondary science teachers through undergraduate education and practical application of theory in museums, museum staff have begun to create systems for rapidly transferring the study's findings and successful strategies for synthesizing educational research and practice into the broader education programs of the museum. This effort to quickly transform research results beyond a single program's borders and re-envision other programmatic approaches is creating a recursive pattern for progress and advancement throughout all department programs.

Importance
With these examples as starting points, attendees will break into small groups to discuss issues, strategies, and new approaches for sharing and increasing the accessibility and ultimate impact of research and evaluation on the practice of museums and other informal learning settings. This is meant to be a venue for in-depth discussions about:
- Strengths and weaknesses in current dissemination practice
- Needs within the museum field for sharing of research/evaluation
- Strategies (existing or new) and guidelines for communicating research/evaluation findings and implications
- Practical considerations for various strategies (e.g., cost, planning, design, available resources)

At the conclusion of the conference, notes from all discussion groups will be compiled. It is hoped that the information, ideas, strategies, and goals that emerge from this session can be synthesized into summary document for publication via VSA or another appropriate forum to share the tools, tips, and strategies from this session beyond the attendees, providing useful information for more of the visitor studies community.

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Friday, July 24 (cont.)

3:50—4:50 p.m.
Concurrent Sessions—Five

Evaluating Long-Term Youth Programs: It's a Whole Different Ballgame
Carey Tisdal, Beth Shea, Christine (Kit) Klein, and Diane Miller

Session Goals
This interactive session is designed so that both program directors and evaluators can engage with and consider solutions to the specific challenges in evaluating long-term youth programs. Long-term engagement in out-of-school programs by low income, minority youth households has the capacity to provide significant impact in their lives. Evaluating these programs is essentially different from some approaches developed for exhibition evaluation.

This session grounds problem-solving discussions in the specifics of two programs, Learning Places (LP) at the St. Louis Science Center (SLSC) and Science Museum of Minnesota (SMM) and the Museum Tech Academy (MTA) at the Illinois State Museum (ISM). Evaluators and program directors (evaluation clients) for both projects describe program experiences and evaluation findings using pictures and video clips. Panelists share lessons learned and their own ongoing questions about program evaluation.

After brief presentations from each project, session participants join one of eight groups to problem-solve about important issues with the evaluation of long-term programs. Attendees will respond to the following questions.   Ideas generated to overcome the challenges will be summarized and shared online after the session at http://sites.google.com/site/evaluatinglongtermprograms/

- How can front-end evaluation, including literature reviews, be conducted to inform decisions about program design and the selection of target audiences?
- How can program evaluation reports be better timed (and organized) so that they are more useful to the client?
- What strategies can be used to better understand why students drop out over the course of long-term youth programs? How can we get data from a full-range of participants' parents?
- What strategies can we use to understand staff attrition and capture institutional memory from staff across the life of the program?
- What are strategies to assess change over time when programs change or initial measurement protocols don't work?
- Is the development and use of standardized instruments across long-term youth programs desirable or possible?
- How can we measure long-term impact after a program ends or a participant leaves?

Prior Perspectives or Theory
The evaluation designs for both projects were outcome-based naturalistic inquiry featuring quantitative and qualitative methods. The evaluation of the MTA program involved the development of a logic model to make connections between program activities and outcomes. This three-year evaluation included a front-end, formative, and summative evaluation. The LP evaluation also featured a mixed method design to assess the numerous intended outcomes and included one standardized instrument.

Importance
The methodology and involvement of evaluators in both projects provided opportunities for observation of changes and encouraged project staff to reflect as changes occurred. This reflection and the perspectives of project staff and evaluators led us to identify the challenges above which

appear salient to program evaluation. This session provides panelists and participants with the opportunity to share ideas for overcoming these challenges. After the session, participants are encouraged to continue the discussion on the session's website to further their contribution to the field.

Additional Information
"Teenage Designers of Learning Places for Children" (LP), engages inner-city teenagers from traditionally underserved populations in designing "Learning Places" for younger children in after-school centers. With NSF funding (ISE-05155732), SLSC and SMM partnered with community organizations offering after-school programs in St. Louis and St. Paul. LP teens created nine Learning Places with activities designed to teach science and mathematics concepts and processes, as well as contexts for implementing these activities, including both the design of physical space and strategies for integrating the activities into existing after-school programs. To disseminate the model nationally, in this last year of the project, five additional museums will be taking lessons learned to create their own versions of Learning Places.

The Museum Tech Academy (MTA) was an out-of-school program for low-income, at-risk students from grades 7-12 in Springfield, Illinois, funded by NSF's ITEST program (ESI-0423083). From fall 2004 through August 2007, ISM and the Center for American Archeology (CAA) partnered to provide an environment for student participation in activities integrating archaeology, natural science, and information technology through authentic projects. Each cohort of students participated in after-school or evening sessions and field trips during two school years, and two weeks of field school at the CAA in the intervening summer. The three-year project was designed to have two cohorts of 45 students each. The evaluation design included a front-end focus in Year 1 of the project, a formative focus in Year 2, and a summative focus in Year 3. Methods included pre/post questionnaires, ongoing in-depth interviews, the collection of student products, and observations. Of the 97 students admitted to the program, 57.4% completed the entire two years. Evaluation measures identified significant growth in archaeological knowledge, information technology skills, and skills for navigating college and careers tied to program participation. The project continues at the Illinois State Museum, funded by the Illinois Department of Natural Resources.

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Improving the Field Trip Experience: Designing Exhibits, Coaching Students, Engaging Teachers
Scott Ewing, Josh Gutwill (Chair), Jim Kisiel, and Scott Pattison

Session Goals
This session explores three distinct approaches to improving museum field trips: (a) understanding teachers to better align museum offerings to their needs, (b) designing exhibits that support facilitation by museum staff, and (c) creating facilitated programs to engage students more deeply with exhibits.

Prior Perspectives or Theory
Teachers and schoolchildren are a significant audience segment for many museums and other informal science institutions (ISIs). The need to establish connections between schools and ISIs has been identified by numerous organizations (e.g., IMLS, 2005, p. 7). However, the pairing of formal and informal learning contexts has proven to be challenging. Numerous studies of school field trips suggest that teachers struggle with the use of informal settings in supporting classroom instruction

and may not recognize how best to utilize such resources (Anderson, Kisiel, & Storksdieck, 2006; DeWitt & Storksdieck, 2008; Griffin & Symington, 1997; Kisiel, 2005).

Museum facilitation can greatly enhance the educational value for students on field trips. But what kind of facilitation capitalizes on the strengths of museums, fits with teachers' expectations, and engages students? In this session, we argue that successful facilitation programs must account for teachers' prior experiences and expectations, leverage the potential of "facilitation-friendly" exhibits, and focus on building students' inquiry skills.

To shed light on teachers' expectations, we report an investigation into the role of teachers' personal and school contexts in their use of ISI resources, including field trip programs. A web-based survey gathered information from teachers about their prior experiences, attitudes toward ISIs and science teaching, and perceptions of school-based challenges. Analyses revealed correlations that may help museum professionals align their programs to fit teacher expectations.

Next, we will describe efforts to develop and evaluate "facilitation-friendly" exhibits based on research in social learning and exhibit engagement in museums (e.g., Humphrey and Gutwill, 2005; Borun et al., 1998). Interactive exhibits have the potential to serve as powerful learning tools for school groups. By integrating the role of the interpreter into the exhibit experience, we capitalize on the expertise of staff, the power of social learning, and the significant resources invested in creating exhibits.

Finally, we report on a field trip program, *Inquiry Games*, that markedly improved students' inquiry skills, a key component of scientific literacy. Interactive exhibits at science museums offer a rich opportunity for learners to develop their inquiry skills, but visitors only rarely engage in extended inquiry at such exhibits (Randol, 2005). After learning two key inquiry skills via the *Inquiry Games*, students and their chaperones engaged in more prolonged and coherent inquiry investigations.

Importance

Museum educators and researchers have been wrestling for decades over the question of whether field trips offer a real learning experience for children, particularly compared to the learning experience of school. The gulf between school and museum learning modes leads many teachers and museum staff to organize field trips in ways that rely on traditional formats that underutilize the educational power of the museum, sometimes imposing school-like structures on the field trip experience (e.g., worksheets) and other times providing no structure at all. By understanding teachers' perspectives and actively encouraging those teachers (and their administrators) to think differently about integrating museum experiences into classroom curricula, museum professionals can improve student learning during field trips.

Focusing field trip programs on inquiry skills may help bridge the formal and informal worlds of science education by using the strengths of science museums to meet a significant need in schools. With the development of facilitation-friendly exhibits and skill-based mediated programs, museums can offer students hands-on inquiry experiences that are difficult to find in classrooms. Moreover, thinking skills are generally applicable back in the classroom, reducing the need to carefully match museum content areas to science content studied in school. This means less need for teachers to invest time situating the field trip within their science curriculum; presumably, any science learning will benefit from improved inquiry skills.

Integrating school science with museum learning experiences can potentially create free-choice field trips that teachers would view as educational, thereby increasing the value of museums in the greater community.

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Additional Information
For more information about the Exploratorium's study of inquiry-based field trip programs, please visit the GIVE project website at: http://www.exploratorium.edu/partner/give/

Measuring the Impact of a Science Center on its Community
John H. Falk

Session Goals
Presented will be a summary of more than a dozen years of research designed to frame and answer the following long-term impact questions for the California Science Center:

- Who does and does not utilize the Science Center and why?
- What is the nature of visitor's expereinces within the Science Center?
- Does the Science Center facilitate long-term science learning, and if so, what is the nature of this learning?

And most importantly:

- How successfully has the Science Center accomplished its educational mission to enhance the science and technology understanding, attitudes, and behaviors of the general public in greater Los Angeles?

This research speaks directly to the conference theme: *For What It's Worth: Wrestling with Relevance, Public Value, and Impact*.

Prior Perspectives or Theory
To answer such a range of large and complex questions Falk proposed a series of *inside-out* and *outside-in* investigations. The *inside-out* investigations focused on specific exhibitions and programs; one example was a series of NSF-funded in-depth investigations of a cohort of 200 randomly selected Science Center visitors (cf., Falk & Storksdieck, 2005; in press). These investigations were designed to identify current users of the institution and to assess the short- and long-term effect of the various projects, activities, and exhibitions. The *outside-in* investigations were designed to query a randomized sample of people from the various communities influenced by the Science Center. The institution's effect on the science awareness, attitudes, and understanding of the community of greater Los Angeles was assessed and monitored over time.

Appreciating that there was a window of opportunity for being able to elegantly demonstrate and measure the Science Center's impact, Falk designed a plan to collect a time-series of "snap-shots" of Los Angeles residents' science knowledge and attitudes, and their perceptions of the role that the Science Center played in their lives – from prior to the opening of the new science center, immediately following opening and then again, a decade later. Beginning with qualitative baseline *outside-in* face-to-face interviews (N=200) with Los Angeles residents in 1996, Falk and colleagues then conducted major regional randomized quantitative telephone surveys in 1997 (N=1,007), 2000 (N=832), and 2009 (N=1,018). In this session Falk will summarize findings from a sampling of both *inside-out* and *outside-in* investigations in order to answer the big questions posed above.

<u>Importance</u>
Collectively, the dozens of research and evaluation studies conducted at the California Science over more than a decade represent one of the most comprehensive efforts to capture the influence and impact of an informal science education institution. The insights gained have the potential to directly inform both practice and research as well as to influence public policy related to the value that informal education institutions have in their communities.

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Creating and Sustaining Programming for Social Service Families
Cheryl Kessler, Jeanmarie Walsh, Erik Schurink, and Janice O'Donnell

<u>Session Goals</u>
What does a museum-social services partnership look like? How is it different from other museum partnerships? What kind of programming comes out of these partnerships? What are the program impacts on visitors? Children's museums have taken the lead in working with social service audiences. A recent review of the Association of Children's Museum *Promising Practice Award* applications from the past ten years uncovered at least 19 museums that partner with social service agencies or organizations. Programs at the Providence Children's Museum and Long Island Children's Museum offer insights into what a museum-social services partnership looks like and the value they bring to the public they serve.

Families Together, a visitation program for court-separated families, is a partnership between Providence Children's Museum and the Rhode Island Department of Children, Youth and Families (DCYF), the state's child welfare agency. The program, begun in 1992, grew out of one family therapist's quest for a better way of fostering good parenting in troubled families. When children are removed from the home because of neglect or abuse, the initial goal is for the family to be rehabilitated and the children returned to their parents. While parents receive rehabilitation services from any number of government agencies, the children are cared for by foster families or relatives. During these periods of separation, which can last months or even years, it is critical that children and parents maintain contact, accomplished through "visitation," regularly scheduled family visits usually supervised by a social service worker. *Families Together* provides a place for court-separated parents and children to visit with each other during regular museum public hours, over a period of several months under the guidance of *Families Together* staff therapists. Visiting helps maintain family ties, provides reassurance to children and parents, and provides opportunities to assess parent-child interaction and parenting skills (Hess & Proch 1993). Caseworkers and family court judges rely on the assessment of Families Together therapists to arrive at a permanency plan for the children, be it reunification with the parent, termination of parental rights or open adoption.

Be Together, Learn Together is a partnership between the Long Island Children's Museum and Nassau County Department of Health and Human Services (DHHS). In 2005 Nassau County opened a Welcoming Center less than a 10-minute walk from Museum. This new facility houses eight agencies under one roof and serves 1,000 visitors each day. In 2007 the Long Island Children's Museum (LICM) received an IMLS planning grant to develop a partnership with DHHS to provide programming for children and families served by Nassau County social service agencies. In Year 1, LICM established a

Joint Planning Committee made up of DHHS and LICM staff to create and deliver weekly table-top activities for children in the Welcome Center and the renovate two supervised visitation rooms with the installation of aesthetic educational enhancements designed to engage parents with their children. Where families choose to visit a museum or school program, families in the Welcome Center, attending parenting workshops or using supervised visitation rooms, are there by caseworker referral and often court order. Families don't want to be at DHHS, are most likely in an extremely stressful place in their lives and are actively trying to complete their association with DHHS. Evaluation efforts conducted by the Institute for Learning Innovation for *Be Together, Learn Together* focused on the nature of the partnership, prototyping components for the supervised visitation rooms, and gathering baseline data on Welcome Center families.

Prior Perspectives or Theory

Families receiving social services can be living in fairly desperate situations, working toward normalizing their lives, or receiving temporary assistance between otherwise self-sustaining times. Unless specifically informed, museum staff is generally unaware of families' circumstances. Research about family learning and museums as rich learning environments (Dierking, Ellenbogen, Luke, Anderson, Donnelly, & Cunningham, 2005; Ellenbogen, Luke, & Dierking, 2004; Ellenbogen, 2003; Crowley & Jacobs, 2002, Shine & Acosta, 2000; and Borun & Dritsas, 1997) is applicable for museums interested in providing programming for social service families. Research published in *Marriage & Family Review* looks specifically at why and how museums can act as therapeutic environments using therapeutic approaches to provide relational experiences, i.e., experiences through which family members learn about themselves, each other, and how they function as a group (Silverman, 1989).

Importance

Museum-social services partnerships present challenges not found in typical partnerships. For example, important findings from the evaluation of *Be Together, Learn Together* identified caseworkers as a key audience for the delivery of program components. Caseworkers' role is to monitor family visits and refer parents to learning experiences that will address specific issues. Options for serving families need to be presented as uncomplicated and worthwhile in order for caseworkers to use them. Challenges faced by museum staff and ILI include confidentiality issues with families involved with the program. Due to the circumstances each family brings with them to the Welcome Center there needs to be a heightened level of sensitivity towards the kinds of questions asked of them.

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Additional Information

http://www.childrenmuseum.org/documents/FamiliesTogetherToolKit.pdf

Making it Obvious: Building an Experience Around Data
Rita Deedrick, Joe E. Heimlich, and Nadya J. Bennett

Abstract
The Experience Testing Station at COSI grew out of a desire to both do more exhibit and experience testing with visitors and to make more obvious the evaluation and visitor studies work that we do. From early discussion, a concept emerged for a "fishbowl" for these types of studies where visitors can both participate in and observe the research being done. The realization that the data collection setting did not have to be complicated or have a dedicated space led to creative thinking about a process that would allow us to start putting some of our ideas in front of visitors for feedback. The resulting Experience Testing Station (ETS) has served not only to institutionalize experience testing, but also to provide visitors with a sense of helping to create COSI experiences. This incorporates COSI visiting public directly into the experience development process.

The first component of the session is the process by which the Experience Testing Station was created including decisions on how "permanent" to make the ETS, the process for determining what to test, strategies for making the studies visually interesting (easy with manipulatives and chartable findings; difficult with script testing), and processes by which to target desired visitor demographics. Throughout the process, there were two objectives for the ETS: (1) to get visitor input to develop and improve programs, exhibits, and processes, and (2) to impress upon visitors that COSI is continually evolving and improving our experiences and invite them to share their opinions and thereby contribute and take ownership of COSI as a community resource.

The second component of the session is an overview of the evaluation findings. As front-end studies and prototyping moved from being behind the scenes into being an intentional experience for the visitors, COSI staff members were asked to complete perceptual surveys and visitors were asked a series of questions after the ETS experience related to the experience. These findings will be shared and how the data was used will be explored.

The final component of the session explores the range of studies conducted to date, and the applied findings for making the ETS increasingly valuable to both visitors and team members. The ETS also represents a slight but important philosophical change in the way COSI presents itself. COSI has always valued visitor input, but this process allows COSI to get feedback in a structured, quantifiable, and routine way. The process also more directly conveys to visitors that we want their feedback which was not as clearly messaged before.

Saturday, July 25

9:30—11:00 a.m.
Concurrent Sessions- Six

Understanding the Value of Public Participation in Research
Rick Bonney and Ellen McCallie

Session Goals
Building on a presentation at last year's VSA meeting which focused on the idea of developing "standardized" instruments for evaluating informal science education (ISE) projects, this roundtable will contribute to an on-going effort to develop a systematic and reproducible method of describing and documenting Public Participation in Research (PPR) project impacts using the NSF Framework for Evaluation (Friedman, 2008) as a guide.

We will describe the impacts of three different types of PPR projects, a "contributory" project; a "collaborative" project; and a "co-created" project. We will show how developing a standardized means of assessing impact allows us to compare and contrast different approaches to education to achieve varying goals. In addition to discussing the limitations of using this type of standardized approach to impact assessment, we will describe how our model rubric can be used not only as a tool for assessment but also as a guide for project development. Through discussion, the participants will be encouraged to critique, build on, develop, and use similar assessment rubrics in their own work.

Prior Perspectives or Theory
Public Participation in Research is an umbrella term for several forms of ISE including citizen science, community science, and participatory action research. PPR projects involve visitors to ISE institutions, both virtual visitors and those who arrive "in the flesh," in a variety of scientific activities including observation, data collection, and data interpretation and analysis.

Importance and Relevance
While PPR projects are widely touted as excellent vehicles for helping visitors understand both science content and the process by which scientific investigations are carried out, little systematic work to document the value of these projects to either visitors or the host institutions has been undertaken to date.

Over the past year an Inquiry Group on PPR operating under the auspices of CAISE (the Center for the Advancement of Informal Science Education) designed a "standard" evaluation rubric for PPR projects which requires an evaluator to describe stated goals, potential indicators, measured outcomes, and inferred outcomes for a variety of impact categories. Inquiry group members then used the rubric to assess the impacts of several PPR projects ranging from "contributory" projects, for which visitors collect and submit data following protocols designed by scientists, to "co-created" projects, for which visitors are involved in every step of project design and implementation including data analysis and dissemination of results. Not surprisingly, different types of projects yield different impacts. In addition, different types of projects are better suited at affecting different measures on the NSF Framework. However, all project types seem to help visitors understand science process as well as learn science facts, and many projects help their visitors develop actual skills of scientific investigation.

References
Friedman, A. (Ed.). (March 12, 2008). *Framework for Evaluating Impacts of Informal Science Education Projects* [On-line]. (Available at: http://insci.org/resources/Eval_Framework.pdf)

A Conversation with Alan Friedman
Alan Friedman and Stephen Bitgood

<u>Session Goals</u>
This conversation will cover Alan Friedman's illustrious career including his contributions to visitor studies, his view of informal science education, his insights into where the field of visitor studies has been, and his vision of where it is going.

<u>Prior Perspectives or Theory</u>
Several years ago, Lisa MacKinney initiated a series of interviews at the Annual Visitor Studies Conference with key visitor professionals. The current interview (8th in the series) continues Lisa's tradition.

<u>Importance</u>
Knowing and understanding the history of visitor studies and the key professionals responsible for its development strengthens VSA as an organization by providing professional models for members, by encouraging examination of these individuals' writings, and by becoming more aware of important knowledge and skills in the field of visitor studies.

Alan Friedman is an ideal model for visitor studies professionals. He has received many awards including the ASTC Fellow Award for Outstanding Contribution, The AAAS Award for Public Understanding of Science & Technology, and the American Institute of Physics Andrew Gemant Award. He served over 20 years as Director of the NY Hall of Science making it one of the most outstanding science centers in the world. He co-authored a book with Carol Donley on Albert Einstein (*Einstein as Myth and Muse*). He has served as President of the Visitor Studies Association. Alan is currently co-Principle Investigator for CAISE (Center for Advancement of Informal Science Education). These accomplishments reflect only a small fraction of Alan's immense contribution to visitor studies, science centers, and informal science education in general.

<u>Sample of Alan Friedman's References:</u>
Friedman, A. (1993). Convincing the director. In S. Bicknell & G. Farmelo (Eds.), *Museum visitor studies in the 90s* (pp.43-46). London: Science Museum.
Friedman, A. (1997). Are science centers and theme parks merging? *The Informal Learning Review, 25*. Available at http://www.informallearning.com/archive/1997-0708-a.htm
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Friedman, A. (2007). The extraordinary growth of the science-technology museum. *Curator, 50*(1), 63-75.
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Update from the VSA Institutional Review Board Task Force
Carey Tisdal, Jessica J. Luke, and Kevin Coffee

<u>Session Goals</u>
Session participants will increase their awareness of steps being considered by the Visitor Studies Association (VSA) to support members in navigating the human subjects' protection system and working with Institutional Review Boards (IRBs). They will also increase their knowledge of the requirements for human subject projection from some funding agencies, the structure of this system in the United States, and have the opportunity to engage in discussions and provide input to the VSA Board about issues related to IRBs.

<u>Relevance, Public Value, and Impact</u>
Since 2004, some US Federal funding agencies have required that protocols for research in grants (including some types of evaluation studies) be reviewed by IRBs before funding can be received by the institutions proposing a project. Institutions must assure federal funders that they are protecting human subjects. Many colleges and universities have such IRBs but most museums, science centers,

zoos, botanical gardens, parks, and arts organizations do not. Complicating this situation, many college and university IRBs will only accept protocols for review from researchers affiliated with their school. Independent review boards exist, but many are expensive and unfamiliar with visitor studies methods and contexts. Project members and consultants who conduct research and evaluation are often looked to as the project resource to manage and sometimes pay for a review. In 2007, VSA formed a task force to study this situation and recommend ways to help members accomplish IRB approval of their studies.

In 2009, the VSA IRB Task Force recommended that VSA: 1) implement a three part human subjects ethics curriculum for members, 2) negotiate memoranda-of-understanding with IRBs to provide support and services to members, and 3) develop information resources about human subjects protection for the VSA website. In addition, this group recommended that VSA form an ongoing committee to develop and publish ethical standards including but not limited to human subjects or human subject research.

Round table discussions will address issues identified by the task force for further consideration by session participants.

> Table 1: Children and institutional employees are protected populations. What are the requirements for these groups? How do we protect institutional employees in small samples? How do we provide for informed consent and otherwise minimize risk to children?
> Table 2: Is all summative evaluation by definition generalizable research? Is there a difference between dissemination and generalization?
> Table 3: Should VSA be a stronger advocate for professional ethics? Currently, VSA has no ongoing committee for ethical consideration and advocacy. What is VSA's responsibility to develop explicit ethical standards?

Round table discussion summaries will be reported to the VSA Board.

Importance

Informal educators, exhibit developers, managers, researchers, and evaluators all have ethical and legal obligations to protect human subjects, but navigating the review system can be challenging. In addition, if VSA does not adopt and advocate positions on human subjects protection and other ethical issues, then those standards will be set for us by others.

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The National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). *The belmont report*. Retrieved May 12, 2009 from http://www.hhs.gov/ohrp/humansubjects/guidance/belmont.htm.

United States Department of Health and Human Services. (2005). *Title 45 CFR part 46, protection of human subjects*. Retrieved May 12, 2009 from http://ohsr.od.nih.gov/guidelines/45cfr46.html.

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Visitor Studies Association. (2009) *Ethical research in informal learning environments*. Retrieved May 12, 2009 from http://www.visitorstudies.org/index.php?page=ethical-research.

Additional Information

VSA IRB Task Force

> **Chairs:** Carey Tisdal and Minda Borun
> **Professional Development Working Group:** Jessica Luke (Leader), Josh Gutwill, Kevin Coffee, Pino Monaco
> **Memoranda-of-Understanding (MoU) Working Grou**p: Marcie Benne (Leader), Minda Borun, and Carey Tisdal
> **Website Working Group:** Karen Knutson (Leader) and Carey Tisdal
> **Ethics Statement Working Group:** Kevin Coffee (Leader), Karen Knutson

The Value of Applying Multiple Evaluations on the Same Project
Maritza Macdonald, Ellen Giusti, and Karen Wizevich

Abstract
This session will highlight the value of using multiple strategies to evaluate the American Museum of Natural History's exhibtion *Water: H$_2$O = Life,* and its educational programs' impact on various target audiences. The American Museum of Natural History's (AMNH) evaluation decisions included selection of various evaluators, a hybrid model of summative evalaution for *Water* and front-end evlaution for *Climate Change*, and multiple evaluation foci: public, camp students, and educators. *Water* and *Climate Change* have global importance and respond to a timely need for understanding and debating the related issues of human impact.

Macdonald will frame the administrative, policy, and educational theory that led to the evaluation decisions and applications of *Water* findings to programming for *Climate Change*. Four types of studies were undertaken:
1. A summative evaluation of the general public's response to the exhibition (People Places and Design Research);
2. An internal assessment of museum programs, with policy implications;
3. The impact of programs for teachers (Ellen Giusti);
4. The value of various youth programs (AMNH educators and Giusti).

Summative evaluation explored the general publics' perceptions about the exhibition. It combined entrance interviews (n = 167) and exit interviews (n = 316). We found that:
- Expectations are an important context for visitor experiences. If people expect to see something specific and they don't see it, their experience is affected;
- Visitors entered the exhibition thinking they already knew about many water-related topics;
- All visitors (99%) could articulate some main idea they got from this exhibition;
- Visitor experiences and learning were wide ranging. People came in at different levels of interest and knowledge, and they all got something out of it;
- This exhibition made people think about their everyday lives and the future; and
- Experiencing this exhibition expanded people's views of global water.

We also explored whether there were lessons to be learned from the *Water* exhibition, which would impact the planning of a future climate change exhibition, such as use of scientific terminology; whether perceptions of, and interest in, climate change altered after seeing the *Water* exhibition; and whether visitors were more interested in "what to do" versus more scientific explanations.

Educators' Night introduced the exhibition's themes and their value for teaching, drawing 450 educators. Teachers reacted positively to the exhibition, saying:
- They were awed by it, motivated to teach about the topics and felt both more informed and interested in learning more; and
- Memorable topics were water's scarcity, and Americans' use of water compared to that of people in other countries.

Teachers provided front-end input on an upcoming exhibition on climate change, requesting scientifically accurate evidence and clear explanations of the impacts worldwide and possible solutions, particularly things individuals (students) could do.

Museum-School Partnership: A 3-day professional development Institute made direct connections to the New York State Scope and Sequence Core Curriculum in Science, focusing on using *Water* to teach the Major Understandings. Most of the 55 participating teachers completed a comprehensive evaluation. Overall response to the Institute was very positive:
- Compared to other PD programs, the Institute was thought of more hands-on and interactive; and
- Teachers appreciated access to exhibits and experts.

The Institute's value for participants' students:
1. An exhibition visit,

2. Their teachers will bring back new lesson ideas and teaching techniques,
3. Teachers will share increased knowledge, and
4. Students will gain awareness of water's scarcity.

School Vacation Camp: A 5-day camp program for 2nd and 3rd grade children attracted a culturally diverse group of children. Its goals were:

- To foster appreciation for the ways water is important to our daily lives,
- To understand that water has unique properties that make life on our planet possible, and
- To develop inquiry skills of observation, questioning, and analyzing evidence.

Activities included hands-on experiments, individual science notebooks, visits to *Water* and other AMNH exhibitions, a trip to Central Park to gather water samples, and a final presentation for families. The children enjoyed Water Camp and learned a great deal. Observations indicated that they found the program challenging and enjoyable.

Institutional Policy Implications

The AMNH has conducted evaluations over the years as separate studies of individual exhibitions or programs. Longitudinal implications of repeated events like Teachers Evenings and Institutes that coordinate with exhibitions have not previously been coordinated with evaluation of the exhibition itself. The *Water* case study represents a new way of evaluating the educational impact of an exhibition on the general public and on its value to teaching and learning core science curriculum in the classroom. AMNH is equally concerned with framing its practices for the STEM needs to meet standards and assessments of local school and educators, and the public's need to understand through exhibits, programs, and access to our online and media resources.

References
http://www.amnh.org/exhibitions/water/
http://www.amnh.org/education/resources/rfl/web/waterguide/index.html

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