

23rd Annual Visitor Studies Association Conference

July 29-31, 2009
Phoenix, Arizona

*Building Shared Agendas:
Conversations on the Public Value of Visitor Studies*

Abstracts

VSA

Visitor Studies Association



Visitor Studies Association 2010 Conference Abstracts

Introduction

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 association's efforts to be "green," the 2010 Abstracts publication is available only in electronic format, not as a printed handout. Abstracts from past conferences are maintained on the VSA website archive found at <http://www.visitorstudiesarchives.org/conference.php>.

The VSA 2010 Conference Abstracts were edited by Susan Foutz.

Conference Theme and Thematic Strands

Demonstrating the value of museums for the public has become one of the most critical issues facing visitor studies. At the 2010 conference, we will be working specifically to define, measure, and communicate public value. Issues of access and equity in our work and in the institutions where we work are also highly relevant this year. Sessions throughout the conference provide opportunities to discuss and reflect on each of these critical themes in greater detail. These sessions are identified by the following symbols in the abstracts:



Defining Public Value



Communicating Public Value



Measuring Public Value



Issues of Equity

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Abstracts

THURSDAY, JULY 29

10:30-11:45 am Concurrent Sessions—One



Perspectives on Impact and Public Value: Delving Deep

Kirsten Ellenbogen, Science Museum of Minnesota
Randi Korn, Randi Korn & Associates
Troy Livingston, Museum of Life and Science

Purpose

This session will provide food for thought, debate, and discussion about impact, including: clarifying what is meant by *impact* and *public value*; the relationship between those words and informal learning environments; and how museums can improve their organizational practice to achieve impact. Because “impact” is a newer idea, this session will provide dedicated time for researchers to reflect on and discuss their thoughts about the concept. The session format includes individual presentations and roundtable discussion, supporting an intent to invite evaluators and researchers to discuss, debate, and clarify *impact* and *public value*. Each presenter will talk for 5 minutes and identify issues for attendees to consider in roundtable discussions; then there will be three, 10-minute table rotations. At the end of the roundtable discussions, each presenter will report on the conversations, and discussant, Marsha Semmel will respond accordingly.

Perspectives

Kirsten Ellenbogen, President of VSA, will discuss accountability pressures on the visitor studies field. Increased interest in public value or achieving impact requires significant changes to assessment and research approaches. Kirsten will discuss evaluation challenges in public impact projects, including: retaining measures of individual or small-group learning while adding measures of public value; a need for a systems approach rather than a linear model; and difficulties with integrating typical phases of evaluation, such as formative and summative when measuring public value.

Randi Korn, impact planning advocate, will present a strategy of how a museum might build, from the inside-out, an impact statement that can serve as a guidepost for decision-making across an organization. Randi will demonstrate how this model of defining impact has evolved from evaluation practice. She will introduce an organizational strategy, called the Cycle of Learning, to help organizations continually address impact by aligning all the work an organization does around the impact it would like to achieve.

Troy Livingston, Vice President for Innovation and Learning will discuss his institution's five-year journey to build capacity to increase public impact and value. MLS' mission was changed to one of life-long learning five years ago after more than half a century of focus on families with young children. Using a combination of digital and face-to-face engagement strategies, MLS has started to change the public's perception of its role in its community. Troy will present strategies MLS uses to produce these changes and describe how similar strategies can be employed to increase public impact and value anywhere.

Importance

Evaluation in informal learning environments usually focuses on learning outcomes for individuals or visitor groups. John Cotton Dana emphasized the need for museums to become more useful and life-enhancing institutions. Management guru Peter Drucker said that non-profits are human-change agents. A decade ago, the late Stephen Weil borrowed a phrase from the United Way of America and proposed that the things that make a museum good are its intent to make a "positive difference in the quality of people's lives." Most recently, there is increased pressure to focus on measuring public value and community impact. Today, within the visitor studies community, increasingly we are asked to define and measure *public value* and *impact*.

But what do practitioners, evaluators, and researchers mean by those words? How do we connect people's informal learning experiences to achieving impact? What are the differences between these words? In what ways do they connect? What are the perspectives of funders, evaluators, and practitioners? What processes should a museum embrace to achieve impact or create public value? What are the criteria for achieving impact? This session's three presenters and discussant will explore these ideas and respond to panelists' remarks and attendees' contributions from the roundtable discussions.

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Field Trip Research and Evaluation: Strategies for Working with Schools

Toni Dancu, Exploratorium
Jim Kisiel, California State University, Long Beach
Jennifer DeWitt, King's College London
Bill Watson, Smithsonian's National Museum of Natural History

Purpose

This session will focus on overcoming a common paradox in field trip research. Improving, measuring, and communicating the value of field trips to schools has become increasingly important for informal learning

institutions, as schools and teachers feel the pressures of standards-based education and face limited time and budgets for such activities. However, those same pressures often deter teachers, administrators or school districts from participation in field trip research and evaluation. While numerous informal education researchers have begun to identify best practices for field trips (e.g., DeWitt & Storksdieck, 2008; Price & Hein, 1991), few have made public the challenges and resolutions often experienced when working within the school system.

Our session will begin by exploring two related areas: First we will present what we have learned about schools' needs regarding field trip research, and issues researchers need to consider to gain access and begin working with the schools. This portion of the session will be based on discussions with district representatives and teachers, as well as on formal educational researcher's perspectives and experiences (Dinella, 2009). Second, each panelist will present one of their own school-based research/evaluation challenges along with the strategies they used to address the challenge. The methodological limitations that these solutions introduce will be discussed, highlighting many of the trade-offs in field trip research. These quick glimpses into multiple approaches for working with schools will be the basis of an audience discussion.

For the remainder of the session, we will encourage the audience to share their own challenges, as well as favored strategies for conducting research and evaluation with schools. As a group we will work to inform future field trip research by identifying the common threads in the school stakeholders' interests, our own interests, and the realistic potential within school-based constraints. Finally, the group will co-determine whether there are best practices for conducting field trip research within the school system.

Perspectives

The difficulties experienced when conducting field trip research can be understood through developmental systems theory (see Bronfenbrenner & Morris, 1998; Roth & Lee, 2007). Museum educators and researchers operate in a context quite different from that of formal educators, researchers, and districts; this difference is especially apparent in the current historical context of accountability. When these disparate cultural systems have similar goals and begin to work together, their structures and belief systems can be difficult to navigate. It seems that the sociocultural differences between the two systems are underpinning many of the complexities encountered by researchers working within the school system. However, there is also opportunity for the two systems to complement one another and provide even stronger support for the students that are growing up as members of both contexts. When looking at the challenges of partnering with schools or teachers, it is useful for researchers to recognize that there is a different community of practice—and that working with teachers and schools means understanding and partnering with that community to create shared goals and mutual participation (Kisiel, 2010; Wenger, 1998).

Importance

This session will help practitioners communicate the public value of field trips by highlighting a variety of considerations for conducting research or evaluation with schools. Because many of the challenges and resolutions are not unique to research and evaluation, this session will be valuable for those working with schools in other capacities as well. The session will also inform strands for future field trip research based on commonalities among school needs, our own interests, and our capabilities when working to combine these two communities of practice.

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Measuring Value in Institution-Wide Studies

Anna Lindgren-Streicher, Museum of Science, Boston
Elisa Israel, Saint Louis Science Center
Rita Deedrick, COSI Columbus

Purpose

This session examines how three institutions have approached measuring public value across an institution as a whole. The Saint Louis Science Center (SLSC), COSI, and Museum of Science, Boston (MOS) have employed different strategies to examine visitors' experiences holistically, beyond program-specific evaluations.

Following the presentation, a discussion may examine the methods utilized, challenges faced, and project findings. Session attendees will be encouraged to share their own experiences with measuring public value in institution-wide initiatives.

Perspectives

Presenters will discuss the institutional needs that led their respective departments to develop and implement institution-wide programs that examine the value of a museum experience for the visiting public. As Hood (1993) argued, more than just educational experiences impact a visitor's perception of a museum. Visitors view their museum visit as a whole, with their experiences, arrival to departure, impacting how they value their experience and their likelihood to return. By taking an institution-wide approach, the projects presented investigate broader impacts across programs, examine the impact of non-programmatic elements, and analyze which elements of a visit impact the visitor's perception of the value of their museum experience.

Importance

Each presenter will discuss how their respective institution defines and measures value, the methods and sampling techniques used, selected findings, and how findings have been utilized by and impacted the institution.

Elisa Israel will present two systems SLSC utilizes for ongoing tracking of the visitor experience. The first is a comment card through which visitors' comments about their visit are actively solicited, analyzed, and reported.

Postage-paid cards are distributed with a rating scale item about overall visit experience and space for open-ended comments. Ratings and coded comments are tracked in monthly reports. The second tool systematically assesses and reports on the impact of SLSC's educational programs. The System for Assessing Mission Impact (SAMI) collects and summarizes performance indicators for educational programs. Visitor feedback forms solicit responses based on SLSC's definition of impact. The ratings are added to create an Impact Score and reported monthly along with comments, for programs, departments, and the collection of all educational programs. SAMI data provides the institution with vital information about the visitor experience in educational programs and information about the scope and reach of all Science Center programs.

Rita Deedrick will speak about how COSI's holistic approach to evaluation is emerging as the institution undergoes significant organizational change. Changes have placed accountability for program evaluation within the programs, freeing the research and evaluation team to engage in research and evaluations that cross guests' experiences, and include aspects of a COSI visit beyond specific educational programming. The team also uses existing data in new ways, incorporating results from individual program evaluations into institution-wide reports to develop a more complete picture of COSI. This holistic approach allows COSI to see if institutional level outcomes were met, and is useful for measuring movement toward strategic goals.

Anna Lindgren-Streicher will present the Visitor Experience Monitoring (VXM) project at the MOS. This project monitors the quality of the visitor experience and stewards the Museum's relationships with visitors. VXM is intended to enhance the capabilities of the leadership team responsible for the visitor experience to make decisions regarding institutional priorities and opportunities for improvement. Email addresses are collected from a random sample of visitors, who then receive an online survey following their visit. This survey includes items on the visitor's perception of the museum's quality and value, specific aspects of the visit, activities the visitor experienced, and demographics. Yearly reports provide in-depth analysis and discussion of data, while quarterly reports allow for tracking of visitor perception of value and quality on a regular basis.

References

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Additional Information

The Saint Louis ScienceCenter issues an annual publication, *Opening Minds to Science*, which presents an overview of the impact data collected from SAMI. Links to these reports can be found at <http://www.slsc.org/GeneralInfo/MediaRoom.aspx>.



IRB and the Public Value of Visitor Studies

Dale McCreedy, Ph.D., Director, Gender & Family Learning Programs, The Franklin Institute

Erica Heath, Partner, E&I Review Services

Jessica Luke, Ph.D., Director of Research & Evaluation, Institute for Learning Innovation

Purpose

While visitor studies offers a critical source of evidence to the discussion about the value of museums and informal learning institutions, Internal Review Boards (IRBs) potentially serve as gatekeepers to our effectiveness. How can we leverage the opportunities offered by the IRB process, while simultaneously challenging and/or clarifying aspects of the process itself? The purpose of this session is to highlight and discuss the challenges and benefits of the IRB process facing our field.

Perspectives

Visitor Studies offers a critical source of evidence to the discussion about the value of museums and informal learning institutions. It is capital in our effort to be recognized as valuable, achieve funding, and explore meaningful questions of potential broad impact. The Internal Review Board (IRB) process is a necessary consideration for studies that involve human subjects, and a requirement of federally funded projects. IRBs serve in some ways as a gatekeeper to this success. How can we leverage the opportunities offered by the IRB process, while simultaneously challenging and/or clarifying aspects of the process itself?

Dale McCreedy will introduce the session, and provide a short overview from a PI's perspective of the IRB process and the expectations from the Federal government. This will also include a description of the benefits and challenges of the IRB process from the perspective of a Principal Investigator.

Jessica Luke, Director of Research & Evaluation, Institute for Learning Innovation, will address key IRB issues faced by researchers and evaluators. How do they match with the practitioner perspectives, and how do they differ?

Erica Heath, Partner, E&I Review Services, will offer her perspective as partner in an IRB organization to discuss IRBs as gatekeepers, and their connection to public value. Key Questions include:

- Do IRBs have different values?
- What does the public think about participation in visitor studies?
- How does the public evaluate their risks of participation?
- How does the history of IRB development, derived from a different value-based system (medicine), impact the process for educational research? Do the words mean the same thing?
- Communication of public value: Without effective communication of the results of our work, the benefit to risk equation tips towards risk. How do we currently address this? What impacts are visible?

We will then form small break-out groups to discuss the larger question around IRBs and Visitor Studies, i.e.

How can we leverage the opportunities offered by the IRB process, while simultaneously challenging and/or clarifying aspects of the process itself? That is, visitor studies have no value if we don't adhere to the federal regulations around IRB, and yet there is a real lack of clarity around those guidelines and varying opinions on what the guidelines even mean, so how do we move forward as a field? Breakout groups will share 1-3 key

questions, issues and/or strategies, depending on the time allowed for group discussion. Finally, the discussant will then reflect on the discussion and the ways in which the field might leverage and challenge the process.

Importance

- This session will focus on key issues facing our field relative to visitor studies and IRBs. By identifying key agenda items for stakeholders, this session will hope to:
- Build shared agendas – in this case, among practitioners, evaluators/researchers, and IRB;
- Define and communicate the public value of our institutions and the IRB process as a part of that value; and
- Clearly define next steps for VSA and the field.

Additional Information

Independent Review Consulting, Inc.: <http://www.irb-irc.com/>

The National Science Foundation – relevant links:

1. NSF supports research involving human subjects when the project has been certified by a responsible body to be in compliance with the federal government's "Common Rule" for the protection of human subjects. <http://www.nsf.gov/bfa/dias/policy/human.jsp>
2. The official NSF version of Code of Federal Regulations 45CFR690.101-124 is available at: <http://www.nsf.gov/bfa/dias/policy/docs/45cfr690.pdf>.

THURSDAY, JULY 29

1:15-2:30 pm

Concurrent Sessions—Two



Creating Cultures of Reflection: Integrating Practitioners into the Evaluation Process

Amy Grack Nelson, Science Museum of Minnesota

Christine Reich, Museum of Science, Boston

Josh Gutwill, Exploratorium

Purpose

How can internal evaluators foster a culture of reflection within their institution? As evaluators, we have to consider not only the methods for a study, but the ways we approach the staff who are creating the programs or products under study. Approaches with high levels of stakeholder involvement take more time and effort from the evaluator, but the payoff is increased utility of our work and improved practices for both evaluators and developers. Framed by theoretical frameworks from the fields of evaluation, teacher education, and business

management, this session offers illustrative vignettes from three internal evaluators who work to increase the utility of their studies and to promote organizational learning. Attendees will learn the benefits and challenges of these approaches and discuss means to incorporate aspects of the approaches into their own work.

Perspectives

Science Museum of Minnesota

The Science Museum of Minnesota's formative evaluation work with the Kitty Andersen Youth Science Center was the first opportunity for the museum's Department of Evaluation and Research in Learning to fully engage in a collaborative, utilization-focused evaluation process. The focus of utilization-focused evaluation is "intended use by the intended users" (Patton, 2008, p. 37). The intended users, in this case the Center staff, are actively involved in the evaluation process to create ownership of the evaluation, thus helping to ensure use of the study's findings. In this presentation, the evaluator describes her process and reflects on her experience working closely with Center staff to define the focus of the evaluation, create instruments, interpret data, identify program improvements, and refine the evaluation process to ensure it continues to collect useful data.

Museum of Science, Boston

Business management and teacher education scholars theorize that deeper knowledge of and improvements in professional practice stem from on-going reflection and testing one's theory of practice (Cochran-Smith & Lytle, 1999; Argyris & Schon, 1974). Based on this theory, the Museum of Science, Boston uses on-going evaluation as a means for developing enhanced understandings of and improvements in museum education practices. Theory-based evaluation models (Donaldson, 2003; Weiss, 1997) enable Museum staff to map their personal theories of how what they do is connected to educational outcomes. Over time, through continuous evaluation, Museum staff members build new theories and develop new understandings of the relationship between actions and outcomes. Such an approach has been used across various initiatives, including teacher professional development and current science and technology programming.

Exploratorium

When the Exploratorium's Visitor Research and Evaluation Department was founded in 1996, many exhibit developers resisted evaluation. Staff were concerned that if evaluation methods did not properly capture the important aspects of visitors' experiences, developers would be forced over time to "teach to the test" — shifting their exhibit goals to those that can be defined and measured. Through a concerted effort by internal evaluators to build trust, demonstrate the utility of formative evaluation and integrate evaluation with exhibit development practice, most developers now embrace evaluation processes. In this presentation, we describe the concrete strategies we used to foster a trusting relationship and promote participatory evaluation (Cousins and Whitmore, 1998). We offer vignettes for each strategy to describe its influence on the museum's learning culture, and its effectiveness at integrating evaluation and practice.

Importance

Addressing the conference theme of "defining public value," the session describes means to increase the involvement of stakeholders in the evaluation process. Increasing stakeholder involvement helps to increase their use of evaluation results, the value they place on evaluation activities in their institution, and their overall value of visitor studies.

References

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Journey to the Stars: From Production to the Public and Beyond

Maritza Macdonald, Sr. Director of Education and Policy, American Museum of Natural History
Ro Kinzler, Sr. Director of the National Center for Science Literacy, Education and Technology, American Museum of Natural History
Jennifer Borland, Evaluator, Rockman et al

Purpose

This session will provide a glimpse at the development, evaluation, and application of evaluation processes for the most recent Space Show created by the American Museum of Natural History, *Journey to the Stars*, including an opportunity to view an excerpt from the show, and hear from three different people involved at various stages of the production, evaluation and dissemination of the program. In addition to the main presentation, we will provide time for short breakout sessions with each of the three presenters so that attendees can engage in conversations that are most pertinent to their specific interests and backgrounds. Copies of the DVD in multiple languages will be available for session attendees.

Perspectives

This is the story of stars that centers on a star we all know well: Our Sun. The beautifully executed digital show examines five big questions and develops a narrative accompanied by extraordinary images and sound effects that engage audiences of all ages. 1. What is a star? 2. Where do stars come from? How do stars differ? 4. Why are stars important? and 5. How do scientists study stars? Having prior knowledge of the sun, visitors of all ages seem to be getting at these perspectives through multiple experiences created by the producers. Evaluators valued the set of essential questions that framed the show. These questions provided entry points to probe for educational impact on visitors, students, and educators. Educators continue to use the show and the evaluation findings to focus professional development, teacher institutes, and curriculum units that focus on the sun from the physical sciences perspectives or from the biological dimensions.

Importance

The summative evaluation effort that took place onsite at the museum, shortly after the show's debut included feedback about visitor's understanding of key scientific concepts, audience interest and curiosity about stars and astronomy, and future behavior and learning behaviors - in other words, what visitors know, think and do as a result of viewing the show. During a three-day, onsite data gathering effort in July 2009, REA staff and local

contractors gathered survey data from a sample of adult and youth audience members for thirty showings of *Journey to the Stars* (n=1289 adult, n=205 youth). In addition to data from members of the general audience, AMNH staff assisted REA in an effort to gather data from educators and students. Ultimately, the evaluation team explored differences between subgroups of viewers and found viewers' prior knowledge and interest levels to be important. There was a steady trend in more interested viewers feeling that there was greater importance in the images being “based on authentic, scientifically accurate data” (average mean for those with an interest level of 1=4.00; 2=4.34; 3=4.46; 4=4.50, and 5=4.71)

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- Libarkin, J., & Brick, C. (2002). Research Methodologies in Science Education: Visualization and the Geosciences. *Journal of Geoscience Education*, 50(4), 449-455.

Additional Information

- <http://www.amnh.org/rose/spaceshow/journey/>
<http://www.learn.amnh.org>
<http://www.amnh.org/education/stars>
<http://www.amnh.org/ology/astronomy>
<http://www.amnh.org/sciencebulletins>
<http://www.amnh.org/rose/universe.html>



Evolving Public Face, Evolving Evaluation Practice

Tammy Messick, Institute for Learning Innovation
Kate Haley Goldman, Institute for Learning Innovation
Pino Monaco, Smithsonian Center for Education and Museum Studies
Kitty Nowak, Smithsonian Center for Education and Museum Studies

Importance

Increasingly, museums and learning centers are utilizing new media as a means to collaborate, share knowledge, and enhance learning opportunities among participants and visitors. With the increased use of user-generated content, it is important to understand to what degree these mediums are effective in communicating and building upon the main outcomes of the project. This presentation focuses on measuring public value and seeks to answer the questions: *How can we measure the value of social media and other new forms of engagement? What is the range of potential methods for assessing value in technology and social media platforms? and What are the indicators of value that we should be looking for in technology and new media?* These timely questions will pinpoint the intersection between what is useful and what is meaningful by using three case studies as talking points to illustrate various methodologies including a network analysis of Ning!, an online social networking site for the Space Science Institute's project Asteroids!, preliminary data from The Smithsonian's Center for Education and Museum Studies discourse analysis on recent virtual conferences, and a forum analysis of WolfQuest, an educational video game, conducted by the Institute for Learning Innovation.

Perspectives

ILI—Space Science Institute, Asteroids! Network Analysis

Tammy Messick from the Institute for Learning Innovation recently performed a “quick-and-dirty” approach to obtain a network analysis of Ning, an online social networking site for Asteroids!, a project with the Space Science Institute which involves middle-school-aged teens across three geographically diverse sites who participate in the development of a traveling exhibit. The network analysis specifically draws upon social network theory (Knoke 2008) which has long been used in anthropological research and more recently is being applied to analyze new media, particularly social networking sites. In this case, a quick network analysis provided an effective “snapshot” to understand the overall usage and interaction of a site. The results of the analysis were used to inform the team of the levels of cross-team communication, and helped to shape a plan moving forward to improve interaction between teams.

SCEMS Video Conferences

The Smithsonian Center for Education and Museum Studies (SCEMS) plays a frontline role in creating cyber-learning opportunities with virtual conferences mostly intended for educators’ professional development. This presentation by Kitty Nowak will cover two virtual conferences, one focused on Abraham Lincoln and the other on Climate Change. This research project addresses three main questions:

- Can critical thinking, communication skills and social emotional learning be measured in a cyber-learning experience setting such as the virtual conferences and related pre- and post-conference activities?
- If so, do different types of presentations create measurably different levels of critical thinking, communication skills and social emotional learning in participants?
- If so, what is the relationship between critical thinking and social emotional learning?

Monaco and Nowak’s conceptual framework was built on the Social Theory by Vygotski. Discourse analysis was chosen as the research methodology to study critical thinking and communication skills. A research and literature review of on-line learning, critical thinking, and discourse analysis provided the foundation for a research matrix, which will be discussed further with the audience.

ILI— WolfQuest

WolfQuest is a NSF-sponsored 3D downloadable game intended to increase the knowledge of, interest in, and attitudes towards wolves and wolf habitats in children ages 9 to 15. During the summative evaluation, we conducted a forum analysis to investigate the considerable amount of social interaction in the site forums (over half a million posts at that time). The WolfQuest forum presented a unique opportunity to tap into large quantities of unstructured qualitative data related to this aspect of the game, looking specifically at whether there was evidence of scientific habits of mind being reinforced by the game. As a framework, we used an analysis rubric from Steinkuehler and Duncan (2008) and adapted it for use in this setting. In their research on gaming and learning, Steinkuehler and Duncan (2008), applied the concept of scientific habits of mind to the commercial massive multi-player online game World of Warcraft (WoW), studying how the game forums might show evidence of this particular skill set. Kate Haley Goldman will discuss forum analysis for evaluation more generally, as well as the decision process, sampling, and analysis strategies learned from applying this methodology in the WolfQuest evaluation.

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Toolkit for Evaluating Impacts of Public Participation in Scientific Research

Rick Bonney, Cornell Lab of Ornithology
Tina Phillips, Cornell Lab of Ornithology

Purpose

This mini-workshop will be designed to introduce the Toolkit for Evaluating Impacts of Public Participation in Scientific Research, show how it is intended to be used, and engage participants in activities in which they will define their programmatic goals and use toolkit materials to outline a plan for evaluation. We will also engage participants in a lively and interactive discussion of the best evaluation mistakes we have ever made. We are particularly interested in feedback to improve the toolkit before it is widely released in the fall of 2010.

Perspectives

The Toolkit for Evaluating Impacts of Public Participation in Scientific Research has been developed to meet a major need in the field of visitor studies: To provide project developers and other professionals, especially those with limited knowledge or understanding of evaluation techniques, with a systematic method for assessing project impact that facilitates longitudinal and cross-project comparisons. The need for the toolkit was first identified at the Citizen Science workshop held at the Cornell Lab of Ornithology in 2007 (McEver et al. 2007) and reaffirmed by a CAISE inquiry group that produced the recent report *Public Participation in Scientific Research: Defining the Field and Assessing its Potential for Informal Science Education* (Bonney et al. 2009).

Importance

The toolkit is intended to provide guidance on evaluation design, customizable instruments, interview and focus group protocols, and data-analysis techniques to help practitioners assess impacts of public participation in scientific research (PPSR) in the categories defined by the NSF evaluation framework (Friedman et al. 2008). PPSR practitioners are eager for assistance in applying the Framework and in learning how to “measure or assess [a project’s] impact and [demonstrate] what value of that measure or evidence will serve as a criterion for defining project success” (Friedman 2008). Given the broad nature of the framework categories, however, we have developed dozens of impact subcategories that are more explicit and contextually appropriate for the PPSR field (Bonney et al. 2009). The toolkit shows how these fine-grained subcategories can be used to effectively measure individualized programmatic impacts across a continuum of PPSR projects and includes several case studies and links to instruments that have been used at the Cornell Lab of Ornithology and which can be adapted for use by similar projects being conducted elsewhere.

We believe that once the toolkit is completed and validated, its widespread adoption among practitioners will go a long way toward standardized evaluations of ISE projects. Additionally, the toolkit could provide a model that would be useful in related fields of informal education in a variety of disciplines.

References

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Additional Information

The developing toolkit will be housed at the website “Citizen Science Central” (www.citizen-science.org) and additional partner web sites.

THURSDAY, JULY 29

2:30-4:00 pm Poster Session

Visitors' Self-Reporting of Learning Experiences

Chantal Barriault, Senior Scientist, Research and Evaluation, Science North
Amy Henson, Staff Scientist, Northern Ecosystems, Science North

Purpose

The purpose of this study was to explore the use of self-reporting of knowledge and understanding and open-ended visitor comments as complementary to observational data to evaluate the learning impacts of the *WaterWorks: Soaking Up the Science* exhibition at Science North. We proposed that the self-reporting of knowledge and understanding by visitors to our *WaterWorks* exhibition would contribute to our understanding of the learning impacts of individual exhibits. In addition, we proposed that these self-reports would provide insights into if and how the exhibition achieved its learning objectives.

Perspectives

For the past several years, the methodology used to evaluate the learning impact of exhibits at Science North consisted solely of observational data, using The Visitor-Based Framework of learning behaviors (Barriault, 1998; Barriault & Pearson, 2010). The Visitor Engagement Profiles produced for individual exhibits provide a practical and valuable assessment of the level of visitor engagement with these exhibits. Although learning behaviors are key in assessing impact, we felt that visitors themselves could contribute to our understanding of the exhibits' learning impact through self-reporting of knowledge and understanding as well as through open-ended comments.

Methods

The evaluation methodology chosen for this exhibition included observations of visitor interactions, close-ended survey questions, and open-ended visitor comments to determine the effectiveness of the *WaterWorks* exhibition at reaching its learning goals. Visitors were video recorded interacting with the exhibits and a

computer-based survey kiosk was placed near the exit in the *WaterWorks* exhibition hall to complement the observation data. The survey asked visitors to answer questions related to their understanding of certain key messages of the exhibition through a closed-ended Likert scale questionnaire. At the end of the survey, visitors were asked to comment on what they found most interesting in the *WaterWorks* exhibition. Visitors could type as little or as much as they wanted regarding their visit.

Data & Analysis

Visitor behaviors were coded using the Visitor-Based Framework (Barriault, 1998; Barriault & Pearson, 2010) and its list of engagement behaviors to produce observational data and Visitor Engagement Profile graphs for individual exhibits. The questionnaire data described what visitors felt they understood about water issues before and after they visited the *WaterWorks* exhibition. This data was plotted in graph form. The visitor comments from the open-ended question on the survey were reviewed and coded using an open-ended coding schema.

Results

The observations of the visitor interactions revealed high levels of learning behaviors in several of the *WaterWorks* exhibits. The results of the open-ended visitor comments gave us insights into the results of the observational data and provided additional support for our findings. During the analysis, four core categories of comments emerged: Identifying the Experience, Positive Affective Comments, Meaning Making, and Negative Affective Comment.

Importance

We suggest that self-reporting of knowledge and understanding can give us valuable insights into visitor learning through science centre and museum exhibits. Each visitor's learning experience at the museum is unique and through the open-ended visitor comments we discovered what the visitors themselves identified as valuable to their learning experience. We propose that a framework of comment categories can provide a tool for analyzing visitor comments that, combined with observational data, contributes to our understanding of the learning impact of an exhibit.

References

- Barriault, C. (1999). The Science Centre Learning Experience: A Visitor-Based Framework. *Informal Learning Review*, 35(1), 14-16. Can be accessed at <http://www.informallearning.com/archive/1999-0304-c.htm>
- Barriault, C. & Pearson, D. (2010). Assessing Exhibits for Science Center Learning: A Practical Tool. *Visitor Studies Journal*, 13 (1), 90-106.

Additional Information

WaterWorks: Soaking Up the Science Exhibit Details

http://staging.sciencenorth.ca/uploadedFiles/Exhibit_Sales_Content/Services/WW.pdf

WaterWorks: Soaking Up the Science Evaluation Report

http://staging.sciencenorth.ca/uploadedFiles/Exhibit_Sales_Content/Services/Traveling_Exhibits/WW%20Final%20Evaluation.pdf

Conversations about Web Applications and Evaluation

Sharisse Butler, Dallas Museum of Art, Manager of Visitor Studies and Evaluation
Rebekah Sobel, US Holocaust Memorial Museum, Program Evaluator

Purpose

Many museums are developing web applications for a variety of purposes, and some are beginning to evaluate their implementation and impact. The presenters' primary goal with this poster session is to connect conference participants who work in institutions that are considering developing, in the process of developing, and at the point of evaluating web applications. As internal evaluators, we ourselves wish to be part of a larger dialogue about goals for these applications and their evaluation, and we suspect that others are interested, as well. We are interested in developing a series of possible questions to use when talking to staff about web application goals, content, and audience use. We would like to explore the idea of developing somewhat standardized measures across institutions, or at minimum, find ways to share our methods with one another. We hope that visitors to this poster session will share experiences, contribute their own ideas about what is needed in this area, and sign up to be a part of a continuing conversation.

Perspectives

Museum like the Tate Modern, SFMoMA, and the Exploratorium have been leaders in creating tours using handheld devices, as well as leaders in assessing the impact of this technology on visitors. With smart phone users increasing at amazing rates (New Media Consortium, 2009), many museums are now developing web applications. These tools are being created around different goals and for a variety of audiences, including both online users and museum visitors. For example, the United States Holocaust Memorial Museum has been developing a web application to help people become oriented to the Museum, plan their visit, and make some "mobile" content accessible outside of structured exhibitions, but the goals and plans are also in flux. The Dallas Museum of Art has developed smARTphone tours that offer visitors assets such as maps, contextual photographs, and videos and audio clips of the artist or the curator. Many museums offer some combination of orientation and content information. Informal discussions tell us that within many institutions, museum staff members do not always agree upon specific "mobile" goals. Yet, it seems there are common themes in our discussions about user experiences, messaging, and content. This presentation aims to convene a space where these commonalities can be more specifically identified, and to find ways to begin thinking together about goals for the visitor experience of web applications as well as goals for evaluation.

Importance

The description of this year's VSA conference theme states that, "We will begin the process of crafting shared research and evaluation agendas about what we know and still need to know in the field." That is exactly what this presentation seeks to do in relation to developing visitor experiences around relatively new technology. We hope to consider in our conversations which "public" we are serving with this technology, and which new audiences we might bring through our doors as a result.

References

<http://www.tate.org.uk/modern/eventseducation/gallerytoursgroups/>

http://www.sfmoma.org/pages/tours_public

Electronic Guidebook Research Project: <http://www.exploratorium.org/guidebook/>

New Media Consortium. (2009). 2009 Horizon Report. Available at <http://wp.nmc.org/horizon2009/>

Jones, J. (2006). Matthew Barney: Drawing Restraint at SFMOMA Interactive Educational Technologies and Interpretation Initiative Evaluation. *American Association of Museums Conference 2007*. Available at

http://www.randikorn.com/docs/interpretive_media_research_presentation_052007.pdf

Samis, Peter (2007). Visual Velcro: Hooking the visitor." *Museum News*, November/December. Available at <http://www.aam-us.org/pubs/visualvelcro.cfm>

Additional Information

<http://dallasmuseumofart.mobi/>

<http://www.usmmm.mobi/>

<http://www.powerhousemuseum.com/dmsblog/index.php/2009/02/28/we-are-partially-mobile-powerhouse-on-your-phone/>

<http://mobile.nasm.si.edu/>

<http://m.walkerart.org/>

<http://www.brooklynmuseum.org/mobile/>



Need to Hire Bilingual Staff? Not Sure Where to Begin?

Maria Montiel, Oregon Museum of Science and Industry

Marcie Benne, Oregon Museum of Science and Industry

Purpose

The purpose of this poster is to share techniques OMSI staff members use to select bilingual employees, volunteers, and contractors. The techniques include "linguistic skill profiles" (Larose & Proulx, 1997) and several means for assessing linguistic skills. These techniques can help colleagues who want to select paid or unpaid staff with language skills beyond English, but have not yet established a process.

Perspectives

OMSI's Evaluation and Visitor Studies division staff has been working on projects in Spanish and English for over ten years. Over the years, our techniques for selecting and assigning staff to do work in Spanish have evolved. We find our current framework very useful; this framework was adapted from one used in Canada, thanks to our VSA colleague, Karen Graham, and OMSI intern, Laura Parker.

Methods

The linguistic skills described in the framework are reading, writing, and oral interaction. For each of these skills, a definition is available for beginning, intermediate, and advanced proficiency (Parker, 2008; Larose & Proulx, 1997). These definitions are written in practical, not academic, terms. Using these definitions, each potential task is described in terms of the level of reading, writing, and oral interaction required for completing the job.

In order to assess candidates' language skills, we have chosen practical assessment techniques that require at least two language assessors fluent (reading, writing, and oral) in both languages. Candidates are asked to: 1) submit a sample of their writing skills in both languages, 2) translate to and from both languages, 3) use both languages during the oral interview, 4) complete a reading comprehension assessment, and 5) complete a self-assessment on their language skills. This information is used to assess the language skill level of the candidate and assessors record their inferences on a rubric.

As always, the application and interview process is also the means for learning about the candidates' qualifications for the job as a whole, including attributes such as cultural sensitivity.

Importance

Selecting and assigning visitor studies staff with appropriate linguistic skills has important public value for museums. The results of a VSA member survey indicated that 26 percent of respondents, a substantial portion, use a language other than English in their work (Phillips & Benne, 2008). We expect language skills to remain important as linguistic groups, with Hispanics as one example (US Census, 2007), continue to grow in the US, and as the visitor studies field continues to grow internationally.

As visitor studies staff members interact with audience members to build relationships, we want to make sure we clearly understand and respect the messages being exchanged. These techniques take into account respect for audience members and best practices for handling data in two languages (Montiel & Benne, 2009; Halai, 2007; Irvine et al., 2008; Temple et al., 2006).

References

- Halai, N. (2007). Making use of bilingual interview data: Some experiences from the field. *The Qualitative Report*, 12(3), 344-355. <http://www.nova.edu/ssss/QR/QR12-3/halai.pdf>
- Irvine, F., Roberts, G., & Bradbury-Jones, C. (2008). The researcher as insider versus the researcher as outsider: Enhancing rigour through language and cultural sensitivity. In Liamputtong, P. (Ed.), *Doing cross-cultural research: Ethical and methodological perspectives*. Springer: Netherlands. <http://www.springerlink.com/content/mt08743478g8l261/>
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- U.S. Census Bureau (2007). 2006 American Community Survey, Tables 16006, B03001, B02001, B01001I, B12002H, B12002I, B14001I, B24010I, B15002I, B16006, B17001H, B17001I, B19001H, B19001I (Hispanic and White, non-Hispanic populations; U.S., Oregon, Portland Metro Area geographic regions.). <http://factfinder.census.gov>

Interactive History: A Case Study for Cross-Disciplinary Museum Exhibit Design

Kathryn Sikes, University of North Carolina at Greensboro

Purpose

The purpose of this research project is to perform a front-end evaluation of the feasibility of developing a science museum-style, hands-on, interactive exhibit for a small history museum. The specific a style of exhibits serving as a model are based on Active Prolonged Engagement (APE) framework developed at the Exploratorium

and detailed in the related publications. In my poster presentation, I will present the development, method and results of my summer research, and discuss future development for my graduate research.

Perspectives

Early perspectives on this research were brought forth from a contrast of my experience as a visitor in hands-on science museums, and my experience as a professional at history museums in developing interactive exhibits. Upon learning of the Active Prolonged Engagement approach in the Exploratorium publication, I worked with my university to gather some funding to investigate the possibility of a successful cross-discipline interactive exhibit design. Additional perspectives will be offered by the participating history museum (Charlotte Hawkins Brown Museum), exhibits staff from a local hands-on science museum (SciWorks), and the visitors of the history museum.

Methods

Development of a hands-on interactive exhibit design based on the framework of the APE research publication and the content needs of the history museum. Refinement of design in collaboration with my university advisor and local science museum exhibits staff. Construction of a working prototype based on the revised design. Evaluate the prototype with the visitors of the history museum by implementing visitor observations.

Data, Analysis & Results

Data will be gathered through in-person observation of visitor behavior at the participating history museum. Visitor observations will be analyzed in terms of questions, responses, and activities of the visitor and whether they illustrate signs of APE based on the standards set by Exploratorium publications. Findings will be based on whether or not the data indicates the visitors engaged with the prototype presented a display of APE attributes significant enough to meet the Exploratorium's standards.

Importance

Though this feasibility study is a humble beginning, I feel that between the vast amount of research utilized in science museum exhibit design combined with the large number of history museums in search of expanding their horizons in visitor access, that there is a great deal of potential in pursuing cross-disciplinary museum exhibit design. By measuring the public value of such exhibits, not only could funding for further research and development come into place, but there will be common ground for museums to build a shared agenda in exhibit design and museum collaboration in tight economic times.

References

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

Summative Evaluation of 'Cruisin' the Fossil Freeway' at the Burke Museum of Natural History

Instructors: Kris Morrissey, Kathryn Owen, Nick Visscher
Graduate Students: Liz Broughton and Sara Martinez

Purpose

One of three New Directions Project evaluation sites, a group of graduate students sought out to address in what way does the inclusion of art shape visitor attitudes toward fossil exhibits. This evaluation aimed to answer the following questions:

- In what way does the inclusion of art shape visitor attitude towards fossil exhibits?
- Is the *Cruisin'* exhibit attracting a specialized audience?
- What aspects of the *Cruisin'* exhibit do visitors interact with the most?

Perspective

The New Directions project at the University of Washington evaluated the traveling exhibition *Cruisin' the Fossil Freeway* created by the Burke Museum of Natural History and Culture in Seattle. This evaluation built off the findings of the summative evaluation done in 2009 on *Coffee: The World in Your Cup* which was previously held in the same space. The Burke Museum of Natural History and Culture is dedicated to creating a better understanding of the world and our place in it. Its collections, comprised of over 12 million specimens and artifacts, are utilized in exhibitions to educate and engage the public. In, *Cruisin'*, the Burke presents specimens from their geology department in conjunction with the art of Ray Troll. *Cruisin'* is based on the book of the same title written by Kirk Johnson with illustrations from Troll. It tells the story of two men on a road trip searching for fossils throughout the Western US. The Burke also hosts a permanent exhibit called *Life and Times of Washington State*, and it features fossils and other evidence of Washington's past. *Life and Times* could be considered a traditional natural history exhibit with a focus on fossils alongside text. The exhibit *Cruisin' the Fossil Freeway* approaches the topic of fossils in a unique way by presenting them together with rich artwork.

Methods

This study utilized timing, tracking, and exit interviews over a three month period in early 2010 to examine the Burke's audience and to compare visitor attitudes towards a relatively traditional fossil exhibit at the Burke and a more unique presentation of science and art in the *Cruisin'* exhibit.

Results

The data suggests that the artwork in the *Cruisin'* exhibit did attract a more specialized audience for the Burke, and that they were successfully engaged within the exhibit. Most visitors had a positive attitude towards both exhibits, finding them educational and entertaining, though their reasoning differed. This summative evaluation suggests that the exhibit was able to present the topic of fossils and prehistory in an alternative way while successfully engaging new audiences and continuing to reach visitors with a deep interest in fossils.

Importance

This project focuses on unique methods of interpreting and exhibiting more traditional natural history objects. In addition, as part of the New Directions Project, it is a unique example of how a university-museum partnership can mutually benefit experience-seeking students, and local museums who gain valuable visitor studies data.



Summative Evaluation of the Exhibit 'East by Northwest' at the Northwest African American Museum

Instructors: Kris Morrissey, Kathryn Owen, Nick Visscher

Graduate Students: Erin Milbeck Wilcox, Marta Beyer, Justine Walker, Alex Curio, Julie Dougherty

Purpose

Through mixed methodologies, this study aimed to address five objectives:

- Visitors will be able to identify at least one reason Ethiopians came to the United States.
- Visitors describe at least one custom that continues to play a role in the lives of Ethiopians in Seattle today.
- Visitors will stop in front of at least 1 element in each of the 3 zones of the exhibit
- Visitors recognize the impact Ethiopia's geography has had on Ethiopian culture.
- Visitors see NAAM's attempt at an honest depiction of their experience in the exhibit.

Perspective

This summative evaluation focused on the *East by Northwest Exhibit* at the Northwest African American Museum (NAAM) in Seattle, Washington. The exhibit tells the story of Seattle's Ethiopian community, highlighting the continuity of their culture and the contribution to our shared experience. By interacting with the exhibition elements, the museum hopes that visitors (members of Seattle's Ethiopian community) will value their cultural continuity and feel that their experiences are valued by others.

Methods & Results

We employed tracking and timing, surveys, interviews, and guestbook entries. We found that 46% of visitors stopped in all three zones of the exhibit, with an average visit time of 6 minutes and 30 seconds. Most visitors were able to identify at least one reason Ethiopians came to the United States; political upheaval, the search for a better life, and opportunity were among the most frequently cited explanations. Other results and limitations will be addressed in the poster presentation.

Importance

This project attempts to gauge the perceptions of one specific target audience within a cultural context in addition to conducting an exhibit evaluation in a museum with no previous experience with evaluation. As part of the New Directions Project, it is a unique example of how a university-museum partnership can mutually benefit experience-seeking students, and local museums who gain valuable visitor studies data.

Use and Effectiveness of Discovery Carts at the Pacific Science Center

Instructors: Kris Morrissey, Kathryn Owen, Nick Visscher

Graduate Students: Kathryn Fromson, Jessica Newkirk, Elizabeth Rosino, Shannon Weiss

Purpose

Researchers observed visitors at interpreter-staffed Discovery Carts to determine which visitors are attracted to the carts and how they use them. The results can help Pacific Science Center staff better target cart activities

and staff training to the needs of specific audiences.

Perspectives

Pacific Science Center is a private, not-for-profit organization established in 1962 in Seattle, WA. Its Science Interpretation Program (SIP) encourages visitors to appreciate or pursue STEM topics through a variety of programs. The researchers chose to focus on Discovery Carts, wheeled carts presented on the exhibit floor containing hands-on activities about a specific topic. The carts are staffed by Science Interpreters who facilitate discussion and interaction with visitors beyond what the exhibits provide.

Methods, Data & Analysis

Research on the Discovery Carts was conducted by a team of four researchers in the IMLS-funded New Directions program at the University of Washington Museology Graduate Program. Over one month, the four researchers and nine additional data collectors conducted 348 observations of visitor interactions at the Discovery Carts. Researchers recorded subjects' age, gender, and time spent, as well as who initiated the interaction, cart activities the visitor engaged in, and learning behaviors the visitor demonstrated. Learning behaviors were modified from Chantal Barriault's framework of "breakthrough behaviors." Observational data were coded and entered into SPSS, where standard statistical tests were used to answer the research questions and explore correlations between variables.

Results

Researchers posed and answered four main questions:

1. *What age group is most attracted to the Discovery Carts?* Ages 3-5 and 6-10 comprise the majority of visitors to the Discovery Carts and are disproportionately represented among the institution's overall visitorship.
2. *Who initiates the interaction between staff and visitors?* Visitors initiate the majority of interactions, although this is not true for every cart or age group.
3. *How long do visitors stay at the carts and what influences length of stay?* Visitors spend about three minutes per visit. The youngest and oldest visitors spent less time than average, while visitors invited to the cart by a staff member spent more time.
4. *To what extent are visitors exhibiting learning behaviors during their interaction?* 63 percent of visitors demonstrate at least one learning behavior, although only 11 percent demonstrate more than two behaviors. Answering questions is the most common behavior.

Importance

Results indicate that visitors ages 3-10 are more likely to utilize the Discovery Carts; thus, the researchers recommend targeting activities to the developmental level of this age group. In addition, the researchers recommend the cart activities be modified to better promote or incorporate learning behaviors not typically observed, such as referring to past experiences or relevant exhibits.

References

Barriault, C. (1999). The science center learning experience: A visitor-based framework." *The Informal Learning Review*, 35(March/April).

New Directions in Audience Research: Training Graduate Students through Community-University Partnerships

Kris Morrissey, Director, UW Museology Program
Kathryn Owen, Evaluation Supervisor, Woodland Park Zoo
Nick Visscher, New Directions Project Coordinator, UW Museology Program

Purpose

To prepare a new generation of evaluators and museum practitioners, through a combination of mentoring, fieldwork, academics and client-centered experiences.

Perspectives

The New Directions Project is a 3-year, IMLS-funded program focusing in training graduate students in evaluation and Visitor Studies. Taking students through a total of five academic quarters, students are exposed to a graduate introduction course in audience research then continue to work on established evaluation projects, and finally developing and implementing original evaluation projects at various local and regional sites. This process not only trains students in the evaluation process (from helping 'clients' form research questions, to data collection & analysis, to final reporting), but strengthens partnerships between students, our Museology Program, and institutions within our community. This poster will describe this project's model of practice, structure of each academic quarter, and evaluation tools used to measure student success.

Methods & Results

In the first full year of New Directions a mixed methods approach was used. We adapted VSA's "Evaluation Competency for Professional Development" document into a questionnaire that was delivered to students before and after their experience with the Introduction course. Qualitative data was collected via student reflection papers following the completion of the course. This evaluation was preliminary, and will be part of a larger summative evaluation upon the completion of the third and final year of New Directions. A mean score was calculated over the five strands of professional proficiency identified by VSA. Results showed an increase in self-rated competency with qualitative comments affirming a shift in knowledge-gain and confidence in the field of evaluation.

Importance

This method of teaching may serve as a model of professional development for graduate students and Museum Studies Programs, emphasizing "real-world" project work and exposure to community institutions and staff toward developing future museum practitioners.

Additional Information

InformalScience.org Project Page: <http://www.informalscience.org/project/show/1757>

Follow us on Twitter: @NewDirectionsUW

See our Youtube Page with student testimonials:

<http://www.youtube.com/user/NewDirectionsProject>

FRIDAY, JULY 30

10:15-11:30am Concurrent Sessions—Three



Aesthetic Experience as Public Value: The IMA's Viewing Project

Linda Duke, Director of Education, Indianapolis Museum of Art
Tiffany Leason, Manager of Higher Education Programs & Research Assessment, Indianapolis Museum of Art
Annette Schlagenhauff, Ph.D., Associate Curator for Research, Indianapolis Museum of Art

Purpose

The Viewing Project (VP) is a series of experimental installations comprised of objects from the permanent collection of the Indianapolis Museum of Art. The project is funded in part by a generous grant from Art Mentor Foundation Lucerne and aims to support visitors as they find meanings that matter to them in art works from different times and places. We will discuss successes and challenges that we have encountered while trying to achieve the project objectives (i.e., develop presentations/installation designs that encourage longer looking and looking again at works of art, create information architecture that meets the needs of visitors at varying levels of art experience, develop a better understanding of aesthetic experience and its measurable signifiers) and the possibilities for communicating to a broad audience of colleagues what people's experiences with art in The Viewing Project installations have taught us.

Perspectives

The work of psychologist Abigail Housen and museum educator Philip Yenawine serves as a touch-stone for our cross-departmental team: curators, educators, designers and technology experts. Each VP installation has a theme based on Housen's research, which has identified strengths and interests of museum visitors related to works of art. Housen's research suggests that active looking experiences enable a kind of growth in the understanding of art itself - what Housen terms "aesthetic development" - that cannot be obtained through reading or hearing information (Housen, 1999). A main objective of the Viewing Project is to encourage visitors to feel comfortable looking actively at art for longer periods of time. VP installations are designed to encourage viewers to defer judgments (like/don't like). They focus attention instead on productive activities that Housen's research indicates many visitors will do naturally, such as noticing details (VP3) or spatial relationships in art (VP4). "Moving between research, theory and practice enriches the understanding of the aesthetic response. It has revealed how it is more than one response; rather, it is a chain of responses...It has shown that beginners can and will develop if they are given relevant and provocative stimulation in the form of art works to respond to, questions to ponder, and space to share experiences. In short, aesthetic growth will naturally and predictably appear if we create the conditions that foster the aesthetic experience" (Housen, 1999, p. 24). VP installations aim to support such active looking experiences, while still providing substantial information to visitors who want

it. The installation's design makes a distinction between aesthetic experiences (noticing, wondering, reconsidering) in front of works of art, and the process of seeking information about the art.

Visitor research and evaluation is an ongoing and integral part of the project. In addition to observational data, we have conducted cued and qualitative interviews, collected visitor comments via a computer station and hand-written on cards, as well as having held visitor panel discussions. We have conducted numerous Visual Thinking Strategies (VTS) discussions with visitors ranging from fourth grade through graduate and professional school levels. This technique has allowed us to hear participants verbalize their experiences of looking at works of art in small groups. We have also engaged in conversations with professionals in educational research (Abigail Housen and Philip Yenawine), visitor research and evaluation (Randi Korn, Andrew Pekarik, Elizabeth Wood, Douglas Worts), and museums and technology (Nancy Proctor, Jeffrey Inscho, Bruce Wyman), among others. Due to the iterative nature of the project, we have the benefit of incorporating what we learn from visitors and other collaborators by making changes to subsequent displays.

Importance

We believe that the opportunity to have an aesthetic experience fulfills an age-old function of art: it can help us understand the experience of being human. Churches and temples, ceremonies and rites of passage have used art to offer such experiences throughout human history. Can we measure the success of an art museum in providing such opportunities? How might we assess art experiences that are not matters of "like" or "don't like" and that, furthermore, do not hinge on how much information was transmitted or retained? We hope this session will encourage others to conduct similar inquiries that test applications of theory in the real world of museum practice and look closely at the effects of installation design, groupings of works of art, and information presentation on visitor engagement as indicated by such measures as viewing times and feedback from interviews. We also hope to prompt more studies that seek ways to assess aesthetic engagement, something that we consider central to the public value of an art museum.

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Additional Information

The Viewing Project: Seeing Doubled (October 29, 2008-March 29, 2009)

<http://www.imamuseum.org/exhibition/viewing-project-seeing-doubled>

The Viewing Project: Seeing Tripled (October 29, 2008-March 29, 2009)

<http://www.imamuseum.org/exhibition/viewing-project-seeing-tripled>

The Viewing Project: Wondering about Detail (May 19, 2009-December 3, 2009)

<http://www.imamuseum.org/exhibition/viewing-project-wondering-about-detail>

The Viewing Project: Wondering about Space (December 22, 2009-June 20, 2010)

<http://www.imamuseum.org/exhibition/viewing-project-wondering-about-space>

Art Mentor Foundation Lucerne

http://www.artmentor.ch/en/1kunst_1projekte.html

VUE, the home of Visual Thinking Strategies

<http://www.vtshome.org/>



Communicating Evaluation and Influencing Practice: Stories from a British Context

Jennifer DeWitt, King's College London

Theano Moussouri, University College London

Ben Gammon, Ben Gammon Consulting

Beth Thomas, Sain Ffagan: Amgueddfa Werin Cymru – St Fagans: National History Museum

G-Gina Koutsika, Tate Britain

Purpose

This exploratory session has a number of interlocking goals:

- Relationship-building between visitor studies practitioners from different national contexts
- Investigating how technology may be used to facilitate such relationship-building at the conference
- Providing an overview of how evaluation and visitor studies have been communicated to stakeholders in the UK
- Starting a conversation between visitor studies practitioners around similarities and differences in the UK and North American contexts and considering possible implications for practice.

Perspectives

Sociocultural theory highlights that individuals and institutions are situated within particular cultural and historical contexts which, in turn, can be expected to influence institutional culture and individual practices (Martin, 2004; Wells & Claxton, 2002; Wertsch, 1998). For instance, in the UK government funding for cultural activities, including for large national museums, is allocated through different mechanisms than in the US and there is more reliance on external evaluators in this context than in North America. These differences can be expected to impact the way visitor studies practitioners conduct and communicate their work. At the same time, one could also consider researchers and evaluators working in informal contexts as a community of practice (Lave & Wenger, 1991; Wenger, 1998), with shared values, goals, and practices. In addition, lessons from other contexts can provide new perspectives and encourage us to consider our own work in a different light.

This session was developed in response to an interest on both sides of the Atlantic in building relationships between visitor studies practitioners in North America (VSA) and in the UK (Visitor Studies Group). Presenters in this session will describe their experiences conducting evaluation and communicating findings in the British context. These presentations will lead into a conversation exploring similarities and differences in visitor studies in these two contexts and considering implications for practice in both.

Importance

The visitor studies field stands to gain from a closer relationship among practitioners in different contexts – such as members of VSA and VSG – and we hope that this session will serve as a step in strengthening that relationship. It will also provide insight into the promise and pitfalls of using technology within the conference format to build this relationship. Finally, we expect that an exploration of how visitor studies is valued and communicated in UK institutions may provide new insights for participants into how they are engaging in such processes in a North American context.



Citizen Scientists, Engagement, Learning Networks, and Research Agendas

Rick Bonney, Cornell Lab of Ornithology
John Fraser, Institute for Learning Innovation
Tina Phillips, Cornell Lab of Ornithology

Purpose

This session will explore whether “traditional” methods of assessing the impact of public participation in scientific research are sufficient to capture the complex outcomes of public participation projects, including the opportunity for participants to find a “sense of purpose” in their project activities.

Perspectives

Citizen science was originally conceived as an opportunity to create new scientific knowledge about the natural world by enlisting members of the public to collect and submit data for study by scientists. Quickly adopted by the Informal Science Education community as a tool for educating the general public about science content and process, most projects include learning outcomes that involve individual changes in “science literacy.”

It is now apparent that the scientific findings derived from citizen science data can be profound and can inform society at large about what is happening to the planet (Bonney et al., 2009a). In addition, several projects have been shown to increase participant knowledge and sometimes even behavior (Bonney et al., 2009b). However, we question whether “transformative individual experience” is the only way to measure how citizen science projects are serving the public. For example, our qualitative analysis of CamClickr, an online citizen science “data coding” project, has revealed that many participants enter the project with extensive knowledge of and appreciation for the scientific enterprise. This finding requires that we reevaluate some of the assumptions that currently inform informal learning strategies used by museums and scientific institutions.

In particular, has the focus on individual learning obscured some of the original intention of citizen science, and is it diverting institutions away from their role as generators of new knowledge? Do citizen science participants value host institutions not because they help them gain personally through project participation, but because

the experience of participation encompasses an altruistic view of the potential accomplishments of widespread learning networks? Do participants value museums and related institutions as nexuses for building new understanding on behalf of society?

This set of presentations will explore various dimensions of citizen science and discuss whether NSF's framework for measuring change (Friedman et al. 2008) should expand its focus to include community learning. The panelists will suggest that both the Framework and the learning strands identified in the National Research Council's (2009) *Learning Science in Informal Environments: Places, People and Pursuits* have only started to suggest ways of measuring how contribution to knowledge development can be a satisfying outcome of leisure pursuits that do not necessarily result in personal change. By considering strand 6, identity, including the concept of identity-consistent behaviors as interpreted through the theoretical framework dubbed "Serious Leisure" (Stebbins, 1982; 1992; 1997), the speakers will explore ways in which two projects developed at the Cornell Lab of Ornithology have led them to expand their notions of how informal learning can be measured.

The panel will explain how a mixed-methods research model that integrated parallel qualitative phenomenological and grounded theory studies into a quantitative knowledge and attitude-gain study revealed that not all participants were learning, and that many participants did not consider learning to be a relevant indicator of their satisfaction or their motivation for continued participation. The study examines altruism and whether citizen science participants show prolonged engagement because they believe strongly in the mission of the sponsoring organization and the need to work collectively toward greater social knowledge.

Importance

This study has led to new considerations for:

1. Developing measures of ISE impact,
2. Understanding the characteristics of a learning network that promotes science, and
3. Promoting measures of learning outcomes that aggregate from professional and amateur engagement in cultural learning.

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Can Demographic and Psychographic Data Convey Public Value?

Kathleen Tinworth, Denver Museum of Nature & Science

Purpose

Even in informal learning institutions without a dedicated evaluation department, we find a wealth of demographic information about visitors. The membership department might track zip codes; school programs may have age and race/ethnicity information; museum shops and cafes may have data on visitor income and sales revenue.

The Denver Museum of Nature & Science (DMNS) has been collecting demographic and psychographic data through its "Baseline Visitor Survey" for 3 years now, and is amassing a wealth of information on its visitors. But is this data *useful*? What can we learn from it about how our institution affects lives? Can this commonly tracked information tell us anything about *public value*-- who defines it, what we mean by it, and what relevance, impact, and meaning it has within our internal and external communities? Is there a better way to understand our visitors?

The session presenter will provide participants with data from two recent studies at DMNS-- "Baseline" (demographics/psychographics) and Falk's Identity-Related Motivation typology. This will be a springboard to discuss what, if any, utility such information has in helping define and address public value and understand the visitor experience. The datasets will be compared and contrasted, participants will have the opportunity to ask clarifying and challenging questions, and ultimately attendees will weigh in on which instrument they feel provides more valuable insight.

Perspectives

Demographics have formed the backbone of visitor studies for many years (Balling & Cornell, 1985). Not only are they concrete, but they are perceived as having widespread institutional utility. More recently, the assumed utility of demographics has been brought into question (Falk, 1993). It has been asked whether or not demographics can or *should* serve as predictive measures of visitor behavior (Falk, 2009). That said, they are still frequently collected and analyzed in many respected studies (Reach Advisors, 2000). Is the "old way" of segmenting visitors as useful as examining more transitory dispositions (e.g. Falk's identity-related motivation typology)? Can the two be complimentary, working together to form a clear picture of museum visitorship?

Methods

The DMNS Baseline is a self-administered paper survey distributed onsite to randomly selected adult visitors. Multiple choice and open-ended questions relate to visitor demographics and psychographics. The Falk 2008 Identity Motivation Instrument utilizes a card sort methodology, with randomly selected adult visitors choosing from 20 cards featuring a combination of visuals (photographs) and text (identity-related statements).

Data, Analysis & Results

For specific data and results from DMNS, please contact kathleen.tinworth@dmns.org. For data, analyses, and results from John Falk's Identity Motivation instrument, please refer to the reference section below.

Importance

Due to the relative availability of this type of data across institutions, this topic has appeal and utility to all visitor studies professionals, as well as museum stakeholders more widely. Further, the debate surrounding continued use of demographic data versus identity-related data is one permeating the field. This format provides a unique vehicle by which to discuss the implications and potential relevance of varied sources of visitor information and to facilitate conversation about the definition and understanding of public value.

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Additional Information

www.dmns.org

For a copy of the DMNS Baseline instrument, please contact kathleen.tinworth@dmns.org.

For a copy of the Falk 2008 Identity Motivation Instrument, please contact John Falk directly.



Building the Future of Relevant Visitor Experience

Cassie Dakan, Museum of Northern Arizona (MNA), Flagstaff, AZ

Purpose

We are measuring the public value of the Museum of Northern Arizona (MNA) experience as part of planning new exhibits as a museum for the 21st century. As we prepare for a major capital investment, an overhaul of exhibits, and create a new educational philosophy and approach, how do we capture, align and use the best visitor generated data possible – data that will inform sweeping decisions? The focus of this session is how MNA has arrived at a decision-making juncture, and how we have come to define, measure and communicate the public value of this museum, *less* as a historic 80 year old institution, and *more* as an vibrant hub of learning, community building, action and research for all, for the future.

Perspectives

MNA has entered a period of capital improvements, which began with private funding for a new collection center completed in 2009. Turning to public interpretations, MNA's museum building is 70+ years old, and the

main gallery exhibits are now 25 years old and overdue for replacement. The museum is committed to weaving together the rich cultural and natural history and diversity of this unique region for visitors. Our survey, conducted in 2009, is now informing exhibit and program directions for MNA as we tell a new story of the Colorado Plateau.

Methods

Prior to this study, MNA had no significant visitor feedback loop. We worked with Slover/Linett (Chicago-based) to create the survey and protocols, and to analyze our data. With consultation we streamlined, focused and completed data collection between May and November 2009. Front desk staff were key to data collection. MNA visitors completed 619 self-administered surveys.

Data & Analysis

The on-site survey met MNA objectives to profile current visitor demographics in light of regional and national demographic trends; to understand how patrons want to experience MNA and their perceptions of current strengths and weaknesses; to identify segments of the MNA audience and to unpack expectations and interests to guide marketing and messaging; and to elicit suggestions for improvements. Data was entered in Survey Monkey by MNA staff and interns, and analyzed by Slover/Linett using SPSS. Initial reports on the data were available in January 2010. The final report of data analysis was given to the MNA Board in May 2010 for review with a board discussion of the findings in June 2010. Many MNA staff members were included in the study process, notably the visitor services staff. From the beginning, the survey, its implementation, recording and analysis was conceived to build MNA's capacity to conduct ongoing visitor studies.

Results

We now have implications and indicators of what visitors to MNA value in a visit with us and directions for new exhibits that are responsive to visitor expectations and interests. A sampling of and recommendations includes:

Exhibit changes that would appeal to:

- A younger demographic by increasing kinds and number of interactive exhibits
- Non-English speakers, especially the region's Latino population
- Native Americans, notably creating an iconic exhibit area

Addressing a weak highway presence and vanilla entry experience:

- Showcase appealing offerings while clearly differentiating MNA from the Grand Canyon
- Make entry an "Aha!" experience by extending it into the parking area and turning it into a walk through time

Focus on improving the first-time visitor experience

- Target first-time visitors for special perks, with tailored brochures and audio tours
- Devise special treatments for tour group participants, creating a distinctive experience

Enhance museum shops and add a café to generate revenues, especially from tour participants

- Target lovers of geology, Native culture, and anthropology
- Add refreshment offerings, improve ambience, create a visible picnicking area

Importance

MNA has confirmed that whole populations do not come through our doors – we are not relevant to them. Our study helps us arrive at some "whys" behind this and how to frame different theoretical and practical approaches to delivering information and experience to our visitors in ways that matter to them. Data tells how to approach changes to better compete for people's time and interest (immediately and long term) and how to reach multiple audiences. Our investment in a multi-million dollar exhibits overhaul must be grounded in the certain knowledge that change is both necessary and data driven; and that change will attract new audiences,

increase our relevance, and will secure the museum's future for the next 20-25 years—an agenda that all cultural institutions share.

FRIDAY, JULY 30

1:00-2:15 pm Concurrent Sessions—Four



Public Value at the National Museum of Natural History: A Museum-wide Process for Establishing Attributes of Success and How to Measure Them

Bill Watson, Chief of Onsite Learning, National Museum of Natural History

Mary Ellen Munley, Principal, MEM & Associates

Randy Roberts, Associate, MEM & Associates

Purpose

This panel will present the process through which senior staff from the Smithsonian's National Museum of Natural History and a team of consultants developed a set of metrics and protocols for evaluating the public value of the museum's products, services, and programs. An 8-month process of readings, meetings, and synthesis of the museum's core values, mission, vision, and strategic plan led to the identification of four key, measurable attributes of the museum's public value: Trust, Scale, Engagement, and Influence. The project's leadership will discuss the process through which these attributes were determined; outcomes, metrics, indicators, and instruments used to measure them; and plans for their implementation to evaluate the public value of programs, exhibits, and web experiences at the museum.

Perspectives

It is widely recognized that experiences in museum settings are idiosyncratic and reflect a higher level of choice than many other learning experiences in structured or semi-structured environments (e.g., Falk & Dierking, 2000; Museums, Libraries, and Archives Council, 2004; National Academies of Science, 2009; National Science Foundation, 2008). The nature of learning in museum services presents a significant evaluation challenge for many museums. Attending to the individual, idiosyncratic, and broad nature of learning typically requires evaluation frameworks and techniques that focus on a relatively small number of users, providing in-depth insights into how the services are used, but that typically are not generalizable. At the same time, museum staff members are often interested in the collection and analysis of more generalizable outcome data, which runs the risk of losing opportunities to describe more nuanced outcomes generated by the unique affordances of the informal environment.

At the Smithsonian's National Museum of Natural History, this challenge was exacerbated by an unsystematic approach to evaluation, often limited to the collection and reporting of decontextualized statistics (e.g., attendance at programs, web hits, total number of visitors), visitor self-reports of satisfaction, demographics, and a narrow range of content-based outcomes, such as understanding the main messages of exhibitions. The museum's leadership recognized that the status quo was problematic if evaluation was to become a common thread through all stages of program development and implementation and provide a wide lens for understanding public value. That recognition led to the process and product described by the panel.

Importance

The emerging vision for evaluation at the National Museum of Natural History is to build a culture of evaluation that integrates multiple needs for and approaches to evaluation. The process through which the team synthesized internal and external perspectives, defined a narrative that would convey the museum's public value, established Trust, Scale, Engagement, and Influence as key attributes of success, and developed instruments and procedures for regularly collecting visitor feedback to provide data on these attributes could provide a useful model for other museums in the beginning stages of establishing a culture of evaluation.

We argue that these four attributes and the measures developed to indicate the museum's progress toward attaining them together describe the public value of the museum in a way that is useful to staff, administrators, and other internal and external stakeholders. The framework is consistent with outcomes based evaluation, focuses on the visitor/user of museum services, is flexible to address multiple outcomes from multiple services for multiple audiences, and is able to be executed with the museum's current limited resources for evaluation. Because of its flexibility, we also argue that the process and the framework could potentially be adopted by other museums. One potential indicator of the public value of the National Museum of Natural History could be the extent to which this framework itself becomes a useful tool for other museums.



Communicating Current Science: Lessons Learned about Engaging the Public

Molly Reisman, Rockman Et Al
Scott Burg, Rockman Et Al
Susan Foutz, Institute for Learning Innovation
Molly Michelson, California Academy of Sciences
Christine Reich, Museum of Science, Boston
Jessica Sickler, Institute for Learning Innovation

Importance

Science Centers are skilled at communicating facts and engaging visitors, but what happens when we want to foster dialogues about and engagement with current science? Supporting ongoing discussion with the public around research and current science may require a change in approach. In this session, museum staff and evaluators will share experiences and findings from a range of programs including exhibits, websites, science cafes, and PD training for research scientists on how to communicate their work to the public.

The public needs to understand current science issues that face our society because on a daily basis we are asked to make decisions that require such knowledge. In addition, much scientific research is publically funded, so it benefits the scientific community to foster understanding of and appreciation for science.

Once out of school, most members of the public do not have a forum for learning about emerging scientific issues. Science centers provide visitors with access to scientific knowledge and information, but only recently have many museums started to foster real dialogues with the public about the issues that impact them. This type of change is not without its challenges, and through sessions like this, informal science institutions can learn from one another's successes and struggles.

By focusing on what did and did not work, and providing a chance for session attendees to share experiences from their own institutions, this session aims to support the VSA community in learning from existing work to support future endeavors.

Study Perspective: The Nanoscale Informal Science Education Network

The *Nanoscale Informal Science Education Network* (NISE Net) is a network of over 200 science museums and research organizations working together to raise awareness and deepen understanding of nanoscale science, engineering and technology. To date, NISE Net has generated over 75 educational products, including kit activities, visualizations, stage presentations, interpretation carts, tabletop exhibits, museum theater, and public discussion forums. In addition, NISE Net has also sought to educate museum professionals and scientists about strategies and methods for engaging the public in nano informal science learning experiences. The NISE Net evaluation team is generating a synthesis document to summarize lessons learned through the over 200 evaluation studies they conducted when examining the public and professional learning aspects of the Network. This synthesis document provides insights not just on nano education, but on a range of themes applicable to the discussion of any emerging science in a museum context, including interpreting the unseen, visitor relevance, discussions of socio-scientific issues, museum educators learning, and museum-research organization educational partnerships.

Study Perspective: Portal to the Public

Since 2007, the NSF-funded research and development project *Portal to the Public* (PoP) has implemented, refined, and tested a specific approach for engaging active researchers and science-based professionals in informal science education at science centers and museums. In PoP, science museums recruit science-based professionals from local institutions (such as universities, government agencies, and hospitals) and provide participating scientists with training and coaching to develop the skills and tools to connect to and engage with visitors through face-to-face, materials-rich, hands-on activities in informal science settings, including how to translate their own research for the public. Through public programs, these scientists become informal science educators of their own research, generating enthusiasm, interest, and science learning among public audiences. In the past year, the Institute for Learning Innovation has conducted comprehensive research to assess the effectiveness of this model for its various stakeholders, as implemented at three diverse institutions: Pacific Science Center (Seattle, WA), Explora (Albuquerque, NM), and the North Museum of Natural History and Science (Lancaster, PA). The results of these three diverse case studies and the cross-case analysis results will be discussed to highlight the core values, challenges, and opportunities of PoP as a model for informal science institutions to engage the public and scientists in their communities.

Study Perspective: Science in Action

Science in Action (SIA), a current science initiative at the California Academy of Sciences (CAS) seeks to engage the public with today's science news. The museum has a permanent exhibit on the floor in addition to an active

website, science presentations, and science cafes. At the core of SIA are short videos that are produced on an ongoing basis to provide visitors with a more in-depth perspective on science in the news.

Using focus groups, intercept interviews, observation data, visitor surveys, and interviews with key staff, evaluators and museum staff have identified ways in which the programs usability can be enhanced through changes to the physical environment and the production process.

In year three, the evaluation process includes recruiting an online panel of participants who can be surveyed and invited to provide feedback on all aspects of SIA, from physical exhibit to website to programming. By tracking a core group of users in addition to a random sampling of visitors, it is hoped that findings will not only improve use for the one time visitors, but will support ongoing use by those who are heavy web users and consumers of current science news.

Additional Information

<http://www.nisenet.org/>

<http://www.pacsci.org/portal/>

<http://www.calacademy.org/sciencetoday/>



Culturally Responsive Research Practices

Dr Theano Moussouri, University College London, UK

Dr David Anderson, University of British Columbia, Canada

Prof Roy Ballantyne, The University of Queensland, Australia

Dr Jan Packer, The University of Queensland, Australia

Purpose

The goal of this session is to discuss different approaches to conducting culturally-sensitive research, the implications these approaches have for the design of the studies, and perspectives and understandings they can elicit. Specifically, this session will present:

- A rationale for using culturally sensitive research approaches,
- Theoretical and methodological frameworks for culturally sensitive research approaches, and
- A discussion of culturally sensitive research approaches in practice.

Theano Moussouri will present the use of participatory research approaches and the ways in which knowledge that characterizes learning experiences in museums can be drawn upon to create more appropriate and responsive contexts for learning. David Anderson will discuss the assumptions underlying the utility, credibility, and trustworthiness of qualitative research methods in non-western cultures. These assumptions are often not visible to researchers until we attempt to use them in contexts where cultural norms are different to what we might expect. Roy Ballantyne and Jan Packer will present their study of interpretive signage at the Chengdu Research Base of Giant Panda Breeding with Chinese and Western visitors. They will examine differences between Chinese and Western visitors in their responses to interpretive signage and to different research techniques.

Perspectives

Research traditions have been shaped by the interest of Western researchers in studying and interpreting the indigenous or the civic “Other” (Vidich & Lyman, 1994). Inherited in these traditions are different sets of beliefs regarding the nature of reality, the type of questions that are asked or can be known, and how these questions can be answered (Denzin & Lincoln, 1994). These beliefs define how any specific study is designed and carried out, the story it tells and subsequent actions taken, if any. Museum visitor research, in particular, tends to be produced and applied by Western institutions most of which are located in English-speaking countries (Hooper-Greenhill and Moussouri, 2000). Although research with different cultural groups is increasingly conducted in both English- and non-English-speaking countries, studies looking at different cultural groups and at the role visitors’ socio-cultural context and background play in meaning-making are scarce (Briseno-Garzon, 2009). Presenters in this session will discuss these issues and their implications for carrying out research in a culturally-sensitive way.

Importance

Studies of museum visitors have been routinely carried out with multicultural audiences within a multicultural context. A few studies that have focused on non-Western audiences (Falk, 1998; Moussouri & Johnsson, 2007) have indicated that people from different socio-cultural backgrounds have different values, motivations, learning strategies which are likely to affect their museum experience and outcomes of their visit. As museums are increasingly asked to measure their public value, they need to better understand the assumptions they make about what they mean to different communities and what is the best approach to consult them.

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A Debate Over Measuring “Museum Fatigue”

Amy Cota-McKinley, Worcester State College
Stephen Bitgood, Jacksonville State University

Purpose

“Museum fatigue” is widely recognized as a barrier to a satisfying educational experience in museums. Despite its importance, only a few research studies are available to inform museums on the problem. It has proven both

difficult to define and difficult to measure since there is a lack of agreement on exactly what it is and what measures are most appropriate (Bitgood, 2009a; 2009b; 2009c).

Perspectives

The Argument for Self-Report Measures (Amy Cota-McKinley)

Although self-report measures have been infrequently used to measure “museum fatigue,” they have at least two advantages:

1. They may be more cost-effective in terms of time and effort.
2. They reflect internal states (e.g., boredom, exhaustion) that are not always obvious by overt observation.

One of the problems with self-report is defining what is being measured. “Fatigue” is a slippery phenomenon (or group of phenomena). It is possible to identify at least four types of “museum fatigue:” physical tiredness/exhaustion, mental tiredness/exhaustion, satiation, and increasing selectiveness when choosing on which exhibit elements to attend. These types of “fatigue” are not mutually exclusive and statistical analysis of self-reports may be useful in sorting out the relationships among these fatigue types.

Another problem with self-report measures deals with validity. Logic suggests that self-reports should correlate with both experimental manipulations as well as with observational data. My dissertation (Cota-McKinley, 1999) demonstrated that limiting the viewing time of participants in a simulated exhibition was reflected in a workload self-report survey modeled after a NASA instrument. In addition, comparing two groups who were exposed to different amounts of exhibit content also produced self-report responses sensitive to amount of information.

The Argument for Observational Measures (Stephen Bitgood)

Observational measures have been the standard for reporting “museum fatigue.” Traditionally, “fatigue” has been implied if there are systematic decreases in attention across viewing time. Only three studies have reported using self-report and there is questionable correlation of this data to direct observation. That is, individuals who show decrements in viewing attention across time may show little consistency in their self-reports. The reverse is also true: self-reports of fatigue do not always correspond with observational data. Consequently, we should stick to the tried and true.

Traditionally, observational measures (especially percent of visitors who stop and viewing time) have been the preferred type of measure for “museum fatigue.” Robinson (1928) and Melton (1935) conducted foundational studies in “museum fatigue” in art museum settings. A consistent decline in visitor attention was observed across viewing both in an entire museum visit and within an exhibit hall. These results were attributed to object satiation rather than physical tiredness or exhaustion. An additional study used time samples of attention (Falk et al, 1986) in which the target of visitor attention (exhibits, social, etc.) was scored every 5 seconds and these data were pooled across 3-minute intervals.

More recently, we have studied three measures of “fatigue” during a simulated museum session and a self-report rating of “fatigue” after the session was completed. For each individual, a fatigue score was computed based on whether or not a systematic decline occurred in viewing time, rating interest of the artwork, and proportion of a text passage read. After the session, participants rated a number of items including: general interest in art, general knowledge about art, enjoyment in viewing artwork, enjoyment in reading text passages, boredom, mental effort, etc. There was no significant correlation between the fatigue measure and any of the self-report items even though most of the participants showed a systematic pattern of attention decrease as the session progressed.

Importance

How do we bring together these different types of measures? What kind of research is necessary to determine the best measures?

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FRIDAY, JULY 30

2:30-3:45pm

Concurrent Sessions—Five



CAISE Report: Including People with Disabilities in Informal Science Learning

Christine Reich, Museum of Science, Boston

Ellen Rubin, Independent Access Consultant

Mary Ann Steiner, University of Pittsburgh Center for Learning in Out of School Environments

Purpose

The Center for the Advancement of Informal Science Education Access Inquiry Group (CAISE AIG) was commissioned to establish a shared framework for the inclusion of people with disabilities in informal science education. This group also identified ways the informal science education field has worked to include people with disabilities, and what this prior work tells us about actions that should be taken in the future.

Perspectives

Disability studies scholars have put forth a model for understanding and defining disability called the “social model of disability.” This model defines disability as society’s response to “human difference” which results in the design of environments for persons whose characteristics fall into the narrow range defined as “normal” and the exclusion of individuals who fall outside that range (Gill, 1999). This model situates the notion of disability within societal and cultural norms and values, and therefore places the responsibility for change amongst those who design and develop public spaces, policies and programs (Barnes, 2003). The social model of disability, therefore, addresses how we define the problem of inclusion. For example, rather than saying that the “problem” lies in the fact that people are in wheelchairs, the social model of disability suggests that the problem is the societal norm that assumes all individuals walk on two legs, which leads to the design of spaces with stairs and no ramps.

According to the social model of disability, inclusion is more than simply gaining access into a physical structure—is also about gaining equal access to the policies, practices, and systems civic society affords (Barnes, 2003). Inclusion in informal science education, therefore, goes further than ensuring that people with disabilities can enter or use the buildings, programs, and technologies that deliver such experiences. It also requires that people with disabilities are able to learn from them and participate as a part of, and not separate from, the larger social group and community.

Similar to definitions of inclusion from the field of formal education (Blamires, 1999), inclusion in informal science education requires that learners are able to:

- a. Physically interact with/perceive the (virtual or real) space
- b. Cognitively engage with the materials
- c. Socially interact with one another

Importance

CAISE Access Inquiry Group investigations suggest that ***the greatest barrier to inclusion is that the standards of current practice do not promote the inclusion of people with disabilities.*** While the group located a number of projects, initiatives and organizations that have sought greater inclusion of people with disabilities in informal science learning, such efforts are not widespread. This investigation points to a number of changes that need to be addressed for the field to advance the inclusion of people with disabilities within informal science learning:

- Changes to the standard design of informal learning experiences
- Changes in knowledge of and attitudes toward inclusion amongst informal science education professionals
- Changes in the way the issue of inclusion is framed, with a greater emphasis on the physical, cognitive and social dimensions of inclusion
- Generation of new understandings of inclusive practices through the study of inclusion and informal science learning
- Development of new designs through cross-pollination within and across different segments of the informal science education field.

Combined, these recommendations call for sustained change in the practices and culture of informal science learning professionals, which is not easily realized. Exemplars of inclusive informal science learning experiences, however, do exist. These exemplars offer evidence that it is possible to create, design, and implement informal science learning environments that are open, accessible, and inclusive for all.

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Additional Information: The following is a link to the full CAISE Access Inquiry Group report:
<http://caise.insci.org/uploads/docs/InclusionDisabilities&ISE.pdf>



Making a Case for Value to Schools: Results of a Museum After-School Program

Laura W. Martin, Arizona Science Center

Purpose

To demonstrate the importance to smaller institutions of conducting evaluation for securing local funding for programs and of reporting results such that funders and project sites gain confidence in the institution. A discussion will explore the expectations of funders such as departments of education, how smaller centers can easily build simple evaluations what they do, and how to assist museums in getting a convincing word out about the informal learning promoted in their outreach programs.

Perspectives

Program evaluation was designed using simple quantitative and qualitative measures that were piloted and validated. The measures were designed to capture learning according to the strands of the National Academies report on Informal Science Learning. They addressed the impact on various stakeholders including: children, parents, and instructors.

Method, Data & Analysis

Subjects were 142 children in three cities who participated in a one week summer camp run by a science center for school districts. Observations, Pre/Post Child Surveys, Parent and Child Questionnaires, Instructor Surveys looked at participation quality, attitude changes, awareness, and suggestions for improvements.

Results

The camp program engaged children's participation and was extremely well received by both children and families. The main benefits to the children were that they had a great time, explored new activities, found excitement in science, engineering, and math-based projects, and had their interest in topics and experimentation piqued in even the short four-day program. Girls in particular seem to have benefited from the experience. Attitudes towards getting engaged with STEM also seem to have improved in the groups overall. A highlight for many was the visit to the Science Center. For parents, they took great delight in seeing their children happy, excited to attend the program, learning new things, and exploring new experiences. There were no substantive critical comments by either campers or parents and the great majority would like to see the program continue during the year or as a camp. Logistical issues were not a major obstacle and could be anticipated and addressed in subsequent series.

A written report was distributed to the Arizona State Department of Education and presented at their statewide conference of 180 21st Century Learning Community Center sites. The result was a commitment to an expanded and expanding contract for services and more demand for programs than the Science Center can currently accommodate. Representatives of the ADE stressed how impressed they were by having a professional evaluation and how strongly that influenced their decision-making about continuing this kind of program

Importance

Although solid, this was not an innovative evaluation *per se* but it was a first for the Department of Education, who had never seen something like this from any of the groups or vendors they contract with to run programs. Note that by the time of the VSA conference in July we will have additional results compiled from the current academic year after-school and camp program.



Designers as Brokers: The Development of Museum Field Trip Programs

Alice C. Fu, Stanford University School of Education

Purpose

This session explores the behind-the-scenes work of educators in museums--specifically informal science institutions (ISIs)--who develop or design school field trip programs. Research questions include: What resources do these educators use? In what contexts and to what extent do they act as knowledge brokers, if at all? I will present a model of knowledge brokering, which frames my research, and discuss initial findings from in-progress case studies.

Perspectives

Teachers have varied motivations for taking field trips (Anderson et al., 2006), with potential conflict between teachers' agendas and those of museum educators (Kisiel, 2005; Lucas, 2000). Designing programs that satisfy both school and ISI agendas may require negotiating across social and conceptual divides.

Hargadon's (2002) model of innovation through knowledge brokering offers a framework for exploring program design. This model, from the organizational behavior field, describes brokers who traverse disconnected social domains; learn about existing resources, problems, and solutions; and, by linking old resources and new problems, "transform their knowledge about these extant resources into the raw materials of new innovations" (Hargadon, 2002, p. 49). In museums, program designers might link knowledge across disparate domains including museum departments, other ISIs, schools, scientists, and evaluators, among others (e.g., Bailey, 2006; Dragotto et al., 2006; Tran, 2008). I seek to understand the contexts in which brokering opportunities are realized in field trip design.

Methods

I am employing a comparative case study approach at three California ISIs. At each, I investigate the work of one program designer through semi-structured interviews with designers and others, resource mapping exercises, materials gathering, and observations. Within each case, I further focus on one already-developed field trip program. Programs comprise pre-planned, ISI-based activities designed for schools and distinct from general public offerings.

Data & Analysis

When data collection is completed, I will code the data to develop analytic themes. I will write case descriptions and draw cross-case conclusions focusing on contexts for work, programs and their development, types of resources used, and extent to which designers broker across domains.

Results

A number of interesting, initial themes are emerging. My presentation will focus on two cases—an aquarium and a science museum. Both are large institutions with multiple departments and missions including education and scientific research. I will describe opportunities in these organizations to access and broker diverse knowledge and discuss preliminary findings about how field trip designers navigate this landscape.

Importance

In designing school programs, museum educators define and communicate the public value of their institutions. Value is embedded in decisions about, for example, learning activities, objects, images of science, and talk. Museums can offer valuable experiences distinct from what is possible in schools, but those opportunities are not always fulfilled (Cox-Petersen et al., 2003; Tal & Morag, 2007). Despite "best practices" recommendations (e.g., DeWitt & Osborne, 2007), the resources and knowledge used by program designers are not well understood. Comprehension of these issues, coupled with ongoing visitor studies, could spur field-trip improvements and inform the building of effective supports for those who do this work.

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Fostering and Assessing Math Learning in Science Centers

Scott Pattison, Oregon Museum of Science and Industry
Josh Gutwill, Exploratorium
Cecilia Garibay, Garibay Group

Purpose

Over the last several decades, mathematics has emerged as a central issue in the broader debate over student achievement and the nation’s education infrastructure. Despite the recognized importance of mathematics, science centers are just beginning to explore their role in supporting informal math learning. In this session, we will present two approaches to describing and measuring math learning at interactive exhibits, drawing on the NSF-funded traveling exhibit projects *Access Algebra* and *Geometry Playground*. Both projects share the goal of creating interactive exhibits that engage visitors in mathematical thinking and reasoning, rather than communicating mathematical concepts or vocabulary.

The session will:

- Raise awareness of the potential for science centers to support informal math learning.
- Engage participants in discussion about what constitutes evidence of mathematical reasoning and thinking at exhibits.
- Present methods and strategies that have been used to measure math learning in science centers, as well as lessons learned from their development.

Perspectives

Both *Access Algebra* and *Geometry Playground* build on research in classrooms and everyday contexts to understand how visitors engage in mathematical thinking in science centers. The *Geometry Playground* exhibition draws on a robust body of research suggesting the importance of spatial reasoning for understanding science and mathematics (e.g., Ben-Chaim et al., 1989), including studies of virtual and physical interactives in geometry curricula (Battista, 2003; Clements & Battista, 1990) and links between children’s toys and skills such as spatial perception and mental rotation (Tracy, 1987). Research on gross-motor learning supports the

fundamental project hypothesis that large-scale physical exploration may also build spatial reasoning skills (Hazen et al., 1978). In response to this research, the project is studying the efficacy of immersive experiences for enhancing informal learning.

Similarly, the *Access Algebra* project reflects an emerging focus across the field of math education on algebra as a process of mathematical inquiry (National Council of Teachers of Mathematics, 2008). To foster algebraic thinking and mathematical engagement, the exhibition is designed to support the variety of intuitive and informal strategies individuals use when dealing with mathematical problems in their everyday lives (e.g., Civil, 2002; Nunes, Schliemann, & Carraher, 1993). Research in classrooms suggests that students may be more successful at solving algebraic problems when they can build on their own informal strategies and use accessible mathematical representations (e.g., Koedinger & Nathan, 2004).

Importance

The nationwide focus on mathematics provides a strong imperative for science centers to define their role in math education. Although many of these institutions have begun to embrace a broader educational mission that includes mathematics, we are only beginning to understand informal math learning (Mokros, 2006). The field of visitor studies has a critical role to play in defining what math learning looks like in science centers and developing valid and reliable methods for its assessment across a range of experiences. Evaluation and research studies from the *Access Algebra* and *Geometry Playground* exhibitions provide potential frameworks for understanding and assessing mathematical engagement in science centers, as well as preliminary evidence that interactive exhibits can support rich mathematical learning.

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Additional Information:

Geometry Playground website: <http://www.exploratorium.edu/geometryplayground/>

Geometry Playground evaluation & research reports:

http://www.exploratorium.edu/partner/visitor_research/reports.php

Access Algebra evaluation reports: <http://www.oms.edu/formative>

Share Ideas for Expanding Evaluation and Research Capacity Through Volunteers

Marcie Benne, Oregon Museum of Science and Industry

Rita Deedrick, Center of Science and Industry

Matt Sikora, Detroit Institute of Arts

Purpose

The objective of this session is for attendees to share ideas for maximizing the benefits and managing the costs of involving volunteers and unpaid interns in visitor studies work – specifically with regard to increasing capacity. This session will have three brief presentations (under 30 minutes), roundtable discussions (30 minutes), and a wrap-up led by a conference discussant (15 minutes). The perspective of this session is operational and pragmatic.

Importance

Many evaluators and researchers find working with unpaid personnel relevant with regard to increasing capacity. Some face capacity challenges as their organizations (or those they consult) have recently experienced budget and staff cuts. Some face capacity challenges because they do not have established evaluation resources and are trying to grow them with little or no funding. And we all face capacity challenges as our field adopts more rigorous and formal processes (e.g. more robust studies, cooperating with IRBs, and increasing dissemination activities) while funding remains tight. Some of us operate in a non-profit climate in which we are expected to “do more with less” on a daily basis. And some of us work for community organizations where involving volunteers is the basis of the organizational culture. In each of these cases, working with volunteers offers benefits for individuals and organizations when win-win, manageable systems are established.

Volunteers can bring benefits to the work of visitor studies such as time, attention, ability, creativity, expertise, reliability, and enthusiasm. They can also bring experience and backgrounds that are shared by audiences involved in our visitor studies. Volunteers can learn, grow, lead, and innovate within the work of evaluation and visitor studies. In return, volunteers can expect professional development, supportive social interactions, and rewarding service and accomplishments.

The costs associated with hiring, training, supervising, and recognizing volunteers must be managed in order to reap the benefits for all involved. The facilitators in this forum will bring cost-benefit perspectives to the discussion with the intent of helping evaluators and researchers maximize benefit, manage costs, and increase capacity through successful, win-win volunteer assignments and systems.

The three presenters each started working with volunteers for different reasons – personal interest, organizational mandate, and resource needs. The presenters will discuss how these reasons for working with volunteers have led to expanded capacity and successful volunteer support for evaluation and research activities. They will cover what volunteerism means in their institution, the roles of volunteers in their division, the systems they have developed to manage volunteers, the benefits for the volunteers and the institution, and the trade-offs for the work of the division.

Marcie Benne, Oregon Museum of Science and Industry (OMSI) Evaluation and Visitor Studies division manager, maintains a volunteer staff of about 16. Highly skilled volunteers serve in roles of expert, leader, and independent researcher. Rita Deedrick, Senior Director for Evaluation, Planning & Research at the Center of Science and Industry (COSI), works with volunteers in research and evaluation as college interns, “provisional” (on-call) volunteers, donor volunteers, and teen volunteers. Matt Sikora, Director of Evaluation at the Detroit Institute of Arts (DIA), works with a group of about seven volunteers and interns as data collectors.

Attendees will join a roundtable discussion with the presenter of their choice – most likely the one with relevant needs and experiences. Discussion at each table will cover:

- Reconciling costs (i.e., time, energy invested in recruiting, training, and supervision) with number of hours worked.
- Maintaining quality control with volunteers.
- Considering requirements for the ethical treatment of human subjects and sensitivity of data when working with volunteers.
- Building on volunteers’ expectations, leadership, and expertise.

SATURDAY, JULY 31

9:00-10:15 am Concurrent Sessions—Six



Measuring Ethnicity

Cecilia Garibay, Garibay Group
Jeff Hayward, People, Places & Design Research
Brian Werner, People, Places & Design Research
Laura Huerta Migus, Association of Science Technology Centers

Purpose

This session examines various approaches to measuring ethnicity, discusses challenges, and explores future directions and implications for practice. We examine the complexity and nuances of measuring ethnicity and ethnic identity and discuss these issues within the broader frame of conducting culturally responsive research and evaluation.

The specific goals of this session are to:

- Review select literature on ethnicity and ethnic identity development

- Discuss potential reasons for the need to measure ethnicity (including the extent to which it may or may not be useful)
- Present different methods, including advantages and limitations, for measuring ethnicity
- Explore implications for practice

Perspectives

The increase in multicultural populations in the U.S. has raised urgency of understanding commonalities and differences among ethnic groups (Lee, 2001). Ethnic identity is considered a critical aspect of an individual's self-concept and broader identity development (Tajfel, 1981) and has been considered by some as essential to psychological functioning. Researchers, therefore, suggest that ethnic identity is an important consideration in the psychological development and socio-cultural processes (Phinney, 1990;) which impacts individual and group experiences in a range of areas, including learning (Chavez & DeBrito, 1999) and consumer choices (Laroche et al., 1991).

As museums and other informal learning organizations increase efforts to engage ethnically diverse audiences, evaluators have been more often asked to assess the success of initiatives to draw visitors from various ethnic communities. The need to better serve diverse constituencies in the informal learning field has also increased researchers' and evaluators' interest in better understanding culturally diverse groups' values, decisions, and museum experiences. Yet while issues of culture and ethnic identity draw more attention, defining ethnicity is difficult (Petersen, Novak, and Gleason, 1982) and measuring ethnic identity even more challenging.

In this session, we will draw on work from a range of evaluation and research projects in which we either: a) measured ethnicity and used resulting data to examine differences in experiences and understandings and interest in exhibitions among visitors; or b) explored the extent to which ethnic identity and culture influenced participants' perspectives and experiences.

The focus of this session, however, is not about presenting one specific "appropriate" method to measure ethnicity or to present individual research findings *per se*. We seek to explore various approaches to measuring ethnicity, examining its complexity, nuances, and challenges. We will discuss these issues within the broader frame of conducting research and evaluation in culturally responsive ways. We envision an interactive session in which we present initial constructs and findings from our own work, then move to group discussion.

Importance

We argue that while ethnicity may be an important consideration, it is a complex construct requiring deeper examination to place it within broader socio-cultural dimensions. As museums increasingly ask evaluators and researchers to measure visitor ethnicity, it is imperative that we examine the underlying assumptions in doing so and the extent to which our current methods appropriately measure this construct. Furthermore, we suggest that measuring impact for broader audiences requires us, as researchers and evaluators, to examine these issues more deeply. We also contend that gaining awareness of these issues is critical to developing our (and museums') cultural competence.

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Internal Evaluation Departments: Clarifying the Public Value of Museums

Sarah Cohn, Session Chair, Science Museum of Minnesota
Marcie Benne, Oregon Museum of Science and Industry
Anna Lindgren-Streicher, Museum of Science, Boston
Kathleen Tinworth, Denver Museum of Nature and Science

Purpose

Participants will hear about different structures, perspectives, and ways of working as internal evaluation departments. The presenters will share lightning talks about the strengths, weaknesses, and lessons learned in their internal evaluation departments. Each presenter will speak to a specific topic relevant to the overall session objectives:

1. Communicating evaluation efforts and results throughout the larger organization,
2. Teaming internal and external evaluation,
3. Capacity building, and
4. Quality control processes.

Though the presenters' museums have long and rich histories, which include reflective practices and evaluation strategies, their formal evaluation departments are young. Though initially complicated, these museums find the work of their evaluation departments critical to the development process for their projects. The evaluation departments have written purpose statements and sets of core values that direct their work and define the departments' efforts for others. The session will quickly explain how these four evaluation departments communicate and support the public value and worth of the museum.

Teaming in-house evaluation with external contractors creates a unique lens through which to compare internal and external evaluation. It offers the opportunity to generate a model of best practices within visitor studies based on shared adherence to ethics, mutuality, reliability and validity, and goals and objectives. Even organizations with in-house evaluation often outsource some aspects of their work due to grants and funding requirements, or because of increasing workloads. Consequently, many evaluators face the task of collaborating with new partners. Throughout the presentation, emphasis will be given to the strategies, successes, and pitfalls of working with an external partner, especially when addressing the delineation of responsibility, the timeline, and budgeting.

These departments, as well as others, have turned to a pool of part-time staff and volunteers to assist with various aspects of evaluation and research projects. This approach allows for a higher volume of work to be

completed but also has potential challenges. This session will focus on strategies for hiring, training, and retaining this pool of staff.

Developing quality control processes is essential to the success of internal evaluation departments. Control processes may include a workflow that can be tracked electronically, personnel to monitor data quality, institutional guidelines for data access and security, and consistent training across all evaluation staff. This presentation and discussion will focus on the benefits, costs, and ongoing challenges of trying to implement each of these approaches. Come share what has worked for you and where you are still trying to improve.

Perspectives

Participating presenters each help lead high-quality evaluation and visitor studies departments within museums. These museums have vastly different communities and cultures of practice. Being built within the specific museum community, each department has adopted different strategies to support their museum's mission and cultural norms while diligently working to define and clarify the museum's value to the public. Using various systems, the evaluation departments strive to support their museums' missions and work by strengthening the value and worth of the museums' products. The evaluation departments at these four museums continuously influence the impact and public value of their museums through their department processes.

Importance

This session will foster dialogue about systems within internal evaluation departments that help an institution communicate the public value of its informal learning environment. It promotes broadening discussions about visitor studies beyond single institutions, cohesively moving the ILE field towards increasing public value, advancing the visitor studies field, bridging gaps between research and practice, and innovative methodology, analysis, and practice. This session will be of interest to internal and external evaluators, researchers, program and exhibits staff, practitioners, administrators and anyone interested in working collaboratively towards shared goals.



Learning from the Edges, Moving to the Middle

Judy Koke, Session Moderator, Art Gallery of Ontario

Joe E. Heimlich, OSUExtension@COSI

Jessica Luke, Institute for Learning Innovation

Jennifer Novak-Leonard, WolfBrown

Purpose

Audience and visitor studies have long been viewed as medium or context specific. What is now becoming more understood is that what is learned in one context is relevant to other contexts, even though differences do exist. This panel and audience discussion will explore the differences and commonalities among three specific contexts: performing arts, art museums, and nature-based settings.

Perspectives

In learning exchange theory, both the physical and psychological contexts are important to the experience and in determining outcomes (Heimlich & Norland, 1994). If we consider museums, parks, zoos, and even orchestra

halls learning places (Falk & Dierking, 2000), it is necessary to approach learning with awareness of the nature of experience being constrained by the setting (Evans, 1995), and by expectations of individuals in attending to these settings (Marsick & Neaman, 1996).

Visitor and audience studies have, historically, been divided by type of experience. Performing arts organizations, art (and other collection) museums, living history, and environmental settings such as zoos, nature centers, parks and the like have separate journals, disciplinary training, jargon, and collective understanding and wisdom. Yet those evaluators and researchers who study across the types of institutions and contexts learn and carry with them transferable knowledge. This session will explore shared experiences and explorations across three contexts and, through dialogue with participants, explore where there are intersections, parallel activities or learnings, and differences.

Importance

Performing arts organizations have had difficulty articulating their true impact. In the absence of other measures, metrics such as ticket sales and attendance are used to gauge success when, in fact, missions define success in very different terms. Performing arts organizations are in the business of transforming individuals and communities through arts experiences. To assess the impact of arts programs, it is necessary to better understand and measure how audience members are transformed—what happens to them in their seats and what happens when they go home.

Within art museums there is baggage of history, and change in the institutions often comes from within and the visitor is not a party to the change process. Art museums have recently begun to consider visitors in ways that challenge older assumptions of the visitor and the visit process. One such change is to focus on a visit as a social experience. How individuals interact with others around the art and the context for creating interactions and dialogue are questions of concern for many museums. Likewise, the changing understanding of how individuals in a family unit interact around learning is driving a focus in many art museums of critically exploring family-learning.

Zoos, aquariums, nature centers, parks, conservatories, botanical gardens, arboreta, wildlife parks, ecotourism, nature-based tourism, and nature-based recreation are rarely considered cohesive, yet share the context being used to convey outcomes and facilitate visitor engagement toward mission and impact. Within the past decade, there has been an increase in examining the whole of environmental contexts as free-choice learning settings across the venues and purposes. Programming, and therefore evaluation and research in the last several years, have increasingly focused on behavioral outcomes related to individual and environment.

This discussion between panelists speaking from different perspectives (and different physical places in the room) and among the participants underlies measurement and communications of visitor and audience experiences, expectations, outcomes, and impacts. The panel acknowledges the role of context in determining value and how visitor studies across different contexts can lead to, and impact, our understanding of public value. Panelists respond to prompting questions from a theoretical perspective and then engage in discussion with the audience to explore applied perspectives and issues.

References

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Visitor Attention: A Closer Look

Stephen Bitgood, Jacksonville State University
Amy Cota-McKinley, Worcester State College
Shannon Robertson, Jacksonville State University

Purpose

The goals are to:

1. Provide a clear, comprehensive definition of visitor attention,
2. Suggest and apply objective criteria for assessing theories and models of attention,
3. Examine several theories/models in the visitor literature,
4. Review relevant literature from cognitive science, and
5. Describe an alternative model of attention.

Perspectives

At the core of successful exhibition design is the management of visitor attention. Any account of visitor attention must consider psychological and physiological processes as well as the environmental context in which the visitor experience occurs. Three presentations examine some of the major issues of attention.

Presentation #1: Stephen Bitgood

Visitor attention is defined as a group of psychological processes: that involve a continuum of three-stages (capture, focus, and engage); with each stage sensitive to a different set of variables; in which actions from these processes are motivated by a combination of personal factors (interest, past experiences, etc.), psychological factors (perceptual, cognitive, affective, decision-making), and environmental factors (social, architectural, etc.); and that are measured by several indicators or dependent variables (approaching an object, stopping, viewing time, reading, talking with others about, thinking about, learning and memory, rating scales, etc.).

To assess the merits of varying approaches to visitor attention, we suggest several criteria: comprehensiveness; predictive validity; parsimony; social validity or acceptability to the audiences likely to apply the approach; and usability of the model.

Our model proposes that visitor attention is a continuum from the initial capture to the deeper levels of engagement that result in desirable outcomes such as learning. Each stage or level of this continuum is influenced by a different set of variables. Engaged attention is possible only if the first two stages have occurred and if the perceived value (utility, benefit, or satisfaction) divided by costs (time, effort, entrance fee, etc.) is high.

Presentation #2: Shannon Robertson

Many areas of cognitive psychology relevant to visitor attention will be discussed in this paper including: individual differences, perceptual processes, choice/decision-making, critical thinking, neural processing, and learning. For example, laboratory studies have found that a target stimulus placed among distracters is more likely to capture attention if there are clear differences between the target and distracters (e.g., shape, color) and if the objects and distracters are placed farther apart. This applies to exhibit design: exhibit elements that blend into a complex are less likely to capture attention than those clearly differentiated from the background. Another example relates to decision-making and choice. In temporal discounting studies both the outcome (e.g., pleasant, satisfying experience) and the time involved are systematically changed and pairs of choices presented to participants. Both size of reward and time delay strongly influence choice. When given a choice between \$100 today or \$150 a year from now, many people choose the \$100 today, a sure thing! A year's delay "discounts" the value of money.

Presentation #3: Amy Cota-McKinley

While many writers have addressed the topic of visitor attention, because of limited time only five approaches will be discussed in this paper. These approaches include: Robinson-Melton (Melton, 1935; Robinson, 1928); Koran and his colleagues (e.g. Koran, Foster, & Koran, 1988); Moscardo (1999); Falk and his colleagues (e.g., Falk, Moussouri & Coulson, 1998); and Rounds (2004). Each approach will be examined in terms of its basic principles, comprehensiveness, predictive validity, parsimony, social validity, and usability.

Importance

Visitor attention is at the core of the visitor experience. Visitor studies needs a model or theory of attention that can guide practitioners to engage in more effective exhibition design.

References

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- Robinson, E. (1928). *The behavior of the museum visitor*. New Series No. 5. Washington, DC: American Association of Museums.
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SATURDAY, JULY 31

10:20-11:35am Concurrent Sessions—Seven



Understanding Local Communities' Perceived Value of the Tahoe Environmental Research Center (TERC)

Steven Yalowitz, Institute for Learning Innovation

Purpose

The purpose of this session is to present the result of research for a planning grant to help inform TERC about the greater Lake Tahoe area community's perceived value of the center and two 3-D visualizations included as part of their guided tour of the center.

The research questions focused on the following:

- How do various local groups currently perceive the center?
- How can the center better engage with both locals and tourists alike?
- What is the potential for the current 3-D visualizations (Lake Tahoe, Earthquakes) for impacting attitudes and behaviors about the Lake?
- How does the Lake Tahoe 3-D visualization impact middle school students during a school visit? Do they learn anything, think differently, are they inspired?

Perspectives

The UC Davis Tahoe Environmental Research Center (UCD-TERC) is located in Lake Tahoe, and communicates about the research UC Davis has been doing there since 1968. Included in this center is the Otellini 3-D Visualization lab, a state-of-the-art facility and the centerpiece to both understand the complexities of Lake Tahoe and to educate and inspire the next generation of scientists and engineers. Currently, it includes two 3-D visualizations: 1) earthquakes occurring from 1940 to present on a 3-D globe, and 2) a Lake Tahoe digital elevation model showing above-ground and below-water features of the Lake Tahoe landscape. The second is used to communicate how Lake Tahoe has changed over time and how it functions as a watershed.

In 2008, TERC received an NSF ISE planning grant (DRL #0755578) to further develop and test the potential for the 3-D visualizations to engage diverse groups of people in STEM-related (Science, Technology, Engineering Math) content.

Methods

The evaluation was designed to test the 3-D visualizations' potential, and included two main methods:

1. A series of 9 focus groups with a variety of audiences, including docents, 6th grade students, high school students, college students, tourists, Tahoe homeowners, local environmental agency staff, and Spanish-speaking residents (total n = 98)
2. A quasi-experimental study with local 6th grade students, half of whom experienced a guided tour including the 3-D visualization and a control group who received a tour but without the 3-D visualization (total n=246)

Importance

This study is relevant to the field of visitor studies and museums/informal learning institutions in two main ways: a) it deals with a topic many institutions struggle with: how a small science center with limited resources can best engage diverse communities, and b) the effectiveness of 3-D to engage in science content; a technology that is becoming more popular in both museums and mainstream media (e.g., movie theaters, television).

There are a number of findings highlighted during the presentation:

- **LEVEL OF TECHNOLOGY:** Even though 3-D technology is becoming commonplace in movies all groups included in the study enjoyed and found it engaging. There was a question about whether or not younger, more tech-savvy students would find it engaging enough, but this was not the case.
- **TARGETING AUDIENCES:** While most people thought TERC was engaging and enjoyable, they thought that some groups, such as tourists coming to Lake Tahoe for a singular purpose (i.e., gambling, hiking, etc.), would not be looking for an informal science education experience.
- **RECEPTIVITY TO ENVIRONMENTAL INFORMATION:** Middle students who experienced the 3-D visualization, compared to a control group, had significantly higher outcomes in self-reported learning about and engagement with environmental topics related to Lake Tahoe.

References

The full report includes a literature review with 40 references about 3-D visualization and role in science learning. Selected references include the following:

- Barab, S.A., Scott, B., Siyahhan, S., Goldstone, R., Ingram-Goble, A., Zuiker, S.J., & Warren, S. (2009). Transformational play as a curricular scaffold: Using videogames to support science education. *Journal of Science Education and Technology*. 18(4), 305-320.
- Cifuentes, L., & Hsieh, Y. (2004). Visualization for middle school students' engagement in science learning. *Journal of Computers in Mathematics and Science Teaching*. 23(2), 109-137.
- Harrell, S. V., Abrahamson, D., Morgado, L., Esteves, M., Valcke, M., Vansteenbrugge, H., Rosenbaum, E., & Barab, S. (2008). Virtually there: Emerging designs for STEM teaching and learning in immersive online 3D microworlds. In *Proceedings of the 8th International Conference for the Learning Sciences - Volume 3* (Utrecht, The Netherlands, June 24 - 28, 2008) (pp. 383-391). International Society of the Learning Sciences.
- Keating, T., Barnett, M., Barab, S.A., & Hay, K.E. (2002). The Virtual Solar System Project: Developing Conceptual Understanding of Astronomical Concepts Through Building Three-Dimensional Computational Models. *Journal of Science Education and Technology*. 11(3), 261-275.
- Yeung, Y. (2005). An Evaluation on Using Virtual Reality and 3D Visualisation in Science Education. In C. Looi, D. Jonassen, & M. Ikeda (Eds.) *Proceeding of the 2005 Conference on Towards Sustainable and Scalable Educational innovations informed By the Learning Sciences: Sharing Good Practices of Research, Experimentation and Innovation* (pp. 942-945). Frontiers in Artificial Intelligence and Applications, vol. 133. Amsterdam, The Netherlands: IOS Press.



Defining Value for Students: A Case Study of a College Art Museum

Alexa Miller, Davis Museum and Cultural Center
Emily Skidmore, Randi Korn & Associates, Inc.

Purpose

This session will explore an integrated approach to visitor studies conducted for the Davis Museum and Cultural Center that helped staff:

1. Redefine a primary audience,
2. Clarify the Museum's potential value for that audience, and
3. Begin the process of changing organizational practice so staff can demonstrate this value and achieve impact.

Perspectives

Randi Korn & Associates, Inc. (RK&A) has found integrating staff planning and reflection workshops into its research and evaluation work helps museums use evaluation findings across the organization, enabling staff to align initiatives with their audiences. This approach reflects an intentional practice model, representing an ideal strategic and day-to-day work cycle.

Methods

As part of an effort to evaluate the Davis' reinstallation of its permanent collection (2007-2009), RK&A employed two methods to collect information about the Museum's audiences with regard to art, college art museums, and the reinstallation galleries: focus groups and in-depth interviews. Additionally, RK&A facilitated two workshops—one that helped the Museum define its desired impact and another that helped staff reflect on the implications of study findings for achieving this impact.

Data & Analysis

Study methods resulted in qualitative data, meaning that results are descriptive. RK&A studied verbatim transcripts for meaningful patterns, and as patterns and trends emerged, grouped similar responses. This approach, also referred to as grounded theory, does not assume *a priori* but allows what is meaningful to naturally emerge from the data.

Results

Focus groups with students and faculty revealed that faculty confidently navigated galleries while students required more support. Students' discomfort experiencing and interpreting works of art prompted the Museum to define them as the primary audience for the reinstallation. These findings prompted another study to more fully understand Wellesley students, their relationship to art and art museums, and their experiences in the reinstallation galleries. Two key findings from this study resonated with staff: (1) students perceived art museum visits as time-intensive and needed a concrete reason to visit; (2) interviews confirmed students as beginning viewers of works of art who require support to build their art-viewing capacity.

Importance

These studies effected organizational thinking and practice when staff came together to reflect on findings and build capacity to use evaluation data. Through facilitated workshops, staff considered the impact of the Museum and its unique contribution to the education of Wellesley students. Reflecting on findings prompted

staff to reconsider how experiences with art can be integrated into students' holistic development over four years at college; and staff determined that the reinstallation's primary value was to contribute to this development by supporting direct experiences with works of art. The approach employed for the Museum has larger implications as a strategy for helping museums *define their value* for the audiences they serve. Only then can museums determine how best to align this potential value with the needs of their "public" to achieve impact.

References:

- Housen, A. (1999, September). *Eye of the beholder: Research, theory and practice*. Paper presented at the Aesthetic and Art Education: a Transdisciplinary Approach Conference, Lisbon, Portugal. Retrieved from http://www.vtshome.org/system/resources/0000/0006/Eye_of_the_Beholder.pdf
- Korn, R. (2007). The Case for Holistic Intentionality. *Curator: The Museum Journal*, 50, 255-264. http://www.randikorn.com/docs/the_case%20for_holistic_intentionality_042007.pdf
- Yenawine, P. (1998). Visual Art and Student-Centered Discussions [Electronic version]. *Theory into Practice*, 37, 314-322. http://www.vtshome.org/system/resources/0000/0037/visual_art_and_student_ctr.pdf

Additional Information

Davis Museum's Web site - <http://www.davismuseum.wellesley.edu/>
RK&A's Web site - <http://www.randikorn.com/>



The Value of Listening to Voices that Are Usually Unheard

Maggie Esson, Education Programmes Manager, Chester Zoo, UK

Purpose

In the 21st century zoos are under coming under increasing pressure to demonstrate their public value in order to justify the keeping of exotic animals in captivity while charging the public to view them. The purpose of this investigation is to explore the values attributed to zoos as cultural institutions by an under-represented zoo audience – lone parents and their children living in social and economic deprivation.

Perspective

The methodological approach for this investigation was perceived as phenomenological and inductive, seeking a vantage point from which zoos can gain perspective on how audiences contextualize the zoo world within their own. Motivation for visiting is the subject of numerous investigations in the field of visitor studies (Falk et al., 2008; Packer and Ballantyne, 2002; Turley, 2001). Identifying reasons for not visiting is less well explored (Hood, 1983). This study sought to explore perceptions of family outing destinations, the attributes parents ascribed to destinations in relation to the value they placed upon them, and the factors affecting the decision of whether to visit or not.

Methods

The investigation comprised three dimensions of qualitative data collection using a multi-method, sequential framework (Cohen et al., 2003). Lone parents and their children made three semi-structured zoo visits and focus

groups were held at the end of their last visit. 100 parents took part in 18 focus groups. Several weeks after the zoo visit 40 semi-structured parent interviews were conducted in the community and 60 children completed Personal Meaning Maps.

Data & Analysis

Analysis of focus groups and interviews was conducted using a qualitative coding matrix, refined through inter-coder agreement (Miles and Huberman, 1994; Falk & Gillespie, 2009). A modification of Falk and Dierking's four dimension analysis of PMMs was devised for this situation where access to children was limited to post-learning experience only (Falk et al., 1998).

Results

Content analysis of focus groups transcripts and interviews showed that parents associated a museum or science centre visit with free entry and a strong educational component. Parents dismissed art galleries as being elitist and not for families, even though they were perceived to be to some extent 'educational'. Zoos were also characterized as educational and healthy (being close to nature and outside) but were seen as expensive. Although parents felt that museums were educational they stated that they would only visit if entry was free. In the PMMs, 30 children (50%) scored 4 or more on a 7-point scale evidencing the ability of zoos to deliver an educational message.

Importance

Defining public value is becoming increasingly important to classify and evidence, and those institutions seeking to serve the public good may risk audience discrimination on economic grounds, as the ability to pay raises questions of inclusion. The educational value of this study is that it allowed normally absent voices to be heard. Together with two other presentations, the focus of this session is to explore the spectrum of what constitutes public value across a range of institutions including zoos.

References

- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (5th ed.). London: Routledge.
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New Directions for IMLS Museum Research

Carlos Manjarrez, Institute of Museum and Library Services
Erica Pastore, Institute of Museum and Library Services
Everett Henderson, Institute of Museum and Library Services

Purpose

This session consists of three parts:

- Paper #1: Participants will gain increased awareness of the scope of research activities conducted and sponsored by IMLS in the Office of Policy, Planning, Research and Communications to encourage more comprehensive data collection on museums and museum visitors at the national level and facilitate evidence-based policy research about museums' public value. Two papers following the introduction to IMLS research address current agency activities in museum research.
- Paper #2: Participants will be briefed on a new agency initiative to build a comprehensive web-based data portal of the museum landscape in the United States and on how institutions and individuals can participate in data collection and use of the portal.
- Paper #3: Participants will gain insight into recent findings on museum attendance by gender from two nationally representative household surveys. This analysis compares representative data from an IMLS funded research study on use of museums and libraries with results of the 2008 General Social Survey.

Perspectives

First Paper: Discussion of IMLS' Approach to Museum Data Collection

Presenter: Carlos Manjarrez, Associate Deputy Director of Research and Statistics, IMLS

This presentation will provide an overview of research activities conducted or sponsored by the new Office of Policy Planning, Research and Communications (OPPRC) at IMLS. The first part of the presentation will present a Federal perspective on public value and outline the analytic approach the agency will employ in the coming years to highlight the public value of the museum sector. We will discuss the use of Federal administrative data, annual and cross sectional surveys as well as the purchase of propriety data to develop a more comprehensive portrait of the museum sector and services. We will also discuss the agency's plans for annual collection of institutional data from museums and museum visitor information from representative household surveys. The paper will outline federally sponsored data collection efforts by NSF, Bureau of Labor Statistics, IRS and Census, and IMLS and will present various survey options under consideration. Feedback from participants on survey strategies under consideration is strongly encouraged.

Second Paper: Establishing a Baseline for Future Research

Presenter: Erica Pastore, Program Analyst, IMLS

While there are several private and not-for-profit organizations that compile data on museums, as well as a wide breadth of research on museums at the sector and academic level, these efforts use separate and often non-comparable taxonomies to identify and categorize museums and museum data, and the efforts are often weighted toward larger, more established museums. As such, there is no single reliable database of museums available for basic research and analysis of the museum sector or to provide the public and museum service organizations with basic details about the size and scope of the sector. IMLS' Museum Landscape Portal is a web-based project created to address this critical need by providing a single, comprehensive list of museums in the United States with consistent, up-to-date, baseline administrative data. This paper will provide an overview

of the Museum Landscape Portal, its objective, purpose and perspectives (both disciplinary and theoretical) highlighting the value of this data for researchers, the museum sector and the public.

Third Paper: Analysis of Museum Visitors Using Nationally Representative Data

Presenter: Everett Henderson, Statistical Analyst, IMLS

It is commonly believed that men are much less likely to visit museums than women. Most of the surveys on which this conclusion is based are non-random and therefore subject to selection bias. This paper uses the 2008 General Social Survey, a randomly sampled, nationally representative survey of American adults, to conduct cross-gender comparisons of museum attendance rates. The paper will feature descriptive and inferential statistics; a logistic regression will be conducted to determine if men and women truly have different museum attendance patterns or if any differences in attendance rates are due to other factors, such as income, education level, age and race/ethnicity. The paper will also use the 2006 Interconnections survey, a nationally representative household survey focusing on museum and library visitation, to compare the General Social Survey results with. The conclusions this paper draws will give us a more accurate picture of the demographics that drive museum attendance as well as help museum professionals target their outreach efforts more effectively.

Importance

This session discusses new museum research activities in the Research & Statistics Program in the OPPRC at IMLS. Recognizing the need for more state and national level data and research about museums, our current efforts focus on basic questions related to museum use and organizational ecology in order to better communicate the public value of museums in terms of scope, reach and impact of services across the country. These papers provide a sampling of the original research conducted by the OPPRC.

Additional Information

Recent publications from the Research and Statistics Program at IMLS can be found at <http://imls.gov/resources>. Within the Office of Policy, Planning, Research and Communications at IMLS, the Research and Statistics Program has released a number of reports including,

- [Opportunity for All: How the American Public Benefits from Internet Access at U.S. Libraries](#)
- [A Catalyst for Change: LSTA Grants to States Program Activities and the Transformation of Library Services to the Public](#)
- [Exhibiting Public Value-Government Funding for Museums in the United States](#)
- [Research Brief No. 1: Service Trends in U.S. Public Libraries, 1997-2007](#)
- [Research Brief No. 2: State Library Agency Service Trends: 1999-2008](#)
- [Data Note No. 1: Libraries Use Broadband Internet Service to Serve High Need Communities](#)
- [The Future of Museums and Libraries: A Discussion Guide](#)



Factors Influencing 6th Grade Students' Perceptions of an Electronic Fieldtrip

Omolola Adedokun, Jamie Loizzo, Loran Carleton Parker & Wilella Burgess

Purpose

Formal visits to museums, zoos, universities, and other educational institutions are designed for specific audiences and convey particular educational messages. How can we tell what factors influence perceptions of

these programs by their audiences? Using data from zipTrips, an electronic fieldtrip designed for middle school students as an illustration, our presentation will describe an analysis method for investigating the factors related to publics' perceptions of programs.

Perspectives

Electronic Field Trips (EFTs) have been identified as effective avenues to reduce the challenges associated with fieldtrips. ZipTrips was designed to provide middle school students the opportunity to see and interact with university scientists and their exciting work, without leaving their school. The goals of zipTrips are to: 1) increase student understanding of science, research, and career opportunities; 2) enhance student interest in science; and 3) make university researchers and labs accessible to students and their teachers. Although there are separate interactive zipTrips shows for 6th, 7th and 8th grade, this presentation focuses on the 6th grade experience. The EFT was piloted with a select audience before it was released for public viewing; both the pilot and public EFTs were approximately 45 minutes in duration and consisted of four core elements: an in-studio audience, live interaction with scientists, pre-recorded segments, and live experiments.

Method

We conducted linear regression analysis to investigate the effects on students' perceptions of the program by variables such as students' interest in science, race, gender, understanding of program content, teachers' perception, school type (i.e., public or private), and whether or not the school was in the pilot study.

Data & Analysis

Data come from students' (N= 409; male = 55%; female =45%) responses to a pre-post participation survey soliciting information about their demographic characteristics, attitudes and interests in science. The post-participation survey also included questions about students' understanding of the content and their perceptions of the impact of the program. The teachers were also asked to complete a post-participation survey soliciting information about their perceptions of the program.

Results

Our analysis revealed six statistically significant effects: first, students' interest in science was positively related to their perceptions of the program ($\beta = 0.19$, $p < .05$). Second, students' understanding of the program content had positive influence on their perceptions ($\beta = 0.44$, $p < .05$); third, teacher perception was also important ($\beta = -0.10$, $p < .05$). Fourth, we observed gender differences in students' perceptions of zipTrips in favor of girls ($\beta = -0.08$, $p < .05$). Finally, students in schools that were in the pilot study had higher positive perceptions than those in non-pilot schools ($\beta = .20$, $p < .05$). The variables combined, explained 32% ($R^2 = 0.32$) of the variability in students' perceptions of zipTrips.

Importance

Educators and program planners are always interested in examining the impact of their programs on the intended audiences. Just as important, however, are the factors that influence how a program is perceived by the audience. Although these findings are program specific, we believe that the results reinforce some important lessons regarding the factors that affect the publics' value, appreciation and perceptions of programs. The results also emphasize the critical need for educators and the VSA community to define and understand their audiences, and to plan programs that match their characteristics and build on their interests.

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Using Off-the-Shelf GPS Technology for Visitor Tracking Studies

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Purpose

Report the results of a study to evaluate the use of GPS technology for tracking visitor use of a large outdoor public venue and determining the effectiveness of interpretative signs in attracting visitors.

Perspectives

Understanding visitor engagement in large outdoor venues using conventional tracking methods poses logistic, time, and resource problems. Previous studies have indicated potential for using GPS technology in such studies (Arrowsmith & Chhetri, 2003; Hallo, Manning, Valliere, & Budruck, 2003; Modsching, Kramer, Hagen, & Gretzel, 2008). Outdoor venues often use signage vs. personnel to direct visitor attention to specific features. Although not a direct indication that engagement has taken place, holding time at a sign can indicate if a visitor stopped long enough to have some interaction with the sign and its venue target (Serrell, 1997; Sandifer, 1997). Interactive signs are generally reported to be more engaging than information-only signs (Sandifer, 2003).

Methods

Visitors to a nature sanctuary with a marked loop trail carried small, off-the-shelf, tamper-proof, non-obtrusive GPS tracking units during their time in the sanctuary. At the end of the visits, the tracking data captured by the units were downloaded to a computer for analysis using the software provided with the GPS units. Visitor demographics and venue-use history were collected via a questionnaire.

Data & Analysis

The GPS units recorded visitor location every 1 second and are reported to be accurate within 2.5 meters. The routes visitors travelled were overlaid on a Google Earth map of the venue for analysis. The data were used to determine visitor holding times (stops of 10 seconds or longer within a 5 meter radius) at locations where interpretative signs were placed (treatment conditions) and compared to visitor holding times at these same locations when the signs were absent (control conditions) and at locations of existing descriptive signs.

Results

The results showed that 40% to 65% of treatment visitors (36) recorded holding times at interpretative sign locations compared to 4% to 17% of control visitors (39) at these same locations in the absence of signs. The mean holding time at treatment signs was 47 seconds. The longest mean holding time was at a sign that invited visitors to interact tactilely with thigmomastic plants, 109 seconds. This sign also attracted over 60% of first-time and repeat visitors. This indicates that repeat visitors had likely not previously noticed this feature. Forty-three percent of the control visitors and 25% of the treatment visitors traveled routes that were distinctly off the marked trail. For those visitors who did not deviate from the marked loop trail, 62% traveled in the clockwise direction and 38% in the counterclockwise direction.

Importance

GPS technology was shown to be effective in collecting a variety of visitor use data in a nature sanctuary. This information is difficult to collect by other means and is useful information for enhancing visitors' experiences and protecting the natural area.

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Additional Information

The GPS units used in this study were the Pocket Track Pro Magnetic GPS Logger, with magnets removed, and the Land Air Sea 3100-EXT.



Family Group Learning at the Zoo: Missed Messages and Opportunities for Connections

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Purpose

Informal learning institutions often design exhibit objects and texts to impart specific educational messages matching the objectives and goals of the exhibit or institution. This session will examine how family groups at a small community zoo utilized these objects and texts to learn during multiple visits; visitors' conversations at exhibits and post-visit interviews will be used to explore what counts as a valuable learning experience to these family groups.

Perspectives

Educational objectives are often defined from the top down through comparison to academic standards created by governmental institutions or accepted messages created by advocacy organizations. These messages are not value and context free, however, as Lorimer's (2007) study of the public's reaction to a science and technology exhibit indicates. Family groups operate as communities of practice and make use of interactives, text, and objects provided by the zoo (Roth and McGinn, 1997) to create their own learning experiences during each visit.

Methods

I recruited families in person at a community zoo and through personal connections with families in the community. This study focused on three families whom I observed, videotaped and interviewed during multiple visits to the community zoo. The families' entire zoo visits were video and audio recorded. Immediately following each visit, I interviewed each family as a group about their experiences and interactions. I focused the interview on the group's utilization of learning resources provided by the zoo and their understanding of zoo as a valuable learning environment.

Data & Analysis

I conducted a preliminary analysis of each family's visit and discussed it with them during post-visit interviews; they evaluated or elaborated on the preliminary analyses, directing further analyses. Family conversation, gestures and actions during the visits were transcribed and coded to identify family use of text and objects in the exhibits using Hymes' (1972) SPEAKING framework. The analyses resulted in a snapshot of how each family values learning at the zoo and the specific ways that they enact these values during visits to the zoo.

Results

The families constructed their own curriculum during each visit. Families focused primarily on the physical exhibit—the constructed habitat for the animal or current animal behavior, rather than more abstract concepts such as habitat conservation or animal adaptation. The families focused their discussions on animals' daily lives, behaviors, food, feelings, appearance, and captive habitat, rather than the abstract scientific and conservation concepts that were the focus of the zoo's interpretive master plan.

Importance

The family groups in this study valued the zoo visit as an educational experience, but did not explicitly incorporate the educational messages of the zoo into their learning conversations at exhibits. They valued the zoo as a learning experience for the opportunities it provided for families to have new experiences with animals and did not explicitly link these experiences to the scientific and conservation concepts valued by the zoo. This session will stimulate discussion on how to bridge the gap between the values and concrete interests of family groups and the more abstract, conservation-oriented mission of the zoo.

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Community Identity and Age as Factors Shaping Visitors' Memories of the Aichi World Exposition 2005

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Purpose

This study investigated autobiographical memory characteristics as a function of *age* and *community identity* using the context of Japanese visitors' recollections of the 2005 Aichi World Exposition, Japan. The presentation will be highly relevant to those who seek to understand the factors that influence and shape the long-term impact of the visitors' experiences as measured through memories.

Methods & Analysis

A total of 82 Japanese nationals were interviewed and later completed a 38-item Memory Characteristics Questionnaire (MCQ). Age was stratified by two levels – university students aged 18 to 30 years and older adults aged 60 to 82 years, while community identity was also stratified by two levels – visitors who lived in and around the city of Osaka and those in and around the city of Nagoya where the exposition was staged. Participants' autobiographical memory characteristics (e.g., clarity of memories, emotion affect, retrospective reflection and rehearsal, sensory experiences) which were factors of the MCQ, were explored through two quantitative analytical techniques. Firstly, multivariate analysis of variance (MANOVA) was performed for all factors as a function of *age*, *community identity*, and the interaction of *age* by *community identity*. Secondly, hierarchical multiple linear regression analysis (HMLRA) sought to understand the contribution of MCQ factors that influence the *clarity* of visitors' long-term autobiographical memories (as a dependant variable). A three-level model explored the influence of *affect* on *clarity* (level 1), *affect* and *retrospective recollection & rehearsal* on the *clarity* (level 2), and all the influence of all MCQ factors (level 3).

Results

In almost every statistical test, either age or community identity or the interaction of both factors proved to significant on influencing visitors' long-term memories of the Aichi Expo. Furthermore, the results of the HMLRA indicated that *retrospective recollection & rehearsal* was the most influential factor on the clarity of visitors' long-term memories. Explanations of these significant effects are explored in terms of participants' socio-cultural identities which drive or motivate recollection and rehearsal activity and lead to rich or improvised autobiographical memories of the event.

Importance

The implications of this study speak loudly to the need to think critically about mechanisms to encourage and facilitate visitors' post-visit reflections on their experiences, as a function of their identity, in order to assist in the later development of clear and vivid memories.

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The Experiences of Pilgrims, Generalists, and Heritage Tourists at Historic Religious Attractions

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Purpose

This study explores and compares the experiences of pilgrims and other visitors at three English religious heritage sites, each site with differing levels of pilgrimage and tourism activity: Sites were chosen using Nolan and Nolan's (1989) typology of Christian religious sites, and included a major tourist attraction (Canterbury Cathedral), a pilgrimage shrine, with minimal tourism (the Shrine of Our Lady of Walsingham), and a religious festival (the Anglo-Christian pilgrimage festival, Glastonbury Abbey).

Perspectives

The research utilises a benefits-based approach to heritage site management, and employs a number of theoretical models to explore the experiences and benefits of gained at religious-heritage attractions. Primarily the research utilises Beeho and Prentice's (1997) Activities, Settings, Experience, and Benefits (ASEB) framework as a means of understanding the relationships between the setting or environment, the activities undertaken by visitors, the experiences reported, and the benefits gained from visiting religious-heritage sites.

Methods

This research used a concurrent, mixed-method research approach, employing qualitative and quantitative analysis techniques. A post-visit questionnaire was distributed to approximately 200 visitors at three religious-heritage sites (N=600). Sites were chosen based on a typology of Christian religious sites developed by Nolan and Nolan (1989). Each location has a significant history as a pilgrimage site, and differing levels of tourist activity. Ten in-depth, qualitative interviews were also undertaken at each site. Participants were chosen based on whether they self-identified as a 'recreational tourist', a 'heritage-tourist' or a 'pilgrim'. Interviews were undertaken using a laddering approach, in order to ascertain most significant/important aspects of the visitor experience and associated benefits.

Data & Analysis

Data was analysed using a number of different techniques. Quantitative data analysis of the questionnaires included simple descriptive statistics, factor analysis, both parametric and non-parametric significance testing,

and multiple regression analysis. Thematic analysis techniques were employed to analyse the in-depth interviews.

Results

The results of this research reveal significant differences between the experiences reported by different groups of visitors at the three religious-heritage sites across all four variants of the AESB analysis. Results suggest that it is the pilgrims and heritage tourists who are most likely to participate in the various activities on offer, purchase items in the gift shops, and undertake guided tours. Not surprisingly, pilgrims are the most likely to participate in the more spiritually focussed activities and report the greatest spiritually-focussed benefits. This research suggests a number of similarities between pilgrims and heritage tourists across all aspects of the ASEB framework.

Importance

This paper examines the nature of experiences of different groups of visitors to religious-heritage sites. The results have a number of important implications for both researchers and those who are charged with the management of visitor experiences at places of worship. In particular, the study provides information on the needs, motivations, and expectations of different groups of visitors to religious sites. The ASEB framework employed in this research has shown to be an effective means of conceptualising visitor experience. The measures developed for this research have shown to be an effective way of exploring visitor experiences and benefits at heritage sites, and may provide a useful tool for examining visitor experiences across a range venues and settings. The results of which will help visitor researchers to further understand the nature of visitor 'experience' and provide a means to linking experiences specific benefits and outcomes.

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