



insight evaluation services

**National Museum of Natural History  
Conference: 21<sup>st</sup> Century Learning in Natural History Settings  
February 12-15, 2012**

**Evaluation Report**

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## EXECUTIVE SUMMARY

This report presents the findings from the evaluation of *21<sup>st</sup> Century Learning in Natural History Settings*, a conference hosted by the National Museum of Natural History (NMNH) on February 12-15, 2012. The Museum engaged Insight Evaluation Services (IES) to conduct the evaluation, which sought to determine the effectiveness of the Conference in fostering a nationwide dialogue about what, how and why diverse publics learn in natural history settings, which would then inform the development of an enhanced research agenda for the field. The summary that follows highlights key findings from feedback obtained from Conference attendees and non-attendees; data collection took place between February and May, 2012, and included conducting observations, web-based surveys and follow-up telephone interviews.

### Key Findings: Conference Attendees

IES was a participant-observer at the Conference and informally spoke with approximately 24 of the 82 attendees about the proceedings. A web-based survey that was distributed to all attendees after the Conference was completed by 56 individuals; of these, 20 were later called on the telephone to discuss their reactions to the proceedings in more detail.

#### Attendee profile

- Over half of the attendees represented a natural history museum, with the remainder representing either a university department, zoo, arboretum/botanical garden, independent non-profit organization, science center, consulting organization or a combination of two or more entities. Over one-third were in a leadership or managerial role at their organization.
- One third of the organizations represented by attendees were located in the Western region of the United States; the remainder were fairly evenly distributed among the Southern, Northeastern and Midwestern regions of the country.
- Organizations represented by attendees varied widely in terms of their annual attendance figures, from 14 thousand to 5 million (onsite) and 2 thousand to 20 million (online) per year.

#### Pre-Conference activities

- Overall, attendees felt they had limited time in which to participate in the pre-Conference activities. However, the most helpful activity was that which encouraged organization/colleague discussions around focus questions; also very helpful was the activity to develop a slide to summarize pre-Conference activities. The January 2012 ASTC Connect Discussion saw greater participation by attendees and was considered more helpful than the September-October 2011 Discussion.

### **Conference activities**

- Attendees considered the cocktail hour/dinner, working breakfasts and lunches to be the most effective activities in promoting a collaborative effort among participants; also considered effective to this end were the key note presentations, which served to inspire and energize attendees to come together to achieve common goals, and the working group sessions, which allowed attendees to learn how their organizations complement each other. The large group discussions/summaries were considered most effective in helping the group move towards a national research agenda; the working groups were also considered helpful in this regard because they got attendees thinking about how key areas of interest to the field “fed into” the larger goal.
- The concurrent discussion of the proceedings via live wiki and Twitter updates were rated among the least effective in achieving the Conference goals of promoting a collaborative effort and moving towards a national research agenda. However, more than half of the attendees felt the wiki was a good way to document the proceedings, as well as provided a useful reference when reporting back to their colleagues at their home institutions; three-quarters of attendees indicated they visited the wiki at least once after the Conference.
- In terms of the working groups, attendees generally felt comfortable speaking up and felt their ideas/opinions were valued, as well as helped guide the conversation, which a number of individuals indicated was “invigorating” and “satisfying” on both a personal and professional level. At the same time, attendees were somewhat less inclined to agree that the working groups accomplished what they set out to do; attendees who were interviewed felt that contributing factors included ambiguous goals and expectations, “focus group” format of the break-out sessions, varying quality of facilitation, diversity of participants and the need to establish “common ground” among participants of different backgrounds.

### **Conference overall**

- Attendees very much appreciated the opportunity to attend the Conference, including the time and effort on the part of Conference organizers to host the meeting. Attendees rated highly their satisfaction with the responsiveness of Conference organizers/facilitators to daily feedback about how the proceedings were unfolding, as well as their satisfaction with the quality of the Conference overall. Attendees were least satisfied with the time allocated to network, reflect and recharge and commented on the lack of breaks.
- In terms of what they took away from the Conference, attendees most strongly agreed that they were provided with opportunities to collaborate with others, as well as gained new insight about the opportunities and challenges in the field. Attendees were least likely to agree that the Conference increased their understanding of best practices in the field, however there is evidence to suggest that there was some diversity of opinion on this aspect.

- Overall, attendees indicated that the most effective elements of the Conference were the working groups, the guest speakers, the opportunity to meet new people and/or learn from others, the organization/set up of the event and the Conference organizers/facilitators. Among the least effective elements were the “intense” pace of the Conference, including the limited number of breaks, the lack of clarity regarding overall goals to work towards and the set-up of the working groups, including the wide range of experience of attendees within each group.
- Attendees’ recommendations to Conference organizers for next steps included mainly creating a follow-up document (such as a draft of a proposed research agenda, attendees’ actions plans, work on the Declaration Statement, a summary of the Conference proceedings and/or a “primer” on learning research), continuing the conversation (i.e., meet again either in person or online) and making recommendations of things to consider for the organization and set-up of the next conference.
- Echoing earlier findings, the opportunity to network and gaining new/different perspectives from others in the field were considered among the greatest benefits of attending the Conference; additional benefits mentioned included the opportunity to participate in a national conversation, which was “inspirational” and offered a renewed sense of purpose.

### **Action plans**

- Half of the attendees who were interviewed indicated they had made some progress on their action plans, including identifying ways to adapt current projects at their institutions with ideas/strategies they learned at the Conference, presenting on the content of the Conference to their staff/colleagues, pursuing collaborations with people they met at the Conference and/or were working on new initiatives that were born of their Conference experience. The other half who were not making progress generally mentioned the limited reach of their job/organization, time pressures at work and the lack of communication with their partner-attendee; a few said they did not know how to proceed or questioned the usefulness of developing an action plan.
- More than half of those interviewed indicated that they were looking for leadership to keep the momentum of the Conference going and implied, if not directly stated, that such leadership should come from NMNH. Additional support that attendees felt organizers could offer post-Conference was the opportunity to meet again, or at least provide updates on what organizers and/or other attendees were working on, be it next steps, a research agenda or action plans. A few noted that even with organizers’ support, the lack of resources would continue to be a challenge.

## **Key Findings: Conference Non-Attendees**

Twelve applicants completed a web-based survey about their participation in any of the online discussions that took place before and during the proceedings; an additional six applicants provided responses about their participation via email. In addition, 11 individuals completed a web-based survey about their participation in the first ASTC Connect Discussion, which took place in September-October, 2011.

### **Applicant profile**

- Over one-fifth of the applicants represented a natural history museum, with the remainder representing either a nature center, an independent non-profit organization, a combination of two or more entities, a zoo, arboretum/botanical garden, science center, university department or a collections based museum. Just over half said they develop or implement education programs for live audiences; just under half were in a leadership or managerial role at their organization.

### **Applicants' participation in ASTC Connect Discussion, wiki and Twitter feed**

- Two-thirds of applicants said they did not participate in the ASTC Connect Discussion, mainly because they were not aware of the discussion when it took place. The remaining one third said they followed the Discussion.
- Almost none of the applicants said they participated in the Conference wiki, mainly because they were not aware of it when it took place.
- Two-thirds of applicants said they did not follow the Conference Twitter feed, again mainly because they were unaware of it.

### **ASTC Connect Discussion participant motivations**

- Three-quarters of ASTC Connect Discussion participants said they were prompted to take part in the online forum because they had a specific interest in natural history settings; almost half said they also had a specific interest in informal learning research.
- Participants were somewhat divided in their opinion of the online forum in sharing evaluation information/resources/research results and best practices about learning in natural history settings, with approximately half finding it lacking and the other half finding it successful.

### **Participants' level of participation in the wiki and Twitter feed**

- Most ASTC Connect Discussion participants indicated they were not aware the Conference proceedings were going to be online and so did not follow the wiki or the Twitter feed.

## DISCUSSION

The findings of this evaluation reveal that the Conference, *21<sup>st</sup> Century Learning in Natural History Settings*, hosted by the National Museum of Natural History, was a unique opportunity for a diverse group of natural history and learning research professionals to come together and discuss key issues that concern the future of the field—in particular what, how and why diverse publics learn natural history and the role natural history settings can play in their pursuits. Not only did attendees gain new insight about the challenges and opportunities they share with their counterparts across the United States and beyond, more than a few also indicated that they came away from the proceedings feeling “inspired,” “renewed” and “reinvigorated” about the work they do. Moreover, the Conference offered a space for attendees to connect with people “that traditionally don’t talk much to each other,” as well as initiate new collaborations, which clearly supported one of the main goals of the meeting: to build a community that is eager and willing to work together on developing an enhanced research agenda that drives innovative and effective practice and which ultimately meets the needs of a 21<sup>st</sup> Century audience.

The overall success of the Conference can be attributed, in no small part, to a tremendous amount of thought and planning on the part of the organizing committee. The Conference was designed around a number of activities that effectively supported a fairly ambitious schedule and moved the conversation forward. In particular, attendees spent the majority of their time in working groups that were tasked with discussing specific themes. These working group discussions were considered one of the most effective elements of the Conference, with many attendees finding them engaging on both a professional and personal level, especially as the goals of these discussions became a little clearer and more concrete over the course of the four-day meeting. The flexibility of the organizers to make changes to the format of the working groups once they got started was also helpful in that regard, as were the large group discussions and summaries, which served to keep everyone’s focus on the task at hand.

At the same time, there were a number of attendees who did not agree the working groups were a good way to achieve the Conference goals. That the goals for these discussions never fully emerged was a challenge for those who were not comfortable with a certain level of ambiguity. In addition, the focus group or brainstorming feel of the discussions was an issue for those who wanted to probe topics more deeply. Another stumbling block was the wide range of experiences that attendees brought with them, which led to confusion on the part of some regarding the use of specific terms and concepts (if not the purpose of the entire Conference) or led to frustration on the part of others with having to spend time establishing “common ground.” To this end, it may be that organizers missed an opportunity to set up attendees’ expectations for the Conference. While various activities to generate thinking and promote pre-Conference conversations about the topics to be discussed were assigned, perhaps it would have been useful to provide more details about the purpose and organization of the meeting, as well as to suggest background reading material for those who felt they might need it.

It is also worth noting that attendees said they would have benefitted from a longer lead time in which to complete pre-Conference activities. While the timing of the second ASTC Connect Discussion created a conflict for some, the short notice regarding upcoming meeting items appears to have limited the extent to which attendees could adequately prepare in general. For example, not knowing until the first day of the Conference that the proceedings would be documented live meant that a few attendees did not consider taking a laptop or computer to the meeting. The last-minute nature of Conference-related communication likely also explains the significant absence of participation in the wiki and Twitter feed on the part of non-attendees who were surveyed and who mostly indicated they were not aware that the proceedings would be available to them via those media. As such, the Conference was perhaps least successful in supporting field-wide engagement in the national conversation, which would be an area the organizing committee might strengthen if the National Museum of Natural History should continue to take the lead in this effort.

The wiki itself was clearly a testament to attendees' active participation in the discussions that took place, documenting as it did all the discussions that took place. The wiki provided a useful way for attendees to learn about what those in other working groups discussed; the wiki also gave attendees a reference point when they returned to their home institutions and presented to their colleagues and staff about their experience. At the same time, it is important to note that the content of the wiki was primarily written by the Conference "scribes." Even though only a few of those surveyed made a point of saying so, it may be the case that the wiki was in fact "too formal" to really encourage anyone outside of an "official" Conference capacity to comment on or ask questions about the proceedings; as one of these attendees further suggested, a more informal tool such as Google Docs, that offers the audience a more inviting "backchannel" might be considered next time. (Interestingly, while the Twitter feed was essentially set up for that purpose, relatively few attendees tweeted actively. As IES noted, it was difficult to get Wi-Fi access in the Museum building, which would also account for the limited contributions to the wiki. Other reasons not to use Twitter could have been that it was "distracting," "it was one more thing we had to do" or there was a lack of familiarity with it, as a few attendees indicated about the wiki. However, Twitter is not designed to capture the entirety of a meeting and so the suggestion to explore other options is reiterated. Furthermore, it is suggested that whatever option is used in future, organizers provide a short tutorial on how to use it).

Attendees also noted that while they were very satisfied with the quality of the Conference overall, they found the pace to be fairly "intense." Indeed, attendees frequently mentioned that they would have liked more or longer breaks to network, reflect or recharge. For instance, while attendees appreciated the need to make the most of each day, having guest speakers present during meals—as much as those presentations were enjoyed—meant less time to meet new people. In addition, for all the work that was accomplished there was also some sense that there was no tangible end-result upon the conclusion of the Conference. Certainly, attendees agreed they took away new insights about the challenges and opportunities in the field, as well as gained a greater sense of community among their fellow practitioners. But



when asked about their recommendations for next steps, almost half mentioned the creation of a follow-up document, such as a proposed research agenda, others' actions plans, any further work on the Declaration Statement that was begun by one of the working groups or even a summary of all the notes that were taken.

In terms of next steps, almost half of the attendees also mentioned that they would like to continue the Conference dialogue. Not surprisingly then, IES noted some disappointment that no real communication had occurred after the meeting other than getting reminders to take the evaluation survey and complete the action plans; one person who was interviewed almost two months later said he “was hoping for a more active post-Conference follow-up to maintain the energy and purpose of the Conference...the wind went out of the sails...” While the Conference “call to arms” was taken very seriously by attendees and many recognized that it was their responsibility to fulfill the commitment they had made, it was evident that attendees were looking for direction from NMNH to push them forward. If the Museum takes up this challenge, it may be that one way to more effectively communicate with the field would be to set up an online presence that anyone can access for information and updates. One model that might be followed is that of Museums and the Web located at <http://www.museumsandtheweb.com/>. This site essentially houses all discussions, news, tweets, images, blogs, etc. that serve the field of “cultural informatics” and revolve around an annual conference. In a similar manner, there could be a centralized location for all content generated by the 21<sup>st</sup> Century Learning in Natural History Settings Conference, including action plans and other work conducted by attendees or designated task forces throughout the year. While time and other resources would always be needed to create such a site, the logistical issues in sending out messages, reminders, documents, as well as keeping the wiki up at a different address would be avoided and the field would have a “one-stop shopping” opportunity to access what they need when they need it.

In the meantime, it seems important to encourage attendees to continue their work on their action plans, either by offering feedback on steps each organization has identified thus far or facilitating a way to share those plans with others who are interested in seeing them. It may be that next time there is a task of this nature, where it is a requirement of participation to commit to something in writing, attendees can work together on the assignment in a more structured format. Specifically, Conference facilitators can establish guidelines for appropriate action items, as well as offer advice as questions come up; after a designated period of time, the group debriefs on the process and/or discusses what they came up with.

## INTRODUCTION

The National Museum of Natural History (NMNH) received funding from the National Science Foundation (NSF) to initiate a national, collaborative effort to understand what, how and why diverse publics learn natural history and what role natural history museums can play in their pursuits, as well as discuss how these findings can translate into widespread practice. As part of this effort, NMNH invited education, exhibits and science staff from natural history settings, as well as researchers and innovators from the informal education field to participate in a Conference that took place at the Museum on February 12-15, 2012. The Conference was designed to explore the ideas generated from online discussions that took place in late 2011-early 2012, as well as implement an action plan that supports a new collaborative community and sustains an enhanced research agenda going forward.

To determine the effectiveness of the Conference in accomplishing its goals, NMNH engaged Insight Evaluation Services (IES) to conduct an evaluation of the proceedings. Specifically, the evaluation assessed the extent to which the Conference activities:

- were well organized and implemented;
- encouraged a collaborative effort among participants;
- offered participants new opportunities, insights and ideas to take back to their organizations; and
- promoted the development of a national research agenda.

The evaluation principally sought feedback from Conference attendees, and to gauge the extent to which the proceedings supported field-wide participation in the national conversation, solicited the reactions of non-attendees, as well. This report presents the findings of the evaluation.

## METHODS

IES collaborated with NMNH to identify the methods that would best address the evaluation objectives; three data collection strategies were used including observations, web-based surveys and follow-up telephone interviews.

### ***Conference observations***

Kirsten Büchner of IES attended the Conference on February 12-15, 2012, as a participant-observer, recording attendees' experiences and conducting brief, informal interviews with a convenient sample of Conference attendees ( $n \cong 24$ ) who were willing to provide insight into the process that was unfolding.

### ***Web-based surveys: Conference attendees***

To determine the effectiveness of the Conference, a web-based survey was created on SurveyMonkey® to seek feedback from attendees about various aspects of the proceedings. The survey was designed to take approximately 20 minutes to complete and sought primarily quantitative data (specifically via rating scales), but included a number of open-ended questions, as well. On March 8, 2012 (approximately one month after the Conference), a letter with the link to the survey was electronically mailed to all 82 individuals in attendance, not including NMNH Conference organizers and staff (See Appendix A for a copy of the survey, including the message that attendees received). Two reminders to complete the survey (that included the link to the survey) were sent to attendees on March 15 and March 22; the survey was closed on March 25, 2012.<sup>1</sup> Fifty-seven attendees started the survey and 56 completed it.

### ***Follow-up telephone interviews***

To gain further insight into attendees' reactions to specific aspects of the Conference, follow-up telephone interviews were also conducted; interviews were open-ended and sought feedback from attendees about the working groups and action plans in particular (See Appendix B for a copy of the interview guide). A sample of 20 individuals was drawn from the 33 attendees who, on the web-based survey, indicated their willingness to be called to discuss their responses; these individuals were purposefully selected to include a representative mix of opinions and in cases where two people from the same organization had agreed to be interviewed only one was called. Interviews were approximately 15-20 minutes long each and took place between March 28 and May 9, 2012.

### ***Web-based surveys: Non-Conference attendees***

In an effort to gauge the inclusiveness of the Conference proceedings (including the pre-Conference ASTC Connect Discussion, "What do we know about learning in natural history settings?" that was open to the field, the Conference wiki and the Conference Twitter feed), two 5-minute web-based surveys were created on SurveyMonkey® and distributed to non-Conference attendees, as described on the following page.

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<sup>1</sup> The survey was temporarily re-opened on March 30, 2012, to allow one additional attendee to complete it.

*Applicants:* The first survey was designed for those individuals who applied but were not selected to attend the Conference; the rationale for this survey was that applicants' interest in the topics to be discussed was such they ostensibly would follow the proceedings online. The letter and link to this survey was sent out on March 20, 2012, to 32 applicants for whom an email address had been provided (see Appendix C for a copy of the survey, including the message that applicants received). A total of 12 individuals took the survey, with an additional six who provided an email response to the invitation to take survey.<sup>2</sup>

*ASTC Connect Discussion participants:* The second survey was designed for those individuals who participated in the pre-Conference ASTC Connect Discussion, "What do we know about learning in natural history settings?" which was open to the field. In order to achieve a minimum sample size of 12-15, 30 names were drawn from the archived discussion located on the ASTC Connect site using a systematic random sampling method.<sup>3</sup> The letter and link to this survey was first sent out on March 11, 2012 (See Appendix D for a copy of the survey, including the message that participants received), with additional reminders (including the link to the survey) sent on March 19 and March 22; the survey was closed on March 25, 2012. A total of 11 participants took the survey, with one additional person who provided an email response to the survey.

The findings are discussed in two main sections, as follows:

1. Attendee Reactions to the Conference
2. Non-Attendee Reactions to the Conference

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<sup>2</sup> Based on the initial responses received, no reminders to complete this survey were sent.

<sup>3</sup> All participants (excluding Conference organizers and attendees) were listed in alphabetical order by first name and every fourth name selected to be surveyed (if the person selected had a Smithsonian Institution email address, s/he was skipped and the next person down was selected).

# FINDINGS

## 1. Attendee Reactions to the Conference

Attendee reactions to the Conference were captured primarily via the web-based survey that was distributed approximately one month after the Conference took place; observation and telephone interview data are used to supplement and augment the web-based survey data.

### 1.a Profile of attendees and the organizations they represented

The web-based survey began with a series of questions designed to obtain a profile of the attendees who attended the Conference and the organizations they represented. The first question asked attendees about their main responsibilities at work and asked them to select as many descriptions from the list provided as applied to them. Table 1 below shows that attendees have an average of two responsibilities each (119 responses divided by 57 attendees); over one third are in a leadership or managerial role at their organization (35%, n=20). “Other” responsibilities (5%, n=3) included “acting as media spokesperson,” “developing education products for media formats” and “helping museums plan their work” (one mention each).

**Table 1. Attendees’ main responsibilities at work.**

Main responsibilities	Attendees (n=57)
I conduct research in natural or cultural science (biologist, anthropologist, paleobiologist, etc.)	25% (n=14)
I manage natural or cultural collections	18% (n=10)
I develop or implement education programs for live audiences	30% (n=17)
I develop or implement programs or services for online/web-based audiences	19% (n=11)
I conduct learning research (social scientist, education researcher, etc.)	26% (n=15)
I conduct program or education evaluations.	23% (n=13)
I develop museum exhibitions	28% (n=16)
I am primarily in a leadership role, and/or manage people whose focus is one of the above	35% (n=20)
Other	5% (n=3)

Attendees were then asked to identify the type of organization they represent, with Table 2 below showing that over half (51%, n=29) selected “natural history museum” from the list provided.

**Table 2. Organizations represented by attendees.**

Organizations	Attendees (n=57)*
Natural history museum	51% (n=29)
University department	12% (n=7)
Zoo, arboretum, or botanical garden	11% (n=6)
Independent non-profit organization	9% (n=5)
Combination of two or more entities (e.g., science center with collections)	7% (n=4)
Science Center	5% (n=3)
Consulting organization	5% (n=3)
Nature center	0% (n=0)

\*Percentages do not sum to 100% due to rounding.

Table 3 below shows the general location of organizations that Conference attendees represented. One-third (n=19) indicated their organizations are in the Western region of the United States; almost all of the other organizations represented were fairly equally distributed across the Southern, Northeastern and Midwestern regions of the country (21%, 19% and 19%, respectively).

**Table 3. Location of organizations that attendees represented.**

Organization location <sup>4</sup>	Attendees (n=57)*
West (Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico, Alaska , Washington, Oregon, California, Hawaii)	33% (n=19)
South (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Mississippi, Alabama, Oklahoma, Texas, Arkansas, Louisiana)	21% (n=12)
Northeast (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey)	19% (n=11)
Midwest (Wisconsin, Michigan, Illinois, Indiana, Ohio, Missouri, North Dakota, South Dakota , Nebraska, Kansas, Minnesota, Iowa)	19% (n=11)
Outside USA (Canada, Australia, U.K.)	5% (n=3)
Throughout the United States	2% (n=1)

\*Percentages do not sum to 100% due to rounding.

<sup>4</sup> Regions are per Census Bureau: [http://www.census.gov/geo/www/us\\_regdiv.pdf](http://www.census.gov/geo/www/us_regdiv.pdf)

Attendees were also asked to estimate the number of visitors their organization serves annually both onsite and online (Table 4).<sup>5</sup> Clearly, attendees came from organizations that varied widely in terms of their attendance figures; indeed, the numbers of visitors served by their organizations ranged from 14,000 to 5,000,000 onsite and 2,000 to 20,000,000 online (see Table 5 below).

**Table 4. Attendees’ estimates of visitors served annually onsite and online.**

Estimated visitors	Onsite*	Online**
<100,000	17% (n=7)	16% (n=5)
100,000 – 250,000	21% (n=9)	9% (n=3)
250,001 – 500,000	24% (n=10)	13% (n=4)
500,001 – 750,000	7% (n=3)	6% (n=2)
750,001 – 1,000,000	10% (n=4)	13% (n=4)
1,000,001 – 5,000,000	21% (n=9)	22% (n=7)
>5,000,000	0% (n=0)	22% (n=7)

\*Percentages based on 42 responses.

\*\* Percentages based on 32 responses; percentages do not sum to 100% due to rounding. Given that all the organizations/projects represented at the Conference have a web presence, the difference in onsite vs. online responses is likely due to participants being unable to provide an estimate of virtual visitors.

**Table 5. Range of visitors served annually onsite and online.**

Organization site	Range of visitors served	
	Minimum	Maximum
Onsite	14,000	5,000,000
Online	2,000	20,000,000

<sup>5</sup> At least five pairs of attendees from the same organizations offered estimates of on-site visitation, which differed slightly but still fell within the same ranges identified in Table 4; in terms of online visitation, four of these attendees did not provide an estimate for online visitation while their partners did.



### **1.b Attendees' reactions to pre-Conference activities**

Attendees were asked about the extent to which each of the pre-Conference activities helped them prepare for the Conference and to select one answer on a scale of 1 to 5, where 1=not helpful at all and 5=extremely helpful, or to select N/A if they did not do a given activity. As Table 6 below shows, the activity that encouraged organization/colleague discussions around focus questions was considered most helpful ( $\bar{x}$ =3.68). As an optional activity, the video was watched by just over one-third of attendees (39%, n=22); among those who watched the video, it was considered the least helpful for preparing for the Conference ( $\bar{x}$ =3.00).

**Table 6. Attendees' ratings of the helpfulness of pre-Conference activities.**

<b>Pre-Conference activity</b>	<b>N/A*</b>	<b>Weighted Average</b>	<b>±</b>
ASTC Connect Discussion Sept. 28-Oct. 4, 2011: <i>What do we know about learning in natural history settings?</i> (open to the field)	19	3.08	1.06
ASTC Connect Discussion Jan. 9-13, 2012: <i>21<sup>st</sup> Century Learning in Natural History Settings Pre-Conference Discussion</i> (open to Conference participants only)	6	3.39	1.09
Organization/Colleague discussion around focus questions (at home organization, before attending the Conference)	4	3.68	0.97
Develop slide to summarize pre-Conference activities	3	3.46	1.13
Video "Page 1: Inside the New York Times" (optional activity)	35	3.00	1.24

\*Attendees who indicated they did not do the activity; n=57.

Attendees were then asked to provide comments about the usefulness of the pre-Conference activities or to offer suggestions for other ways that could have helped them prepare for the Conference, to which one-third (n=19) provided a response.<sup>6</sup> As described below, attendees mainly commented on the ASTC Connect Discussions or offered general observations about the activities overall; a common theme was the limited time attendees felt they had in which to participate, either because the pre-Conference activities were set up too close to the Conference<sup>7</sup> and/or they were busy with other commitments.

*Comments about the ASTC Connect Discussions (53%, n=10)*

Of these comments, four were positive with attendees noting that the discussions were helpful in “jump starting the conversation” and “knowing the players that would be involved”; four attendees said the conversation was uninformative and “random,” with one of these suggesting that the moderators might have stepped in to “facilitate between people/orgs they thought would work well together”; four attendees indicated they did not have time to participate fully in the online forums, with two noting they would have preferred that the online forums take place “earlier” and not near the NSF Informal Science Education January deadline; one attendee also mentioned being unaware of the Sept-Oct 2011 Discussion until after the Conference.

*Comments about the pre-Conference activities overall (37%, n=7)*

Of these comments, two were about the limited time available in which to participate in the activities; two were from attendees who felt the activities were not conducive to illuminating the goals of the Conference; two attendees said the activities were “helpful,” with one adding that “they prompted great discussions in our own organization”; one attendee appreciated the fact that both scientists and educators were included in the conversations. (Indeed, on the first evening of the Conference, one attendee commented that “the purpose of the Conference is to bring learning researchers and natural history people together; traditionally, they don’t talk much to each other.”)

*Comments about the organization/colleague discussion, slide and video (21%, n=4)*

Regarding the organization/colleague discussion, two attendees offered comments, including one who said “it was helpful (because) it opened our eyes to issues that were internal that we weren’t fully aware of” and one who wished “more time” had been allotted for that activity. Regarding the slides, one attendee said they were poorly implemented: “The slides were too small, too high, the room too bright and we were intentionally socializing every time they were up.” (Based on observations conducted by IES, the slides went by fairly quickly and one

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<sup>6</sup> Open-ended responses discussed in this and remaining sections of the report may sum to more than 100% because more than one answer was accepted for each question. In addition, counts may not total the sample size because those surveyed were not required to answer every question.

<sup>7</sup> Per NMNH staff, information about the first ASTC Connect Discussion was sent out on September 26, 2011 and information about the second ASTC Connect Discussion, including additional information about the Conference, was sent out on December 13, 2012; a reminder about the second ASTC Connect Discussion went out on January 5, 2012.

attendee commented, “I hope they give us the slides as handouts as they look like they’d be interesting to read.”) One attendee indicated being unaware of the video activity.

*Other comments about the pre-Conference activities (11%, n=2)*

One attendee made a suggestion about the pre-Conference activities (see comment below) and one attendee indicated that while he assigned ratings to each of the pre-Conference activities, he did not engage in all of them given that he “was a Conference advisor not located at a home institution.”

“It would have helped to have (established) a common vocabulary prior to the Conference (because) I kept getting confused about the term ‘research agenda’ which means something completely different to me as a scientific researcher than it means to the learning research community.”

### **1.c Attendees' reactions to Conference activities**

Attendees were also asked a number of questions about the effectiveness of specific Conference activities, as well as about their satisfaction with the Conference overall.

- **Attendees' survey responses regarding the effectiveness of Conference activities in promoting a collaborative effort and moving towards a national research agenda**

Attendees were asked to rate the effectiveness of specific Conference activities in promoting a collaborative effort among those present using a scale of 1 to 5, where 1=not effective and 5=extremely effective. Table 7 on the following page shows that the cocktail hour/dinner, working breakfasts and lunches were considered the most effective to this end ( $\bar{x}$ =4.16), followed by the key note presentations and working group sessions ( $\bar{x}$ =4.09,  $\bar{x}$ =4.07, respectively). Indeed as IES observed at the Conference, the less “structured” opportunities during meals allowed attendees to make connections and discuss possible partnerships with other organizations; the presentations, especially those by the keynote speakers, served to inspire and energize attendees to come together as a field to achieve common goals; the working groups allowed attendees to get to know each other better and get insight on ways their organizations complement each other.

Table 8 on the following page summarizes attendees' ratings (using the same 5-point scale) of the effectiveness of the specific Conference activities in moving towards a national research agenda, with the large group discussions/summaries and the working group sessions considered the most effective to this end ( $\bar{x}$ =3.89,  $\bar{x}$ =3.80, respectively). Certainly, the working groups were designed to get attendees thinking about key areas of interest to the field and, as IES observed, the large group discussions/summaries gave everyone the opportunity to learn how each working group “fed into” the ultimate goal.

The concurrent discussion of the proceedings via live wiki and Twitter updates was rated least effective ( $\bar{x}$ =3.27) in promoting a collaborative effort (see Table 7) and next to least effective ( $\bar{x}$ =3.10) in moving towards a national research agenda (see Table 8); the next section of the report addresses attendees' opinions about the wiki in particular. As far as the use of Twitter, IES noted that one-fifth of attendees (n=16) posted updates. IES observed that getting a Wi-Fi connection in the Museum building was difficult, which may have hampered efforts by others to tweet; as one attendee noted: “I'm having trouble with tweeting, it's slow in updating.” Non-attendees' tweeting about the Conference numbered approximately 18; the second half of this report addresses the level of participation by non-attendees in the concurrent discussion of the proceedings. In short, while attendees' tweets allowed those following to learn what they considered interesting, salient, worthy of further discussion, etc., they do not appear to have been conducive towards accomplishing the main goals of the Conference specifically.

**Table 7. Attendees’ ratings of the effectiveness of Conference activities in promoting a collaborative effort.**

Conference activity	N/A <sup>^</sup>	Weighted average	±
Networking Activities (e.g., participant slides, speed “geeking”)	0	3.48	1.05
Breakout/Working Sessions (small groups)	0	4.07	0.96
Presentations (e.g., keynote speakers, tours of NMNH)	0	4.09	0.89
Large group discussions and summaries	0	3.75	0.91
Concurrent discussion of Conference proceedings via live wiki, Twitter updates	7	3.27	1.21
Cocktail hour/dinner, working breakfasts, lunches	0	4.16	0.68
Reflection time/action planning with team member from your organization at the end of Feb. 13 and Feb. 14	9	3.72	0.92

**Table 8. Attendees’ ratings of the effectiveness of Conference activities in moving towards a national research agenda.**

Conference activity	N/A <sup>^</sup>	Weighted Average	±
Networking Activities (e.g., participant slides, speed “geeking”)	1	2.73	1.07
Breakout/Working Sessions (small groups)	1	3.80	0.96
Presentations (e.g., keynote speakers, tours of NMNH)	1	3.53	0.97
Large group discussions and summaries	2	3.89	0.87
Concurrent discussion of Conference proceedings via live wiki, Twitter updates	8	3.10	1.23
Cocktail hour/dinner, working breakfasts, lunches	3	3.34	0.80
Reflection time/action planning with team member from your organization at the end of Feb. 13 and Feb. 14	10	3.26	0.87

<sup>^</sup> Attendees who indicated they did not do the activity; n=56. NOTE: Discrepancies in Tables 7 and 8 between the numbers of participants who did not do an activity are due to four instances in which “N/A” was assigned to a given activity in one question but not the other. An “N/A” was consistently assigned to the following activities in each question: Concurrent discussion of Conference proceedings via live wiki, Twitter updates (n=7) and Reflection time/action planning with team member from your organization at the end of Feb. 13 and Feb. 14 (n=8).

- **Attendees’ survey responses about the wiki**

Conference organizers created a wiki to document the proceedings in real time, with the goal being to foster an inclusive discussion among attendees and non-attendees, as well as to solicit comments, questions and ideas regarding on-going Conference activities. On the survey, attendees were asked to use a 5-point scale to rate the extent to which they felt the wiki was successful in this goal, where 1=not successful at all and 5=extremely successful, or to select N/A if they did not follow the wiki. Table 9 below shows that just over half of the attendees responded with high ratings of “4” and “5” (34% + 20% = 54%), while the remainder either assigned a “3,” “2” or “1” or did not follow the wiki at all (18% + 5% + 5% + 18% = 46%).

**Table 9. Attendees’ ratings of the success of the wiki.**

Success of wiki	Attendees (n=56)
1=Not successful at all	5% (n=3)
2	5% (n=3)
3	18% (n=10)
4	34% (n=19)
5=Extremely successful	20% (n=11)
N/A=I did not follow the wiki	18% (n=10)

$\bar{x}=3.70$

Attendees were then asked to provide a reason for their rating of the wiki, or if they did not follow the wiki to explain why not. Overall, those who assigned higher ratings found the wiki to be a good reference while those who assigned lower ratings or did not follow the wiki indicated it was time consuming, distracted from the live proceedings or was not a preferred method of contributing to the discussion.

*Reasons for N/A or not following the wiki (26%, n=10)*

Attendees who did not follow the wiki offered a number of reasons for not doing so, including that they did not have a computer/laptop at the meeting (four mentions), did not want to be distracted from the live proceedings (three mentions), did not have time to review the content (two mentions), are “not inclined towards those types of online activities” (two mentions) and/or are not familiar with wikis (two mentions).

*Reasons for “5” rating (18%, n=7)*

Attendees who rated the wiki a “5” said it provided “a good reference point” (four mentions), with one adding that the wiki “allowed me to focus on the experience instead of the note-taking of the experience”; other reasons for the “5” rating included that the wiki could be accessed by and shared with those not in attendance (two mentions) and it was “accessible and easy to use” (one mention). One other attendee said: “I did not follow the Wiki, but I found it an extremely successful tool nonetheless.”

#### *Reasons for “4” rating (23%, n=9)*

Attendees who rated the wiki a “4” said they found it an effective way to document the proceedings and “keep up with other discussions” (five mentions) and that it provided a “useful reference” after the Conference, in particular when reporting back to their colleagues at their home institutions (four mentions); one attendee wondered how much “outside participation” there was; one attendee noted that while she liked the purpose of the wiki, she did not like using it:

“(Wikis) are awkward to navigate, they become too long, they are hard to edit, and hard to write meta-cognitive comments on. I really prefer tools like Google docs that allow for instance, simultaneous editing and robust, conversation commenting. This encourages directed, conversational back and forth between group members, without forcing them to actually edit the document (instead they can leave a comment about a section of the document). It also gives members of the small group a backchannel. The small groups were too large to allow them to be real free-form conversations (i.e., I didn't feel comfortable saying everything I wanted to say in real time, but I also felt like the wiki was too formal for me to get in and use as a backchannel to comment on other's thoughts).”

#### *Reasons for “3” rating (21%, n=8)*

Attendees who rated the wiki a “3” noted that it did not elicit much participation (three mentions), it was too much to read, there was not enough time to read it during the Conference and “it’s unlikely many folks had a lot of experience with it” (one mention each); one attendee said: “I don’t like to multi-task on my computer when I’m trying to participate in a real live discussion (but it) was helpful for taking notes in the small group discussions”; one other attendee said: “I think it was a good exercise but I think the value of it may become more important over time” (When this person was later interviewed, he echoed the sentiments quoted above that the wiki “was too formal” and that “the Conference could have benefited from an ‘online backchannel’” that encourages “constructive dissention or alternate points of view, or even to ask ‘What was that she said?’”).

#### *Reasons for “2” rating (5%, n=2)*

Attendees who rated the wiki a “2” felt it was time consuming to read, it was “one more thing to do,” it did not encourage “a true discussion” to take place and it prevented engagement with the “in-person” activities (one mention each).

#### *Reasons for “1” rating (8%, n=3)*

Attendees who rated the wiki a “1” offered different reasons for doing so, including that it was too much to read (“not every moment of a conference has value”), “I don’t use Wikis” and “I failed to see the point of it” (one mention each).

Attendees were also asked whether they had visited the wiki since the Conference ended; in fact, 75% (n=42) said they visited the wiki at least once after the Conference (Table 10). Moreover, the higher the rating attendees assigned to the success of the wiki, the more likely they were to visit the wiki at least once (see Appendix E for cross tabulation of attendees' ratings of the success of the wiki by attendees' visitation of the wiki after the Conference).

**Table 10. Attendees' visitation of the wiki after the Conference.**

Frequency of visitation	Attendees (n=56)
Not at all	25% (n=14)
Once	23% (n=13)
2-3 times	38% (n=21)
4 + times	14% (n=8)

- **Attendees' survey responses about the working groups**

The survey asked attendees to indicate the working group discussion they primarily attended: "Theme 1: Intersections between Natural History Museum assets and 21<sup>st</sup> Century Audience Engagement Strategies" (Groups A, B, C); "Theme 2: Intersections between Natural History Museum assets and 21<sup>st</sup> Century Audience and Societal Contextual Factors" (Groups D, E); or "Theme 3: Intersections between Natural History Scientific Value and Educational/Public Value for the 21<sup>st</sup> Century" (Group F). Table 11 below shows that attendees who responded to the survey were more likely to be in a group that discussed Theme 1.

**Table 11. Working group discussions that attendees primarily attended.**

Working group discussions	Attendees (n=56)
Theme 1: Intersections between Natural History Museum assets and 21 <sup>st</sup> Century Audience Engagement Strategies (Groups A, B, C)	54% (n=30)
Theme 2: Intersections between Natural History Museum assets and 21 <sup>st</sup> Century Audience and Societal Contextual Factors (Groups D, E)	29% (n=16)
Theme 3: Intersections between Natural History Scientific Value and Educational/Public Value for the 21 <sup>st</sup> Century (Group F)	18% (n=10)



Attendees were then asked to use a 5-point scale to rate their agreement with a series of statements about the working groups they primarily attended, where 1=do not agree at all and 5=very much agree. As Table 12 below shows, attendees generally felt comfortable speaking up ( $\bar{x}$ =2.45) and felt their ideas/opinions were valued ( $\bar{x}$ =3.91), as well as helped guide the conversation ( $\bar{x}$ =3.71). This was consistent with observations by IES that the majority of attendees actively participated in the conversations, with facilitators making efforts to ensure that the more reticent members of their groups were given a chance to contribute. At the same time, attendees were somewhat less inclined to agree that the working groups accomplished their goals ( $\bar{x}$ =3.21); the next section discusses attendees’ opinions for why this was the case.

**Table 12. Participants’ agreement with statements about the working groups they attended.**

Statements about working groups	Weighted Average (n=56)	±
I understood the goal of each working group session.	3.45	1.05
I understood the ultimate (actual) outcome of each working group session.	3.50	1.05
I felt my contribution/ideas/opinions helped guide the conversation.	3.71	0.99
I felt my contribution/ideas/opinions were “heard” or valued.	3.91	1.04
I felt more comfortable listening than participating.	2.45	1.13
Overall, I came away from the working group sessions feeling like we had accomplished our goals.	3.21	1.15
The working group sessions were a good way to achieve the Conference goals.	3.63	1.09

It is worth noting that on average, those who said they primarily attended the working group which discussed Theme 3 (Group F) assigned higher ratings to the working group statements than those who primarily attended the groups that discussed Theme 1 and Theme 2 (see Appendix F for a chart that describes cross tabulation of agreement with statements about working groups by working group primarily attended).

- **Attendees’ interview responses about the working groups**

Given the survey findings about the working groups, follow-up telephone interviews sought to delve further into attendees’ ratings of the last two statements described in Table 12 above: “Overall, I came away from the working group sessions feeling like we had accomplished our goals” and “The working group sessions were a good way to achieve the Conference goals.” Table 13 below summarizes how attendees who were interviewed rated these statements.

**Table 13. Attendees’ ratings of selected statements about the working groups.**

Ratings	Attendees who were interviewed (n=20)
High: 4 or 5 assigned to either statement	50% (n=10)
Middle: 3s or 3 and 4 assigned to each statement, respectively	30% (n=6)
Low: 1 or 2 assigned to either statement	20% (n=4)

IES spoke with attendees about the reasons for their ratings; attendees who assigned a “1,” “2” or “3” to these statements were asked, “What would have been a more effective way to conduct the working groups?” and attendees who assigned a “4” or “5” to these statements were asked, “What specifically was effective about the working groups?” Overall, those who were interviewed talked about their own experiences and, as often as not, indicated their ratings were based on the experiences of others in attendance, as well. The responses obtained during these conversations can be grouped into the following general categories: clarity of goals, set-up/format of working groups, quality of facilitation, quality of conversation, diversity of participants, need for common ground and limited movement/time.

*Clarity of goals (60%, n=12)*

Twelve attendees who were interviewed indicated that the goals/purpose of the working groups/agenda seemed unclear (see first four quotes below), with four of those qualifying their responses to indicate that the ambiguity was in some ways beneficial (see last quote below).

“I do feel some of the goals were nebulous, but I understood when I got there that some of the purpose of the meeting was to define the goals, to figure out what we should talk about. In our group, we defined some of those goals and now we can be more specific about defining the next steps. I understood the basic idea to be how natural history museums could play a role in teaching the public about current earth science issues. But on the first day, someone in our group asked, ‘What are we supposed to be doing?’ and our moderator said, ‘That is a good question, let’s clarify that,’ and so we did.” [Group A participant; High ratings]

“We could have been more productive if we’d had a clear sense (at the beginning of the Conference) of what we were supposed to be doing. We just ran out of time. But I feel like we did come out with some great pieces to add to the conversation.” [Group C participant; Middle ratings]

“I don’t think our group had clear goals at the beginning and a lot of people were disputing the matrix and where it came from and what we were supposed to do with it, how we were supposed to use it, and so the goals became muddy.” [Group E participant; Middle ratings]

“There was a lack of clarity in some of the initial goals, but that’s part of the function of the beast and as the sessions went on, I came to realize that they were more of a brainstorming thing, and so it was hard to set up a concrete agenda and in fairness to the Conference organizers, I realize how hard it is to pull these things off.” [Group B participant; Middle ratings].

“The biggest problem with the working groups was that at the beginning, at least in our group, no one was really clear on what we were supposed to be doing. But I’m of two minds about that because if there had been more structure, the conversations might not have been as interesting; with more structure, you might have had more concrete things come out of it.” [Group C participant; High ratings]

With respect to goal clarity, one attendee who was interviewed felt that, in general, there was also a “disconnect” between what she thought the Conference was about and what took place:

“There was a lot of abstract stuff. I felt like I was giving concrete ideas for next steps and everyone would say, ‘Yeah, we need to get better at that.’ They didn’t say, ‘Yes, let’s get a core group that is focused on that.’ There was a lot of nodding to the ideas, but that’s it. And maybe they wanted us to take the initiative but that’s not how the program was structured. There was this top-down leadership...I think everyone I talked with was looking up at the executive committee and wondering, ‘Where is this going? What is their vision?’ Participants weren’t looking within themselves, they were looking up at the executive committee because that’s how it was presented in the materials we got before the Conference.” [Group F participant; Low ratings]

*Set-up/format of working groups (60%, n=12)*

Six attendees who were interviewed noted that the working groups were set up like focus groups (see first quote below), with three of these noting that as a result, the discussions did not probe issues deeply (see second quote below):

“Maybe if some of that responsibility (of reporting back to the group) was shifted to others, you might get more investment in making it functional. If instead of sitting around and throwing out ideas I had to participate, I would have had more ownership of it. We weren’t working on a project; it was more like a focus group.” [Group A participant; Low ratings]

“The working groups had a focus group format that was more about sharing ideas and not going into depth about anything.” [Group E participant; Low ratings]

Three attendees noted that there was limited ability to choose a working group in which to participate, as the quotes below illustrate:

“We didn’t have the ability to move back and forth from group to group if we didn’t agree with the path that the group was on.” [Group F participant; Low ratings]

“I had a choice of the topic to discuss but there was so much interest in that topic that three groups were created and I was assigned to that group.” [Group B participant; Middle ratings]

“I understand the choices for the working groups were set up just a few days before the Conference and I didn’t have time to think about them too much or what each one would be about. (Once we got there) I didn’t really understand how our working group was different from the other working groups...(and) because we had limited time to select a group, I didn’t have a chance to discuss with my partner who went with me which group we should each be in and we ended up in the same type of group—so he was in D and I was in E.” [Group E participant; Middle ratings]

Echoing the perception raised in the last quote (“I didn’t really understand how our working group was different from the other working groups”), three attendees felt the working groups were very similar to each other. As one said:

“I wasn’t clear on how the groups were different. On the one hand you want it to be organic and see what evolves, but you also want structure. Certainly there is going to be overlap but if I had known ahead of time what the distinctions were, if they had more clearly defined the initial groupings, we could self-select better. On the other hand, the organizers probably knew enough of the folks in the room to maybe assign them to specific groups?” [Group F participant; Middle ratings]

Three participants said the lack of breaks between the working group sessions made it difficult “to think about what was going on and what other people were thinking about [Group D participant; Middle ratings].” One attendee who was in Group B said she liked the process of assigning people to smaller groups: “You needed the workshops so people could get used to the ideas.” On attendee who was in Group F noted that “from my conversations with other people, there was objection to the stringent guidelines they got. In our group we weren’t locked into thinking a certain way.”

### *Quality of facilitation (55%, n=11)*

Seven attendees who were interviewed mentioned that some of the moderators were perceived as ineffective (see first quote below); six attendees noted that their own groups were facilitated well (see second quote below).

“People (in my group) mostly talked about what they were doing now as opposed to what they can do in the future. The moderator should have kept asking ‘What does this have to do with the future?’” [Group E participant; Low ratings]

“Any meeting lives or dies by who is facilitating and is facilitating well. Our moderator had good control of the group and would move it forward, she didn’t get off track. I went to observe another group that was not moderated at all and was not productive at all; people in that group were kind of sniping at each other and not being very receptive to each other’s comments and I just thought, ‘ooh.’” [Group A; High ratings]

### *Quality of conversation (50%, n=10)*

Ten attendees who were interviewed found the working group conversations very satisfying, including six who said they were able to go into depth about the issues specific to natural history settings and create connections with people in that field and four who said they were pushed to think beyond what they do every day. Representative quotes follow below:

“It was very satisfying to be in my working group because of the sense of collegiality and synergy; it was energizing to be with like-minded people...normally conferences don’t attend to the agenda of one type of museum and this was dedicated to doing that; it gave shape to a discussion that we needed to have outside of the regular conference circuit.” [Group F participant; High ratings]

“The Conference gave me something to think about with regards to natural history museums and what our institution does; it was specific to us (our field). The Conference let me connect with other natural history museum professionals; I’ve never had the opportunity to be with all those people in the same room at the same time, it was so cool.” Group D participant; Middle ratings]

“There were some real eye-openers for me at the Conference...and some of that came out in the working group sessions. What do I mean by ‘eye-openers’? Well, I come from the research side of an institution so I tend to think that we are here to inform the public, not to be advocates, so I was surprised to hear that coming out in the conversations and I thought it was interesting and educational to understand what the broader community is thinking...(Also) you wouldn’t believe the number of mind-numbing meetings I have to go to...so those working group sessions helped

me to remember why I got into this work in the first place, they helped me reconnect with that (original purpose).” [Group B participant; Middle ratings]

#### *Diversity of participants (45%, n=9)*

Five attendees who were interviewed appreciated the diversity of participants (see first quote below); two attendees felt the group was too diverse (see second quote below); two attendees felt the group was not diverse enough (see last quote below).

“...It was great to talk to lots of different people and there were young researchers just out of grad school and it was great to meet them; I liked that aspect of the Conference...I was very impressed with the demographic...” [Group A participant; High ratings]

“(The Conference) was by invitation only so I thought all the participants would be ‘thought leaders,’ that they would represent the most progressive view on the role of natural history museums in society. But there were people there at multiple levels in their career and in their understanding of informal learning...and that probably was a better way to do it, but I thought I’d be around people who were all going to be talking about new ideas and not old school ideas, like some people did. I thought I’d learn a bunch of new stuff but instead I learned, ‘Ok, this is where we are, that’s interesting.’” [Group E participant; High ratings]

“I was the odd duck at this thing and I wasn’t sure why I was selected to go to the Conference...I research people outdoors and in natural history; I wasn’t aware this Conference was oriented towards exhibits-oriented facilities.... More diversity of people was needed; there were too few zoos, for example...” [Group E participant; Low ratings]

#### *Need for common ground (15%, n=3)*

Two attendees who were interviewed noted that their working groups spent time becoming familiar with what learning research is, which one clearly felt prevented her group from focusing on the task at hand (see first quote below); one attendee indicated he would have liked more time to be spent explaining what learning research is so he could better understand what the goal of the Conference was (see second quote below).

“What I found is that we spent a lot of time establishing common ground, which impeded...our ability to achieve the Conference goals...I felt we stalled on the goals because we were having old conversations and not pushing into what 21<sup>st</sup> Century learning would look like. For example, I don’t think we talked about learning beyond something that is declarative knowledge. So maybe some other format

might have helped to set the foundation that we can all build on together, rather than everyone building from their own (distinct) foundation...So we didn't have as much time to talk about the goal, which was 21<sup>st</sup> Century learning. I don't know if it could have been done any other way, but (for me) there was this tension between establishing common ground and moving forward." Group E; High ratings]

"The only thing I would say is that it wasn't clearly stated to non-learning researchers what a learning research agenda is. It should have been more clearly stated from the get-go what that means and how that would apply to our different institutions and what the need for an agenda is. It was assumed we would have an understanding of what that is and others I spoke with, heads of departments and people like that, were also thinking that it was nebulous." [Group D, High ratings]

*Limited movement and time (15%, n=3)*

Three attendees who were interviewed were of the opinion that the working groups did not achieve everything they set out to do due to insufficient "movement" and time, as follows:

"I think NMNH took on a pretty big project with this Conference and so I didn't have high expectations going in for what we were going to achieve, so I ranked those statements highly because we did get through a lot...but there wasn't enough movement to get everything done and I think we'd have to reconvene to follow up (on what was not accomplished)..." [Group C participant; High ratings]

"At the end of the Conference, there was no cohesive plan, the whole thing fell short. I know they tried to get us juiced up about next steps, but it kind of fizzled out by saying 'Go back and do your Action Plan.'" [Group F participant; Low ratings]

"...We just ran out of time..." [Group C participant; Middle ratings]

Interestingly, when asked about the reasons for their ratings of the working groups ability to achieve the Conference goals, four attendees referred to the Declaration Statement as a tangible outcome of the Conference (see first quote below); however, one of these indicated ambivalence toward it (see second quote below).

"There was a bit of talk in the corners of the room about how our group got to hijack the goal of the breakouts and hatch the Declaration, which became the framework of the other conversations. The others who were in micro levels of conversations were understandably maybe upset by that. But for me, the Declaration was satisfying on a professional and personal level." [Group F participant; High ratings]

“...Also, I’m not sure we need a Declaration, but in any case, it needs a whole lot more vetting. There was a desire to create something more powerful, but a lot of what was in it was not really new, some of it included issues that are being grappled with already.” [Group B participant; High ratings]

- **Attendees’ survey responses about the Conference overall**

NMNH was also interested in assessing attendees’ satisfaction with general aspects of the Conference; a 5-point scale was used, where 1=not satisfied at all and 5=extremely satisfied. As Table 14 below shows, the responsiveness of Conference organizers/facilitators to daily feedback about how the proceedings were unfolding was most highly rated ( $\bar{x}$ =4.39); attendees were also very satisfied with the overall quality of the Conference ( $\bar{x}$ =4.27). Indeed, based on IES conversations with attendees both during the Conference and afterwards, there was clearly great appreciation for the time and effort on the part of the organizers to host the meeting, as well as for the opportunity to attend (e.g. “This Conference is really great and I’m glad I came.”)

In terms of pre-Conference communication about Conference logistics and expectations, the somewhat lower rating ( $\bar{x}$ =3.80) is consistent with comments made during interviews (discussed in the previous section) that attendees were unclear about the goals of each working group, the differences between the working groups, who would be attending and/or what their role was in helping to achieve the Conference goals. Time to network, reflect, recharge was assigned the lowest rating ( $\bar{x}$ =3.59), which was consistent with IES conversations during which attendees commented on the lack of breaks.

**Table 14. Attendees’ satisfaction with general aspects of the Conference.**

<b>General aspects of the Conference</b>	<b>Weighted Average (n=56)</b>	<b>±</b>
Pre-Conference communication about Conference logistics, expectations, etc.	3.80	1.20
Organization/format of the Conference	3.96	0.91
Duration/pace of the Conference	3.98	0.90
Responsiveness of Conference organizers/facilitators to daily feedback	4.39	0.75
Time to network, reflect, recharge	3.59	1.11
Overall quality of the Conference	4.27	0.74



Attendees were also asked about the extent to which they agreed with statements about general outcomes and what they felt they took away from the proceedings; again, a 5-point scale was used, where 1=do not agree at all and 5=very much agree. Table 15 below shows that attendees most strongly agreed the Conference gave them a greater opportunity to collaborate with others ( $\bar{x}$ =4.14), as well as gave them new insight about the challenges and opportunities in the field ( $\bar{x}$ =4.09).

**Table 15. Attendees’ agreement with statements about the Conference.**

Statements about the Conference	Weighted Average (n=56)	±
The Conference met my expectations.	3.84	1.10
The Conference gave me/is giving me a greater opportunity to collaborate with others in the field.	4.14	0.97
As a result of the Conference, I feel a greater sense of community among my fellow practitioners and researchers in the field.	4.02	0.99
The Conference gave me new insight about the challenges and opportunities in the field.	4.09	1.02
The Conference increased my understanding of best practices for our field.	3.20	1.23
The Conference was a valuable process for developing a national research agenda.	3.71	0.94
As a result of the Conference, I have a better idea of specific actions (next steps) I/my institution can take.	3.54	1.10

Attendees were least likely to agree that the Conference increased their understanding of best practices in the field ( $\bar{x}$ =3.20); on the other hand, the standard deviation for this take away ( $s$ =1.23) indicates there was some diversity of opinion about it. Certainly during the Conference, IES heard attendees say the discussions they were having were giving them new ideas on how to do things (see first quote below), if not confirming they are “already doing some things right” (see second quote below), while others did not feel they were learning anything new or that applied to them specifically (see last two quotes below).

“...we are constantly reinventing the wheel and coming here we can stand on the shoulders of others and get a lot of ideas that we can take back to our own institution.” [Lunch conversation, Feb. 15, 2012]

“...this Conference is really good for the person I came with (because) she’s realizing that we’re doing a lot of things right. She had thought that we aren’t doing a lot of things right or that we’re behind the times. But over the past few days she’s been coming to me and saying, ‘Hey, we’re already doing some of these things’ that she’s been hearing about from other folks here...” [Breakfast conversation, Feb. 15, 2012]

“We’re bouncing from really large scale ideas to really small scale stuff like how to do cart activities, so I’m not sure what to do with that. I was disappointed, I didn’t really want to talk about that, I’ve tried those things before... I have 20 years of experience making exhibits and I pay really close attention to what visitors do but I’m not sure how much of what is being discussed applies to what I’m doing...” [Afternoon conversation, Feb. 14, 2012]

“‘Best practices’ is a term I despise because one practice may work in one situation but may not work in another situation; what works at a rural little nature center may not work at a big urban museum...” [Breakfast conversation, Feb. 14, 2012]

In terms of the extent to which the Conference was a valuable process for developing a national research agenda, attendees’ collective rating of 3.71 is within range of their ratings of the effectiveness of specific Conference activities in facilitating that process (between 2.73 and 3.89 per Table 8 on page 12). Elsewhere in this report there is evidence to support this finding; IES observations and conversations with attendees during the proceedings also inform the reason for this finding. For example, at least a few attendees seemed to struggle with the abstract nature of some of the discussions (see first quote below) and others wondered whether the discussions were “premature” (see second quote below).

“I have a hard time seeing the end-point of the Conference and seeing the impact of the end-point...also these end-points are hard to hold on to, you know that we’re here to ‘save the world,’ and ‘have fun while the world burns’ and ‘go from nice to necessary’...” [Afternoon conversation, Feb. 13, 2012]

“The goal of the Conference seems to be to establish a research agenda, but isn’t this premature? First you have to try things out and then say what are the tools or components for the research agenda. If taking up the charge of climate change is the goal, which it is for a lot of us, then what are the experiments the field needs to perform? Then certainly there would have to be something done first before you can figure out what to research. Not all of what we do is closely related to a learning research agenda. I think we need to ask ‘What’s that we’re doing and what does it have to do with the problem?’...” [Afternoon conversation, Feb. 14, 2012]

- **Attendees' survey responses about the most effective elements of the Conference**

Attendees were asked to identify the two most effective elements of the Conference, half of whom (n=23) mentioned the working groups. Of these, seven specified the “the session on innovative programming,” “the final day’s session when we actually synthesized discussions and started to work on the research agenda” (two mentions each), “the Taskforce Groups at the end of the Conference,” “the energy/statement from the Public Value Group” and “the second day (re-designed) group sessions” (one mention each). Representative quotes of the majority of this category of responses follow below:

“Break-out sessions”

“I enjoyed and learned a lot from our small group discussions.”

“The small group work was invigorating.”

One-third (n=15) mentioned the guest speakers, including seven who specified that they enjoyed Sunday evening’s speaker, Kirk Johnson and/or Monday’s lunchtime speaker, Scott Sampson, for example:

“The invited presentations were excellent.”

“The first two keynote addresses were inspiring.”

“The keynotes were excellent, especially Kirk’s.”

Thirty percent (n=14) said the opportunity to meet new people and network was one of the most effective elements of the Conference, with ten of these also noting the opportunity to share new ideas/solutions and learn from others, as the following quotes illustrate:

“Getting to know new people in the field.”

“The opportunities to network and learn about innovative programs at other institutions.”

“Meeting people from across the country who do informal science education and learning the jargon and methods that educators in this discipline use.”

Seventeen percent (n=8) mentioned the organization and set up of the Conference as being most effective (see first two quotes below); another 17% (n=8) mentioned the Conference organizers and/or facilitators (see last two quotes below):

“The back and forth between small and large groups was a good design for getting the work done while integrating the big picture goals of the Conference.”

“That (the Conference) happened and it had a useful mix of people.”

“The exceptional professionalism of the organizers, facilitators and advisors.”

“John (Falk) and Bill (Watson) did a fabulous job leading discussions.”

Eleven percent (n=5) said the informal networking time (e.g., “social hours”) was the most effective elements of the Conference; less than ten percent each mentioned “the whole group discussions” (three mentions) and the documentation of the proceedings via the Wiki and Twitter feed (three mentions). Other elements of the Conference that attendees said they found effective included: “energetic, convivial and flexible atmosphere,” “speed-geeking” and “round tables” (one mention each).

- **Attendees’ survey responses about the least effective elements of the Conference**

When asked to identify the two least effective elements of the Conference, 35% (n=15) mentioned the “intense” pace of the Conference, which limited the amount of time they could spend networking with others or reflecting on the day’s discussions; representative quotes from this category of responses follow below:

“No breaks!”

“While the keynote discussions were nice, I felt that they took away time from networking during the lunches.”

“The pace was a bit grueling! I often felt deprived of the time for reflection and synthesis necessary for the day’s work to really settle into the brain in a meaningful form.”

Thirty percent (n=13) felt there was a lack of clarity regarding the goals of the Conference and/or what the Conference outcomes were, for example:

“Learning research agenda should have been more clearly spelled out and explained prior to the Conference and during.”

“Lack of clarity when working groups began; I heard from many participants in all of the groups that they weren’t sure what they should be doing, my own group included.”

“I couldn’t figure out where we go from here. The goals seem vague.”

Sixteen percent (n=7) said that the set-up of the Conference was not an effective element of the Conference, including four who mentioned the separation of the working groups (see first two quotes below) and three who said participants were too diverse (see last two quotes below):

“Staying with the same topic/group the entire time somewhat limited one’s ability to get varied perspectives and explore interrelated topics.”

“Although it couldn’t be helped because of the building design, the logistics/arrangements of the room locations were challenging.”

“I found it complicated the discussions to have zoological park participants involved. Although many of the concerns are the same, there were too many drastic differences between live collections and research collections to drive a conversation.”

“The participants represented a huge range, from relative novices to folks with huge amounts of experience. This is good if the purpose is to mentor the novices. Not so useful if the purpose is to create an agenda for the future.”

Fourteen percent (n=6) of attendees found the pre-Conference discussions and/or post-Conference follow-up to be ineffective (see first two quotes below); another 14% (n=6) said the speed-geeking activity was not effective (see last quote below):

“Pre-Conference communication on logistics and follow up.”

“All the groups worked hard following the detailed tasks and questions given to us, but no one knew how this information was going to be used and how we (individuals and institutions) fit into the end product. It was like a first date, I think we are all waiting for a call back.”

“Speed-geeking: I would’ve liked to meet more people.”

Twelve percent (n=5) found the duration of the Conference ineffective, with three attendees commenting that there was “not enough time” to achieve the Conference goals and two attendees who stated the opposite, saying “taking out four days was tough.” Less than 10% each said the following were also not effective: “poor moderation” by some of the facilitators (four mentions), “some of the keynotes” (three mentions), the tours of NMNH (two mentions), “some of the large group discussions,” “end of day reflection time,” the Wiki and Twitter and the group “report outs” at the end of working group meetings (one mention each).

Other elements that attendees felt were not effective were beyond the control of the Conference organizers, including participants' "unwillingness to dream," "the egos of many of the invited stakeholders" and the lack of wireless access at the hotel (one mention each).

- **Attendees' survey responses about recommendations for next steps**

Attendees were asked to provide two recommendations to the Conference organizers for important next steps, the responses to which mainly fell into three general categories: create a follow-up document, continue the conversation and things to consider for the next conference.

*Create a follow-up document (45%, n=20)*

Of the attendees who suggested creating a follow-up document, ten indicated they would like to see a research agenda, with five of these specifying that they would like the opportunity to provide feedback about it (see first two quotes below), six said they would like to see participants' actions plans (see third quote below), four hoped the work on the Declaration Statement begun by Group F would continue (see fourth quote below), four suggested creating a summary of the Conference proceedings (see fifth quote below), two wanted a "primer" on learning research (see last quote below) and one suggested disseminating the findings of the attendee survey (i.e., this report).

"I would be interested in seeing the outcome of the learning research agenda."

"For the research agenda, it would be great to know what your intended next steps are and then get feedback from the group; we might be able to provide input at that point."

"Maintain contact with all organizations and share their action plans with one another."

"One of the working groups outlined a vision for 21NHM that I would very much like to see as some sort of publication or public white paper."

"Synthesize! We generated a ridiculous quantity of ideas and questions. I'm very curious to see what it boils down to (or adds up to)."

"My first recommendation would be to compile a summary chart of what is known about learning or appears to be the case and how these 'knowns' are applied in museums."

*Continue the conversation (43%, n=19)*

In terms of next steps, a number of attendees also indicated they would like to continue the Conference dialogue. Ten of these said they would like to reconvene in person or online (see first three quotes below), seven thought interaction among participants should continue but did not specify how (see fourth quote below) and three suggested that NMNH follow up with each working group (see last quote below).

“Bring us together again soon.”

“I would like to see a follow-up conference or online discussion to review the progress that participants might be making in their own institutions.”

“Determine who might be attending various conferences (AAM, NSTA, others) and try to get those people together to talk.”

“Keep everyone in the loop, keep everyone abreast of any research that is being carried out following this agenda.”

“It would also help if there were specific point persons to follow up with groups that had talked about continuing to craft specific elements, such as the values statement.”

*Things to consider for the next conference (34%, n=15)*

When asked for recommendations for important next steps, some attendees also mentioned things to consider for a future conference, including five who said to build in more time for breaks (see first quote below), three who said to provide better organization, including communication and set up (see second quote below), three who said to collect participants’ action plans before the end of the conference, two who said to extend the length of the Conference, and one each who said to “establish common ground in a deliberate way at the beginning,” recruit “better moderators,” display the live Twitter feed on a large screen “for those of us not on Twitter,” “hold keynote-lite talks at DC nightspots that enable social/work groups to self-assemble after the conference,” “have more dinners together” and “accompany your compostable flatware with piles of food to choose from rather than piles of boxes to throw away.”

“There should be more breaks for follow-up conversations. There were several people I met briefly early on and would have liked to network with, but the opportunities were lacking.”

“More purposeful organization of the people in attendance - taking into account their expertise, and building off of it [*sic*].”

*Other comments regarding next steps (11%, n=5)*

A few attendees mentioned other recommendations for important next steps, including maintain/formalize “the natural history network” of participants (three mentions), “figure out (concrete) strategies and tactics—come down to earth and get real, use more grounded words instead of euphemisms and feel-good adjectives, like ‘surprising’ over and over” and “have directors of organizations identify divergent thinkers in their organizations and have this same discussion with that group” (one mention each).

- **Attendees’ survey responses about the greatest benefit of attending the Conference**

Attendees were also asked to describe what they found to be the greatest benefit of attending the Conference for themselves and/or their organization. Of those who responded to the question, more than half (57%, n=25) mentioned the opportunity to network (see first two quotes below) and about one-third (34%, n=15) also mentioned the new/different perspectives they gained from others (see last three quotes below).

“Networking!”

“Meeting others who do similar but different work.”

“Hearing different viewpoints.”

“Getting new ideas for integrating climate change using our existing collections.”

“The opportunity for cross-pollination with so many smart people from across the field was unparalleled.”

One-fifth (n=9) said they appreciated being able to participate in a national conversation (see first quote below); another fifth said the Conference was “inspirational” and gave them a renewed sense of purpose (see second quote below); another fifth found it beneficial to take the time out to discuss the Conference topics (see last quote below).

“Participating in both (the Conference’s) micro and macro layers of deliberation.”

“(The Conference) reinvigorated my passion for my job and my institution.”

“Setting aside time to think about and discuss these ideas.”

Fourteen percent (n=6) noted that the Conference helped them realize they/their institutions share many issues and challenges, (see quote below); less than 10% said the Conference gave them the “impetus” to develop their own learning goals/agenda for their institutions (two mentions).



“Having the shared feeling that all the informal science ed [sic] institutions that were represented were all encountering the same challenges and barriers.”

Only one attendee said there was “not much” benefit to attending the Conference, adding: “I was taken aback by how inward looking and protective of the status quo a large number of people were.”

- **Attendees’ interview responses about their action plans**

On the first and second full days of the Conference (February 13 and 14, 2012), attendees were asked to spend time with their partner (person with whom they attended) reflecting on the proceedings, in particular thinking about the key takeaway messages, innovations they heard about that could fit with their organization, research questions or hypotheses that are particularly relevant for them and potential new partnerships inspired by the Conference. Attendees were also tasked with identifying actions they/their organizations could take, including what the intended outcomes/objectives for those actions would be and the people to involve, within the next 60, 120 and 180 days. To aid in the completion of this task, attendees were given a template to guide their discussions and write down their ideas (see Appendix G for a copy of the action plan template). Attendees were not required to submit their action plans by the end of the Conference; indeed, they were invited to continue working on them back at their home institutions.

To determine the extent to which attendees saw this task through, follow-up telephone interviews sought to delve further into attendees’ progress with their action plans, including any concerns or challenges they were facing and what Conference organizers can do to support attendees. As of the date they were interviewed, half (n=10) indicated they were making varying degrees of progress on their plans; the other half (n=10) said they were not (Table 16).

**Table 16. Work on action plans by attendees who were interviewed.**

Attendee	Date Interviewed	Work on Action Plan
1	3/28/12	No
2	3/28/12	No
3	3/28/12	No
4	3/28/12	Yes
5	3/29/12	No
6	3/29/12	No
7	3/29/12	No
8	4/07/12	Yes
9	4/10/12	Yes
10	4/11/12	Yes
11	4/11/12	No
12	4/11/12	Yes
13	4/12/12	Yes
14	4/13/12	Yes
15	4/19/12	Yes
16	4/24/12	Yes
17	4/25/12	No
18	5/01/12	Yes
19	5/04/12	No
20	5/09/12	No

Attendees who were making progress on their action plans (50%, n=10) explained what they had done up to the point where they were called by IES. In particular, six said they were identifying ways to adapt or line up current projects at their institutions with ideas/strategies they learned about during the Conference with (see first quote below), five said they had prepared/were preparing staff presentations “to get everyone on the same page about what we’re about” (see second quote below) and three said they were pursuing collaborations with people they met at the Conference (see last quote below).

“I represent a project, *Life on Earth*, and we’re developing an interactive, multi-touch table that will be in natural history museums across the country. So my partners and I came out of the Conference with much clearer goals about what we want the table to accomplish; we already had the project but the Conference

helped us to articulate the goals more clearly... So the second goal of the Conference was the learning research piece and figuring out what we want to know. And so in our project we have really moved ahead on that piece doing learning research and examining whether the immersive digital piece improves visitor understanding of life on Earth, evolution and ecology and makes them want to learn more.” [Attendee 18]

“One of our first action items was to share our experience and the content of the Conference with key people at our organization and that was interesting to see because we saw the same divergence of viewpoints within our staff: some people were in agreement about creating a network of organizations to share expertise and other people asked, ‘Do we really need another organization, another commitment that takes up our time?’ And then some old timers were saying, ‘These are the same conversations we’ve been having for decades.’” [Attendee 14]

“...We made a connection with a zoo that was at the Conference—that connection was really strong and tangible and my partner later flew over to meet with them, and it might not have come about if we hadn’t met at the Conference. Another connection I made is with NMNH—they’re doing an exhibit about Roosevelt’s birds and we have a site on Roosevelt Island in New York City so we talked about how to collaborate in that effort. So our action plan has to do with the serendipitous connections that were born out of that Conference.” [Attendee 12]

Two attendees indicated they were also working on new initiatives that are being developed as a result of the Conference, including one who said “we have three papers in the works” [Attendee 4] and one who said “we also want to make a list of definitions so that we can understand each other,” noting that “for example, ‘citizen science’ means one thing to me as an educator but for my partner, who is in the research science and collections department, it means something completely different” [Attendee 10].

Attendees who said they had not made progress on their action plans (50%, n=10) offered a number of reasons for their inability to move forward, including four who said they work as independent researchers and/or consultants in organizations that have limited connections with natural history museums and “policy geeks” (see first comment below), three who said they had quickly become busy with their daily tasks/work pressures upon their return to their home institutions (see second comment below), two who said they had not been able to get in touch with their partners to work on it together (see third comment below) and two who said they were not clear on what to do (see last comment below).

“I kind of came solo, so during those action planning times at the Conference I didn’t do any action planning, and then being at a university there aren’t any direct connections with natural history museums...” [Attendee 11]

“We haven’t done much of anything and that was more to do with the timing on our part than any lack of interest—we are building a brand new building and we are in the middle of exhibit installation—in fact I just came back from San Francisco to see the exhibit fabricator, and so I’m just swamped with work right now.” [Attendee 19]

“We are totally stalled...What put us into a tailspin is that my partner went to Belize the week after the Conference. I went ahead and filled some of it out but I’d like to work on it with my partner. I’ve sent him an email about it but am still waiting to hear back.” [Attendee 7]

“We did not even fill out the time frame part at all. We filled out everything else, but not the action plan. I don’t know what we can do... there were some great ideas I got but I didn’t come out of the Conference knowing how to move the needle in my world...” [Attendee 2]

Two attendees also questioned the usefulness of the action plan, and thought that Conference organizers should have tasked participants with a different activity, as one explained:

“Personally, the action plan was not satisfying because there was a range of philosophies in the room and we need to check in first with our own mission statements, to make a critical analysis of our mission value and vision statements—that would be more instructive. Because I think the problem is we have to think about what we’re doing and why we’re doing it and what is valuable and then figure out what is our focus.” [Attendee 5]

In terms of how Conference organizers could support them in the completion of their action plans, almost all attendees who were interviewed offered suggestions for ways to hold them “accountable,” if not keep the momentum going. Indeed, 58% (n=11)<sup>8</sup> indicated they were looking for leadership, including to provide direction on the development of something tangible, be it a network or some other “product” (see first two quotes below), to keep attendees informed of what is being discussed/decided by the executive committee (see third quote below) and/or to simply remind attendees to complete their action plans (see last quote below). (It should be noted that most of these comments seemed to imply, if not directly state, that this type of leadership was being sought from NMNH; however, a few attendees (26%, n=5) noted that the Conference organizers “are not babysitters” and that it was the responsibility of each organization to complete and follow through on its action plan.)

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<sup>8</sup> Based on 19 responses due to one conversation that was ended prior to the completion of the interview.

“The action plans are not going to move forward with everyone sitting at their desk. I believe in democracy, you know: ‘By the people, for the people,’ but sometimes someone has to make decisions, someone who can lead and has a strong vision. To move forward, maybe the Conference organizers can identify 2-3 initiatives that they saw come out of the discussions, put a call out to see who is interested in working on them, have a group for each initiative, they set up online meetings and then they come up with a deliverable. The Conference organizers have every right to do that. The initiatives should be ones that people would want to continue pursuing since the work would be accomplished by those of us who volunteer to do it.” [Attendee 17]

“The idea that we might get left out of some type of product that was going to be produced would light a fire under us. They paid for us to attend so I absolutely have the expectation that I have homework to do, but I need a reason for their 60-90 day timeline, otherwise I’ll do it on my own timeline. Other than that, (NMNH) has been very transparent with the process and very helpful with offering resources.” [Attendee 3]

“The one area that was a bit of a disappointment is the post-Conference function. I left the Conference with the assumption that there was going to be a continuation of some of the dialogue that (someone in the executive committee) said he specifically was going to help us keep talking about. So I was hoping for a more active post-Conference follow-up to maintain the energy and purpose of the Conference. And he may have followed up with others, I don’t know. But the wind went out of the sails so a more structured follow-up would have been nice. [Attendee 12]

“Probably we need another email reminder...” [Attendee 7]

Thirty-seven percent (n=7) of attendees who were interviewed said they would like to meet again to discuss what they have done with regards to their action plans, as one said:

“A follow-up conference would be good, but focusing more on the learning research component to find out what we want to know and how to do that. An online meeting might be good but it’s harder (to get participation) because you’re at your desk and have lots of emails...so a face-to-face conference is better.” [Attendee 18]

Another 37% (n=7) commented that with scarce resources, be it time, money and/or staffing, there was a limit to what Conference organizers could do to support them, as one explained:

“It’s not that the action planning is not valuable, it is. It’s that we’re resource challenged and now I’m having personal issues that have led me to cut down on my

work hours so I can deal with them and so that reduces the time I have available to work on it.” [Attendee 20]

In terms of how Conference organizers could support attendees with their action planning, 26% (n=5) said they would like to see others’ action plans and/or summary of what everyone has done/is doing (see first quote below); another 21% (n=4) also said they would like to know “what happened with the Declaration” (see second quote below).

“I do wish there was more follow-up about the other action plans, my gripe is that when you go to a meeting and you want people to do things, then there should be accountability, so how do we know this is going to happen in 120 days, how are we kept accountable? Otherwise, the Conference was all for naught...well, not all for naught because it was a great opportunity, I’m very grateful I was able to participate and I dearly hope there is another meeting...” [Attendee 4]

“Well, I never saw on the wiki if there was a final Declaration, (if) this was the final research agenda that we decided on. I was wondering if anyone is tackling that...It’s been very silent since the Conference ended, but I’m hoping there’s going to be follow up and what the next steps are. The success of the Conference not only depends on what happened at the Conference, but what happens afterwards.” [Attendee 11]

## **2. Non-Attendee Reactions to the Conference**

To ensure the Conference would be inclusive of a wide range of professionals in the field, NMNH was interested in gauging the reactions of those who did not attend the Conference but did participate in the discussions that took place prior to and during the Conference, including in particular the ASTC Connect Discussion, “What do we know about learning in natural history settings?” that was open to the field and took place from September 28 through October 4, 2011, the wiki discussion that took place in real time on February 12-15, 2012, and the Conference Twitter feed, which also took place on February 12-15, 2012.

To this end, IES designed two surveys, one for ASTC Connect Discussion participants and one for wiki participants. Given that only one non-attendee documented her presence on the wiki and with no way to identify who was following that discussion, it was determined that applicants to the Conference might be surveyed instead (if applicants were interested in the topics to be discussed, they might be likely to “tune in” even though they were not invited to attend the Conference). Thus, the section below describes the results of the surveys distributed to Conference applicants and participants of the ASTC Connect Discussion.

### **2.1 Applicants**

In response to the emailed request to complete a survey about their participation in any of the online discussions that took place before and during the Conference proceedings, 12 applicants agreed to do so. An additional six applicants wrote back to say that as they had not been invited to participate in the Conference, they could not speak to the Conference proceedings; three of these specifically noted that they had been “unaware of the online discussions until receiving the request to complete the survey.” The section below describes the responses of the applicants who completed the survey, as well as those of the applicants who wrote back, where appropriate and reasonable to do so.

## 2.1.a Profile of applicants and the organizations they represented

The survey began with a question about applicants' main responsibilities at work and asked them to select as many descriptions from the list provided as applied to them. Table 17 below shows that applicants have an average of two responsibilities each (29 responses divided by 12 applicants); just over half said they develop or implement education programs for live audiences (58%, n=7) and just under half said they are in a leadership or managerial role at their organization (42%, n=5). "Other" responsibilities mentioned by applicants (25%, n=3) included working towards university level museum studies/education degrees (two mentions) and "consultant, editor" (one mention).

**Table 17. Applicants' main responsibilities at work.**

Main responsibilities	Applicants (n=12)
I conduct research in natural or cultural science (biologist, anthropologist, paleobiologist, etc.)	17% (n=2)
I manage natural or cultural collections	25% (n=3)
I develop or implement education programs for live audiences	58% (n=7)
I develop or implement programs or services for online/web-based audiences	8% (n=1)
I conduct learning research (social scientist, education researcher, etc.)	17% (n=2)
I conduct program or education evaluations	25% (n=3)
I develop museum exhibitions	25% (n=3)
I am primarily in a leadership role, and/or manage people whose focus is one of the above	42% (n=5)
Other	25% (n=3)



Applicants were also asked to identify the type of organization they represent, with Table 18 below showing that over one-fifth selected “natural history museum” from the list provided.

**Table 18. Organizations represented by applicants.**

Organizations	Applicants (n=18)
Natural History Museum	28% (n=5)
Nature Center	17% (n=3)
Independent non-profit organization	17% (n=3)
Combination of two or more entities (e.g., university with nature center)	11% (n=2)
Zoo, arboretum, or botanical garden	11% (n=2)
Science Center	6% (n=1)
University Department	6% (n=1)
Other collections based museum	6% (n=1)

## 2.1.b Applicants' participation in and reactions to the ASTC Connect Discussion, wiki and Twitter feed

Applicants were asked if they followed or contributed to the pre-Conference Discussion, "What do we know about learning in natural history settings?" which was open to the field and took place on ASTC Connect on September 28-October 4, 2011. As Table 19 below shows, two-thirds of those who responded said they did not participate in the online forum, mainly because they were not aware of the discussion when it took place (53%, n=8); a few did not get the opportunity to do so (13%, n=2).<sup>9</sup>

**Table 19. Applicants' level of participation in the ASTC Connect Discussion.**

Level of participation in the ASTC Connect Discussion	Applicants (n=15)*
No, was not aware of the discussion when it took place	53% (n=8)
No, did not get the opportunity to do so	13% (n=2)
Yes, followed only <sup>∞</sup>	20% (n=3)
Yes, contributed <sup>∞</sup>	13% (n=2)

\*Percentages do not sum to 100% due to rounding.

<sup>∞</sup>A review of individual responses revealed that of those who said they participated in the online forum, three are in a leadership/managerial role at their organization, one conducts learning research and evaluation and one is a "consultant, editor".

Of the five applicants who said they participated in the ASTC Connect Discussion (Table 19), four responded to the question, "What piece of information, participant comment, or conclusion offered during that discussion stood out for you?" Specifically, two applicants said they "cannot remember," one noted being "impressed by the range of work being done across natural history settings (including) that lots of natural history learning experiences take place...in nature centers, zoos (etc.)," and one found that "goals for learning in natural history settings are quite diverse."

Applicants were also asked if they followed or contributed to the Conference wiki, which documented the proceedings live from February 12-15, 2012. As Table 20 on the next page shows, almost none of those who responded said they participated, with almost three-quarters (73%, n=11) saying they were not aware of it when it took place.<sup>10</sup>

<sup>9</sup> Readers of this report are reminded that information about this ASTC Connect Discussion was sent out on September 26, 2011, which may provide one reason for this finding.

<sup>10</sup> Per NMNH staff, information about the wiki first went out to the field on December 14, 2011 and then again on February 13, 2012.

**Table 20. Applicants’ level of participation in the wiki.**

<b>Level of participation in the wiki</b>	<b>Applicants (n=15)</b>
No, was not aware of the discussion when it took place	73% (n=11)
No, did not get the opportunity to do so	20% (n=3)
Yes, followed only <sup>∞</sup>	7% (n=1)
Yes, contributed	0% (n=0)

<sup>∞</sup>A review of individual responses revealed that this person conducts learning research.

In response to what stood out in the wiki, the one applicant who followed it (Table 20) said “the keynotes were great to watch” and added that “it was most valuable to see how the research questions emerged on the last day (of the Conference).” This same person rated the success of the wiki in fostering an inclusive discussion a “2” on a scale of 1-5, where 1=not successful at all and 5=extremely successful, commenting that the wiki “was a great way to engage with the Conference activities, but was not particularly inviting as a place to contribute thoughts or observations.” (This response echoed that of two attendees who said the wiki felt “too formal for me to get in and comment on others’ thoughts.”)<sup>11</sup>

Finally, applicants were asked if they followed, replied, reposted or re-tweeted the Conference Twitter feed, which began just before February 12 and ended shortly after February 15, 2012. Consistent with applicants’ level of participation in the ASTC Connect Discussion and the wiki, most applicants did not participate in this aspect of the proceedings (Table 21), again because they were either unaware of it (67%, n=8) or did not get the opportunity to do so (25%, n=3).

**Table 21. Applicants’ level of participation in the Twitter feed.**

<b>Level of Participation in the Twitter feed</b>	<b>Applicants (n=12)</b>
No, was not aware of the Conference Twitter feed or any of the Conference participants’ tweets at the time	67% (n=8)
No, did not get the opportunity to do so	25% (n=3)
Yes, followed only <sup>∞</sup>	8% (n=1)
Yes, replied, reposted or re-tweeted	0% (n=0)

<sup>∞</sup>A review of individual responses revealed that this person is “a consultant, editor.”

In a follow-up question about what stood out among the Conference tweets, the one applicant who followed the Twitter feed (Table 21) said “Lynda Kelly and Kirsten Ellenbogen’s Tweets stood out for spontaneity” and that “Lynda’s recommendations on how to be a guerrilla change agent stood out.”

<sup>11</sup> See Attendees’ survey responses about the wiki on pages 13-15 of this report.

## 2.2 ASTC Connect Discussion participants

Eleven people responded to the emailed request to complete a survey about their participation in the ASTC Connect Discussion, “What do we know about learning in natural history settings?” that was open to the field and took place between September 29 and October 4, 2011. One additional person wrote back to say she signed up for the Discussion but was not able to participate. The findings below describe the responses of those who completed the survey.

### 2.2.a Participants’ motivations for and reactions to participating in the Discussion

In order to get a general sense of those sampled, the first question on the survey asked participants what prompted them to take part in the ASTC Connect Discussion and to select as many reasons from the list provided as applied to them. Table 22 below shows that almost three-quarters said they had a specific interest in natural history settings and almost half said they had a specific interest in informal learning research. One “other” reason was offered for taking part in the ASTC Connect Discussion: “I am doing some projects with apps in informal learning settings.”

**Table 22. Participants’ reasons for taking part in the ASTC Connect Discussion.**

Reasons for taking part in the ASTC Connect Discussion	Participants (n=11)
I have a general interest in natural history settings	18% (n=2)
I have specific interest in natural history settings (e.g., I am an educator or content expert in a natural history setting or natural history-related field)	73% (n=8)
I have a general interest in informal learning research and evaluation	27% (n=3)
I have a specific interest in informal learning research and evaluation (e.g., I conduct visitor studies for informal learning organizations, such as museums, zoos, etc.)	45% (n=5)
Other	9% (n=1)

The goal of the ASTC Connect Discussion was to share information, resources, evaluation and research results, and best practices to identify and consider what the field knows about learning in natural history settings. Participants were asked to rate the success of the Discussion in accomplishing that goal, to which just over half assigned lower (“1,” “2” or “3”) ratings (9% + 9% + 36% = 54%) and the remainder offered high (“4 or “5”) ratings (27% + 18% = 45%).

**Table 23. Participants’ ratings of the success of the ASTC Connect Discussion.**

Success of discussion	Participants (n=11)*
1=Not successful at all	9% (n=1)
2	9% (n=1)
3	36% (n=4)
4	27% (n=3)
5=Extremely successful	18% (n=2)

$\bar{x}$ =3.36

\*Percentages do not sum to 100% due to rounding.

When asked, nine of the participants who responded to the survey provided a reason for their rating. In general, those who assigned a rating of “1,” “2” or “3” tended to be more critical (n=5); those who assigned a “4” or “5” rating tended to offer more positive comments (n=4). In terms of criticisms, “the format was cumbersome to follow,” “responses were of varying quality (highly informed to highly opinioned),” it was “a time consuming method of sharing information” (two mentions each), there were too many participants and the Discussion did not seem comprehensive “based on the questions asked” (one mention each). On the positive side, participants said the Discussion included many perspectives, was “lively” and sustained, provided a networking opportunity (two mentions each), “the question and response format was engaging” and “it advanced my knowledge in the area” (one mention each).

When asked to share a piece of information, comment or conclusion offered during the Discussion that stood out for them, five of the participants surveyed did so. In particular, two mentioned the types of things they noticed that participants consistently said (e.g., “people were more interested in talking about what they are doing rather than what the possibilities are”) and one mentioned the need that was identified to create “a coordinated approach to link the work of community-based programs with nationally-based field ecology and research efforts; two participants indicated that “no one piece stood out” with one adding “but the Discussion revitalized my academic interests.”

### **2.2.b Participants’ level of participation in and reactions to the wiki and Twitter feed**

Given their demonstrated interest in the topics of the ASTC Connect Discussion, participants were also asked if they followed or contributed to the Conference wiki and if they followed or replied, reposted or re-tweeted the Conference Twitter feed, the responses to which are described in Tables 24 and 25, respectively. In fact, echoing the findings of the applicant

survey, most participants indicated they were not aware the Conference proceedings were going to be online.<sup>12</sup>

**Table 24. Participants’ level of participation in the wiki.**

Level of participation in the wiki	Participants (n=11)
No, was not aware of the discussion when it took place	64% (n=7)
No, did not get the opportunity to do so	9% (n=1)
Yes, followed only <sup>∞</sup>	18% (n=2)
Yes, contributed <sup>∞</sup>	9% (n=1)

<sup>∞</sup>A review of individual responses revealed that of those who participated in the wiki, two have specific interest in informal learning research & evaluation and one has specific interest in natural history settings.

**Table 25. Participants’ level of participation in the Twitter feed.**

Level of participation in the Twitter feed	Participants (n=11)
No, was not aware of the Conference Twitter feed or any of the Conference participants’ Tweets at the time	73% (n=8)
No, did not get the opportunity to do so	27% (n=3)
Yes, followed only	0% (n=0)
Yes, replied, reposted or re-Tweeted	0% (n=0)

The last question on the survey asked participants who indicated they had followed or contributed either to the wiki or the Twitter feed to share a piece of information, comment or conclusion that stood out for them. Two participants who indicated they followed/contributed to the wiki said the following:

“I found the working group summaries to be of major interest and was VERY excited by the Natural Histories Project films and the cross-disciplinary nature of the dialogues.”

“I am still reading the wiki as we speak. My museum is undergoing strategic planning right now and I am quite aware how relevant the discussion is. I was also struck how much of the early conversations about assets/issue for Natural History museums reflect the same discussions we are having at my museum. I only wish we could have been more involved (in the Conference).”

<sup>12</sup> Again, it may be important to note that information about the wiki first went out to the field on December 14, 2011 and then again on February 13, 2012.

## APPENDICES

**Appendix A-Conference attendee web-based survey, including invitation to complete the survey**

Dear *21<sup>st</sup> Century Learning in Natural History Settings* Participant,

On February 12-15, 2012, you attended the *21<sup>st</sup> Century Learning in Natural History Settings* Conference at the National Museum of Natural History, Smithsonian Institution, in Washington, DC. On the last day of the Conference, Bill Watson indicated that you would be contacted via email to request your feedback about the proceedings.

Below you will find a link to an online survey. By completing the survey, you will help Conference organizers understand your opinion regarding specific aspects of the Conference proceedings, the extent to which you felt the Conference accomplished its goals and any thoughts on how useful the process was for you/your organization. **This survey will take approximately 20 minutes to complete, and all responses will be kept anonymous and confidential.**

**Click on the link below to begin the survey. The survey will be online through March 25, 2012.**

<https://www.surveymonkey.com/s/21CNHM>

Thank you for taking the time to share your thoughts about the Conference! If you have any comments or questions about the survey, please contact Kirsten Büchner at [kirsten@insighte.net](mailto:kirsten@insighte.net) (any time) or 703-606-7976 between 9:00 a.m. and 3:00 p.m. EST (Tues-Fri).

Sincerely,

Kirsten Büchner  
Insight Evaluation Services



## 21CNHM conference participant survey

First we would like to know a little bit about you and the organization you represent.

**\*1. How would you describe your main responsibilities at work? Please select as many descriptions as apply from the list below. Please select "other" if any of your main responsibilities are not reflected in this list or if none of these descriptions apply and then provide a brief explanation of what you do.**

- Other
- I conduct research in natural or cultural science (biologist, anthropologist, paleobiologist, etc.)
- I manage natural or cultural collections
- I develop or implement education programs for live audiences
- I develop or implement programs or services for online/web-based audiences
- I conduct learning research (social scientist, education researcher, etc.)
- I conduct program or education evaluations
- I develop museum exhibitions
- I am primarily in a leadership role, and/or manage people whose focus is one of the above

Other (please specify)

**\*2. What type of organization do you represent? Please select one.**

- Natural history museum
- Other collections-based museum
- Science Center
- Nature center
- University department
- Zoo, arboretum, or botanical garden
- Independent non-profit organization
- Other (please specify)

## 21CNHM conference participant survey

**3. If your organization serves a public audience, please provide an estimate of the number of visitors served on an annual basis (please enter numbers without commas):**

On site:

Online:

**\*4. Where is your organization located/headquartered?**

- Other
- Northeast (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, New Jersey)
- Midwest (Wisconsin, Michigan, Illinois, Indiana, Ohio, Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa)
- West (Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico, Alaska, Washington, Oregon, California, Hawaii)
- South (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Mississippi, Alabama, Oklahoma, Texas, Arkansas, Louisiana)
- Outside USA (Canada, Australia, U.K.)

Other (please specify)

## 21CNHM conference participant survey

Next, we would like to ask you about the pre-Conference activities.

**\*5. How helpful were each of the pre-Conference activities in helping you prepare for the Conference? Please select one answer on a scale of 1 to 5, where 1=Not helpful at all and 5=Extremely helpful or select N/A if you did not do that activity.**

	1=Not helpful at all	2	3	4	5=Extremely helpful	N/A
ASTC Connect Discussion Sept. 28-Oct. 4, 2011 (open to the field): What do we know about learning in natural history settings?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ASTC Connect Discussion Jan. 9-13, 2012 (open to conference participants only): 21st Century Learning in Natural History Settings Pre-Conference Discussion.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization/Colleague Discussion around focus questions (at your home organization, before attending the Conference).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop slide to summarize pre-Conference activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video "Page 1: Inside the New York Times" (optional activity).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**6. Please provide any comments you may have about how useful these activities were or suggestions for other ways that could have helped you prepare for the Conference.**

## 21CNHM conference participant survey

Next, we would like to ask you about various aspects of the Conference proceedings, which took place from Sunday, February 12 through Wednesday, February 15.

### \*7. To what extent were the following Conference activities effective in promoting a collaborative effort among participants?

Please select one answer on a scale of 1 to 5, where 1=Not effective at all and 5=Extremely effective or select N/A if you did not attend or do any part of that activity.

	1=Not effective at all	2	3	4	5=Extremely effective	N/A
Networking Activities (e.g., participant slides, speed "geeking")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Breakout/Working Sessions (small groups)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Presentations (e.g., keynote speakers, tours of NMNH)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Large group discussions and summaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concurrent discussion of Conference proceedings via live Wiki, Twitter updates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cocktail hour/dinner, working breakfasts, lunches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reflection time/action planning with team member from your organization at the end of Monday and Tuesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 21CNHM conference participant survey

**\*8. To what extent were the different Conference activities effective in moving towards a national learning research agenda?**

**Please select one answer on a scale of 1 to 5, where 1=Not effective at all and 5=Extremely effective or select N/A if you did not attend or do any part of that activity.**

	1=Not effective at all	2	3	4	5=Extremely effective	N/A
Networking Activities (e.g., participant slides, speed "geeking")	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Breakout/Working Sessions (small groups)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Presentations (e.g., keynote speakers, tours of NMNH)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Large group discussions and summaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Concurrent discussion of Conference proceedings via live Wiki, Twitter updates	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cocktail hour/dinner, working breakfasts, lunches	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reflection time/action planning with team member from your organization at the end of Monday and Tuesday	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**\*9. The Wiki was created to document the Conference in real time, with the goal being to foster an inclusive discussion among participants and non-participants, as well as to solicit comments, questions and ideas regarding on-going Conference activities. To what extent do you feel that the Wiki was successful in that endeavor? Please select one answer from 1-5, where 1=Not successful at all and 5=Extremely successful, or select N/A if you did not follow the Wiki.**

- 1=Not successful at all
- 2
- 3
- 4
- 5=Extremely successful
- N/A=I did not follow the Wiki

**10. Please tell us the reason (s) for your rating or if you did not follow the Wiki, why not.**

## 21CNHM conference participant survey

**\*11. How often have you visited the Wiki since the Conference ended?**

- Not at all
- Once
- 2-3 times
- 4 + times

## 21CNHM conference participant survey

A large part of your time in the Conference was spent in a working group designed to consider different ideas for moving the field of informal natural history education forward.

### \*12. During the conference, which breakout/working groups did you primarily attend?

- Theme 1: Intersections between Natural History Museum assets and 21st Century Audience Engagement Strategies (Groups A, B, C)
- Theme 2: Intersections between Natural History Museum assets and 21st Century Audience and Societal Contextual Factors (Groups D, E)
- Theme 3: Intersections between Natural History Scientific Value and Educational/Public Value for the 21st Century (Group F)

### \*13. Regarding the working group you primarily attended, please rate your agreement with the following statements, where 1=Do not agree at all and 5=Very much agree.

	1=Do not agree at all	2	3	4	5=Very much agree
I understood the goal of each working group session.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I understood the ultimate (actual) outcome of each working group session.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt my contribution/ideas/opinions helped guide the conversation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt my contribution/ideas/opinions were "heard" or valued.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I felt more comfortable listening than participating.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall, I came away from the working group sessions feeling like we had accomplished our goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The working group sessions were a good way to achieve the Conference goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## 21CNHM conference participant survey

Now we would like to get your impressions of the Conference overall.

**\*14. Please rate your satisfaction with the following general aspects of the Conference, where 1=Not satisfied at all and 5=Extremely satisfied.**

	1=Not satisfied at all	2	3	4	5=Extremely satisfied
Pre-Conference communication about Conference logistics, expectations, etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Organization/format of the Conference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Duration/pace of the Conference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Responsiveness of Conference organizers/facilitators to daily feedback	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time to network, reflect, recharge	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Overall quality of the Conference	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



## 21CNHM conference participant survey

**\*15. Please rate your agreement with the following statements, where 1=Do not agree at all and 5=Very much agree.**

	1=Do not agree at all	2	3	4	5=Very much agree
The Conference met my expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Conference gave me/is giving me a greater opportunity to collaborate with others in the field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a result of the Conference, I feel a greater sense of community among my fellow practitioners and researchers in the field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Conference gave me new insight about the challenges and opportunities in the field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Conference increased my understanding of best practices for our field.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Conference was a valuable process for developing a national research agenda.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
As a result of the Conference, I have a better idea of specific actions (next steps) I/my institution can take.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**16. What were the two most effective elements of the Conference?**

**17. What were the two least effective elements of the Conference?**

**18. What two recommendations would you make to the Conference organizers for important next steps?**

**21CNHM conference participant survey**

**19. What was the greatest benefit of attending the Conference for you and/or your organization?**

## 21CNHM conference participant survey

Thank you very much for taking the time to complete this survey! We would like to follow up with a few participants to get a deeper understanding of your perspectives on the Conference proceedings, what you believe was accomplished and what you perceive can be sustained going forward. If you agree to provide additional feedback, your responses will be kept anonymous and confidential by Insight Evaluation Services. All responses will be reported in the aggregate and at no time will your responses be traced back to you.

**\*20. Would you be willing to talk with us briefly on the phone?**

Yes

No

## 21CNHM conference participant survey

**\*21. If Yes, please provide us with your name:**

**\*22. Please also provide us with your email address and phone number including the best days/times to call you.**

**Appendix B-Conference attendee follow-up telephone interview guide**

**National Museum of Natural History**

Name: \_\_\_\_\_

**Conference: 21<sup>st</sup> Century Learning in Natural History Settings** Date: \_\_\_\_\_

**Participant follow-up telephone interview**

Thank you for agreeing to be interviewed! My main purpose in calling is to get a sense of your perspectives on the Conference proceedings and also to find out how your action planning is going. This conversation should be 10-15 minutes long; do you still have time now to talk? (If not, when would be a good time?

\_\_\_\_\_)

1. As far as the Conference, I'd like to talk about the break-out/working groups. First, please tell me what specific sub-group you were in for most of the Conference: A B C D E F  
On the survey you assigned (\_\_\_, \_\_\_ ratings) to these statements: "Overall, I came away from the working group sessions feeling like we had accomplished our goals" and "The working group sessions were a good way to achieve the Conference goals."

If ratings 1-3, ask: What would have been a more effective way to conduct the working groups?

If ratings 4-5, ask: What specifically was effective about the working groups? Are there other ways you can think of to solicit participants' input if a conference is convened again?

2. To what extent have you/your organization begun working on your action plan?

(If respondent indicates work has begun) What has been helpful in getting that going? (Probe: What else do you need to help you/your organization follow through on your action plan?)

What concerns or questions do you have about your/your organization's ability to follow through on your action plan? (probe: What can Conference organizers do to help address those concerns?)

**Appendix C-Conference applicant web-based survey, including invitation to complete the survey**

Hello,

My name is Kirsten Büchner and I am working with the Smithsonian's National Museum of Natural History to provide an independent evaluation of the Conference, *21st Century Learning in Natural History Settings*, which took place this past February 12-15, 2012, in Washington, DC. Your contact information was provided to me by the Conference organizers.

We are reaching out to you because we would like to know whether you participated in the online discussions that took place before and during the proceedings, and if so, what you took away from those discussions.

Below you will find a link to an online survey. By completing the survey, you will help Conference organizers understand your opinions about the value of the online discussions. **This survey will take approximately 5 minutes to complete, and all responses will be kept anonymous and confidential.**

**Click on the link below to begin the survey. The survey will be online through March 30, 2012.**

<https://www.surveymonkey.com/s/21CNHMaplicants>

Thank you for taking the time to share your thoughts!

If you have any comments or questions about the survey, please contact Kirsten Büchner at [kirsten@insighte.net](mailto:kirsten@insighte.net) (any time) or by calling 703-606-7976 between 9:00 a.m. and 3:00 p.m. EST (Tues-Fri).

Sincerely,

Kirsten Büchner  
Insight Evaluation Services

## 21CNHM applicant survey

**\*1. How would you describe your main responsibilities at work? Please select as many descriptions as apply from the list below. Please select "other" if any of your main responsibilities are not reflected in this list or if none of these descriptions apply and then provide a brief explanation of what you do.**

- I conduct research in natural or cultural science (biologist, anthropologist, paleobiologist, etc.)
- I manage natural or cultural collections
- I develop or implement education programs for live audiences
- I develop or implement programs or services for online/web-based audiences
- I conduct learning research (social scientist, education researcher, etc.)
- I conduct program or education evaluations
- I develop museum exhibitions
- I am primarily in a leadership role, and/or manage people whose focus is one of the above
- Other

Other (please specify)

**\*2. What type of organization do you represent? Please select one.**

- Natural history museum
- Other collections-based museum
- Science Center
- Nature center
- University department
- Zoo, arboretum, or botanical gardens
- Independent non-profit organization
- Other

Other (please specify)

## 21CNHM applicant survey

**\*3. Did you follow or participate in the pre-Conference Discussion that took place on ASTC Connect on Sept. 28-Oct. 4, 2011, titled "What do we know about learning in natural history settings?"**

- No, was not aware of the discussion when it took place
- No, did not get the opportunity to do so
- Yes, followed only
- Yes, contributed

**4. If yes, what piece of information, participant comment, or conclusion offered during that discussion stood out for you?**

**\*5. A Wiki was created to document in real time the Conference that took place on February 12-15, 2012. The goal of the Wiki was to foster an inclusive discussion among Conference participants and non-participants, as well as to solicit comments, questions and ideas regarding on-going Conference activities. Did you follow or participate in the Wiki?**

- No, was not aware of the discussion when it took place
- No, did not get the opportunity to do so
- Yes, followed only
- Yes, contributed

**6. If yes, what piece of information, participant comment, or conclusion offered during the Wiki discussion stood out for you?**

**7. If yes, to what extent do you feel that the Wiki was successful in fostering an inclusive discussion? Please select one answer from 1-5, where 1=Not successful at all and 5=Extremely successful.**

- 1=Not successful at all
- 2
- 3
- 4
- 5=Extremely successful



## 21CNHM applicant survey

**8. Please tell us the reason (s) for your rating.**

**\*9. Did you follow the Conference Twitter feed or any of the Conference participants' Tweets during the Conference on Feb. 12-15?**

- No, was not aware of the Conference Twitter feed or any of the Conference participants' Tweets at the time
- No, did not get the opportunity to do so
- Yes, followed only
- Yes, replied, reposted or re-Tweeted

**10. If yes, what piece of information, participant comment, or conclusion that was Tweeted stood out for you?**

## **Appendix D-ASTC Connect Discussion participant web-based survey**

Dear ASTC Connect Discussion participant,

Between September 28 and October 4, 2011, you participated in an online forum, *What Do We Know About Learning in Natural History Settings?* This discussion was designed to help form the agenda for the Conference, *21<sup>st</sup> Century Learning in Natural History Settings*, which took place this past February 12-15, 2012, at the Smithsonian's National Museum of Natural History in Washington, DC.

You have been randomly selected to participate in a brief online survey, the link to which is below. By completing the survey, you will help Conference organizers understand your opinion about the forum and what you took away from that dialogue. **This survey will take less than 5 minutes to complete, and all responses will be kept anonymous and confidential.**

**Click on the link below to begin the survey. The survey will be online through March 25, 2012.**

<https://www.surveymonkey.com/s/preconferenceASTCConnectDiscussion>

Thank you for taking the time to share your thoughts about the ASTC Connect Discussion!

If you have any comments or questions about the survey, please contact Kirsten Büchner at [kirsten@insighte.net](mailto:kirsten@insighte.net) (any time) or by calling 703-606-7976 between 9:00 a.m. and 3:00 p.m. EST (Tues-Fri).

Sincerely,

Kirsten Büchner  
Insight Evaluation Services

## 21CNHM ASTC Connect Discussion

**1. What prompted you to participate in the ASTC Connect Discussion that took place on Sept. 28-Oct. 4, 2011, titled "What do we know about learning in natural history settings?"**

**Please select all that apply.**

- I have a general interest in natural history settings
- I have specific interest in natural history settings (e.g., I am an educator or content expert in a natural history setting or natural history-related field)
- I have a general interest in informal learning research and evaluation
- I have a specific interest in informal learning research and evaluation (e.g., I conduct visitor studies for informal learning organizations, such as museums, zoos, etc.)

Other (please specify)

**2. The goal of the ASTC Connect Discussion was to share information, resources, evaluation and research results, and best practices to identify and consider what the field knows about learning in natural history settings. To what extent do you feel that the discussion was successful in that endeavor, on a scale of 1 to 5, where 1=not successful at all and 5=extremely successful.**

- 1=Not successful at all
- 2
- 3
- 4
- 5=Extremely successful

**3. Please tell us the reason for your rating.**

**4. What piece of information, participant comment, or conclusion offered during the ASTC Connect Discussion stood out for you?**

## 21CNHM ASTC Connect Discussion

**5. Did you follow or comment on the Conference Wiki discussion that took place between Feb. 12-15?**

- No, was not aware of this option
- No, did not get the opportunity to do so
- Yes, followed only
- Yes, contributed

**6. Did you follow the Conference Twitter feed or any of the Conference participants' Tweets during the Conference on Feb. 12-15?**

- No, was not aware there was a Conference Twitter feed or that participants were tweeting about it
- No, did not get the opportunity to do so
- Yes, followed only
- Yes, replied, reposted or re-tweeted

**7. If you answered "yes" to either question 5 or 6 above, what piece of information, participant comment, or conclusion offered during the Conference stood out for you?**

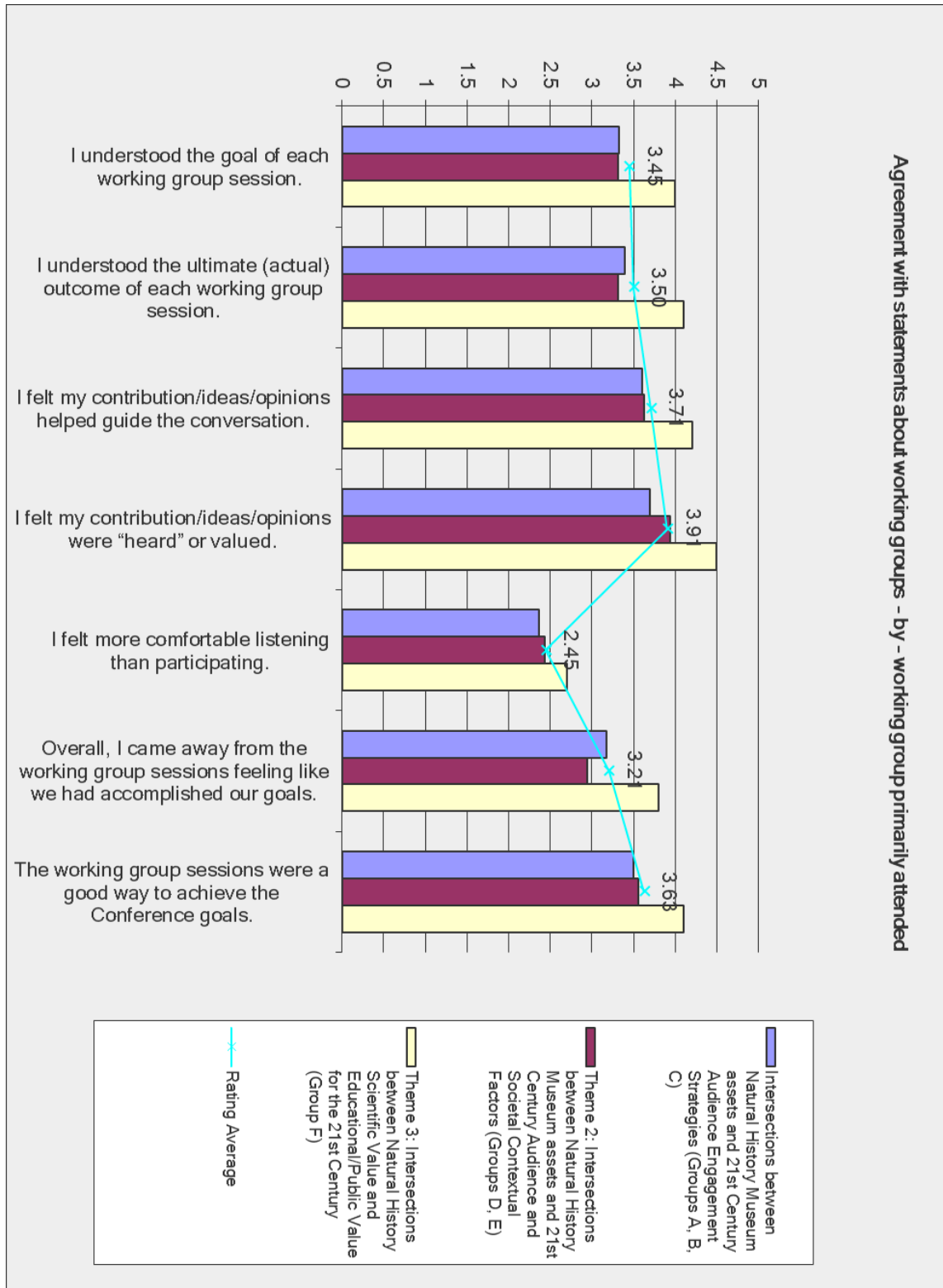
**Appendix E-Cross tabulation of success of wiki by wiki visits after Conference**

Number Row % Col % Total %	Wiki visits after Conference				Totals
	0	1	2	4	
0=did not follow Wiki	4 40.0% 28.6% 7.1%	3 30.0% 23.1% 5.4%	3 30.0% 14.3% 5.4%	0 0.0% 0.0% 0.0%	10 17.9%
1=not successful at all	2 66.7% 14.3% 3.6%	0 0.0% 0.0% 0.0%	1 33.3% 4.8% 1.8%	0 0.0% 0.0% 0.0%	3 5.4%
2=	1 33.3% 7.1% 1.8%	1 33.3% 7.7% 1.8%	1 33.3% 4.8% 1.8%	0 0.0% 0.0% 0.0%	3 5.4%
3=	1 10.0% 7.1% 1.8%	5 50.0% 38.5% 8.9%	3 30.0% 14.3% 5.4%	1 10.0% 12.5% 1.8%	10 17.9%
4=	5 26.3% 35.7% 8.9%	3 15.8% 23.1% 5.4%	7 36.8% 33.3% 12.5%	4 21.1% 50.0% 7.1%	19 33.9%
5=extremely successful	1 9.1% 7.1% 1.8%	1 9.1% 7.7% 1.8%	6 54.5% 28.6% 10.7%	3 27.3% 37.5% 5.4%	11 19.6%
Totals	14 25.0%	13 23.2%	21 37.5%	8 14.3%	56 100.0%

Chi-Square = 16.11  
 Caution: 23 cells (96%) E<5  
 Probability (df=15) = 0.375

Valid Cases = 56  
 Missing Cases = 0  
 Response Rate = 100.0%

**Appendix F-Chart that describes cross tabulation of agreement with statements about working groups by working group primarily attended**



**Appendix G-Action plan template**

**21<sup>st</sup> Century Learning in Natural History Settings  
Team Reflection and Action Plan Template**

Institution Name:

Team Members:

Key takeaway messages from the conference:

Innovations (existing best practice or new) that could fit with our Institution:

Research questions or hypotheses that are particularly relevant for us

Potential new partnerships inspired by this conference

	<b>Action Item</b>	<b>Intended Outcome/Objective</b>	<b>People to Involve</b>	<b>Deadline</b>
<b>60 Days (April 15)</b>				
<b>120 Days (June 15)</b>				
<b>180 Days (8/15)</b>				