STAR*net* Science-Technology Activities & Resources For Libraries

2015 Public Libraries & STEM Conference Evaluation

Final Report

Prepared by Keelin MacCarthy
December, 2015

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1. Background

Libraries across the country have been reimagining their community role and leveraging their resources and public trust to strengthen community-based learning and foster critical thinking, problem solving, and engagement in STEM. What started some years ago as independent experiments has become a national movement. The Space Science Institute's *National Center for Interactive Learning* (NCIL), in partnership with the Lunar and Planetary Institute (LPI), received funding from the National Science Foundation for the first-ever *Public Libraries & STEM* conference, at the Sheraton Denver Downtown Hotel in Colorado, August 20-22, 2015. The conference brought together leaders from local, state, and national libraries; professionals from related associations; STEM leaders from informal science education institutions, universities, and research institutions; and individuals engaged in evaluation, funding, and policy.

Conference sessions and networking events were designed to foster productive collaborations; explore promising practices in designing effective programs; help define a new 21st century vision of STEM learning in public libraries; and develop the foundation for a future evaluation and research agenda for libraries and their partners engaged in STEM education efforts. "Background Reports" are available on the STAR Library Education Network website (www.starnetlibraries.org) that highlight research in how people learn through out-of-school-time (OST) experiences; the importance of collective impact; lessons learned about how to better engage audiences that libraries are serving; and the ways libraries are continuing to evolve to meet their community's needs. The conference's work and published proceedings will inform future development of informal STEM learning programs in libraries and their communities.

Conference sessions were organized around five topics:

TOPIC 1: 21st Century Visions of STEM Learning in Public Libraries
Oral presentations, poster presentations, and discussions under this topic focused on how the following contribute to a broader ecosystem that supports STEM learning: 1) the development of the profession and the needs of librarians and other library staff to facilitate STEM learning and 2) promoting interest, engagement, and literacy of library patrons. Discussions around this topic focused on defining what STEM learning in a 21st Century library looks like in terms of space, staffing, management, and connections to the community and other organizations.

TOPIC 2: Case Studies of Successful STEM Implementation in Libraries
Poster presentations under this topic focused on the lessons learned in implementing STEM learning experiences in libraries or with libraries as partners. Presenters share tools, resources, strategies, outcomes, and community impacts that others can use. Conference participants should walk away not only with solid "nuts and bolts" ideas, but also with an understanding of implications and relevance to aid them in applying lessons learned as they implement their own initiatives.

TOPIC 3: Effective Collaboration Models between Libraries and STEM Organizations
Oral presentations, poster presentations, and discussions under this topic highlight "scalable" and "spreadable" collaborations (local and/or national) to provide STEM learning experiences. Presenters share examples of ways in which public libraries and STEM organizations (e.g., science museums, STEM professional associations, universities/colleges, schools, research institutions, state and federal agencies) are working together to increase access to and availability of quality STEM learning opportunities in urban, rural, and low-income communities. Presentations highlight effective principles for collaboration, including strategies for managing and sustaining partnerships and collaborations.

TOPIC 4: Strategies for Reaching Groups Underrepresented in STEM Fields
Libraries and other informal STEM education providers seek to effectively engage underrepresented audiences in learning opportunities. Oral presentations, poster presentations, and discussions under this topic highlight evidence-based practices and key strategies for designing and developing successful in-reach/out-reach interactions to engage targeted audiences in relevant, mindful, and active learning. This topic strand offers an excellent opportunity for all to share and learn from each other's successful efforts at engaging underrepresented audiences in STEM learning.

TOPIC 5: Building a Foundation for Evaluation and Research for STEM Learning in Public Libraries
Oral presentations, poster presentations, and discussions share what is currently known about the nature of STEM learning in public libraries and how learning impacts are evaluated across all library types. Presentations also examine the critical factors that lead to rich and effective STEM learning experiences in libraries and compare them with the corresponding impacts from other informal education institutions. Discussions begin to map an agenda for future STEM learning research and evaluation in public libraries.

Keelin MacCarthy evaluated the event in order to identify trends and determine the efficacy of the conference in fostering collaboration. The purpose of the evaluation was to:

1. Identify trends emerging in libraries and STEM organizations that both parties can utilize going forward.

2. Determine whether the conference produced new partnerships and what this collaboration will accomplish.

2. Methodology

At the conference, participants were given brief questionnaires at the close of each day (see Section 5 for all evaluation instruments). These questionnaires asked participants to specify their personal goals and which programming best fulfilled these needs. Questions were open ended, designed to give participants the option to elaborate as much or as little as they liked. Questionnaires were intended to take fewer than five minutes to complete so as not to overwhelm attendees.

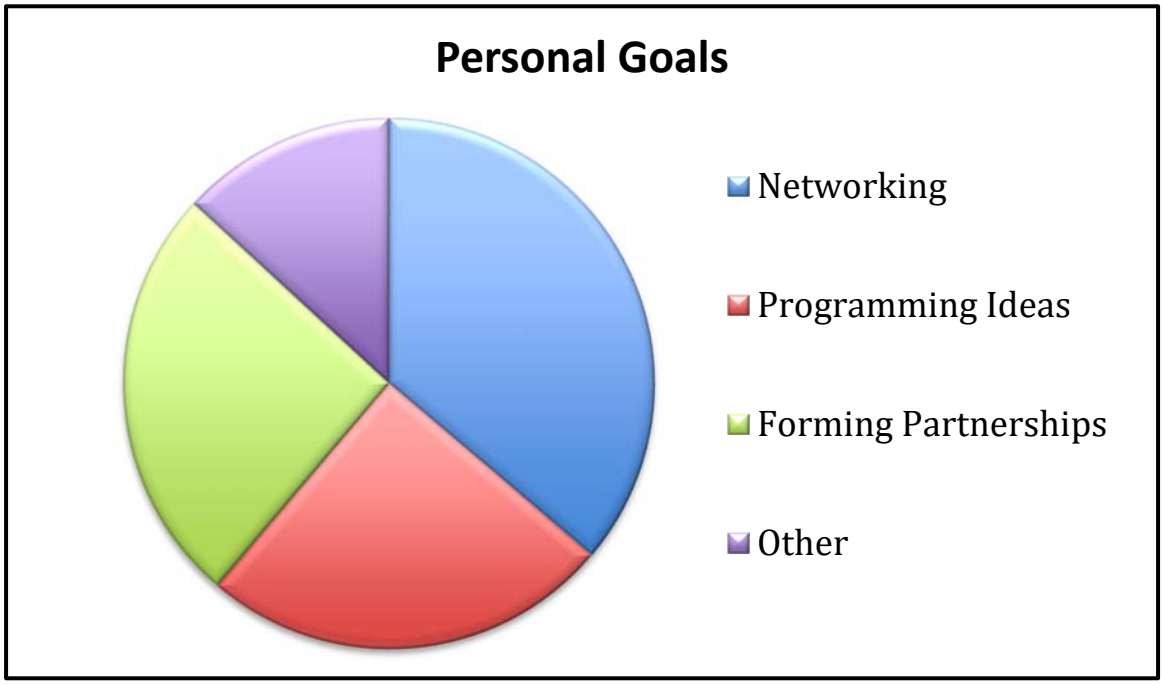
The questionnaires were distributed to all attendees present in the main conference room at the end of each day. They were optional to complete, although attendees were given time to do so should they so choose.

A follow-up survey hosted on Qualtrics was distributed by email invitation on October 5th and closed November 5th.

3. Results

Daily Questionnaire Results

The first day yielded 84 responses, the second 71, and the third 53. In the first questionnaire, attendees were asked to identify their goals in attending. The following graph illustrates the results:



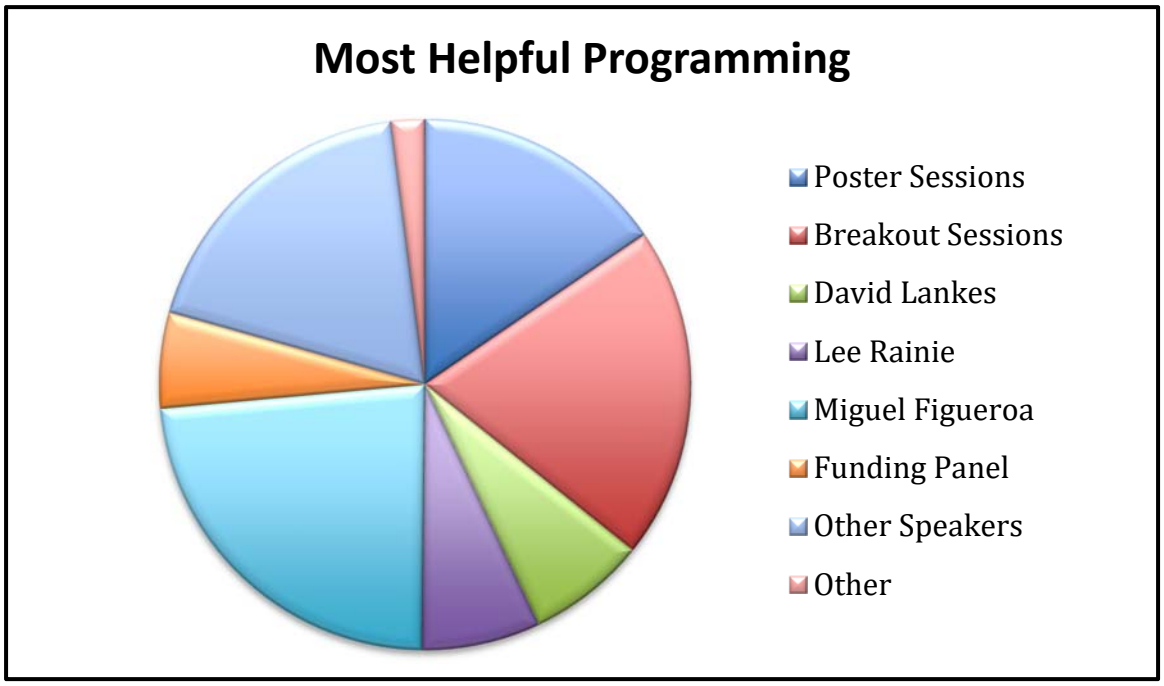
Most respondents (36%) attended the conference to network with other professionals. Many respondents also replied that they attended for all the suggested reasons: networking, programming ideas, and forming partnerships. "Other" responses included**:** increasing awareness of the "state of the field" in STEM education and libraries; learning about funding opportunities, evaluation, and new resources; getting inspiration for new ideas; and sharing collaboration experiences.

Some examples of "other" responses include: **"learning more about the current landscape of programming and professional learning and what the future might look like;"** "gathering perspectives from both library and STEM communities;" "to learn more about the latest

research and practices;" "to crystalize why libraries staff should participate in STEM/STEAM/STREAM."

When asked whether the first day's programming met their needs, respondents overwhelmingly affirmed (83) as opposed to denied (3).

Which programming most helped participants realize their personal goals? Participants were asked this question on all three days. I have chosen to combine their responses into a single graph:

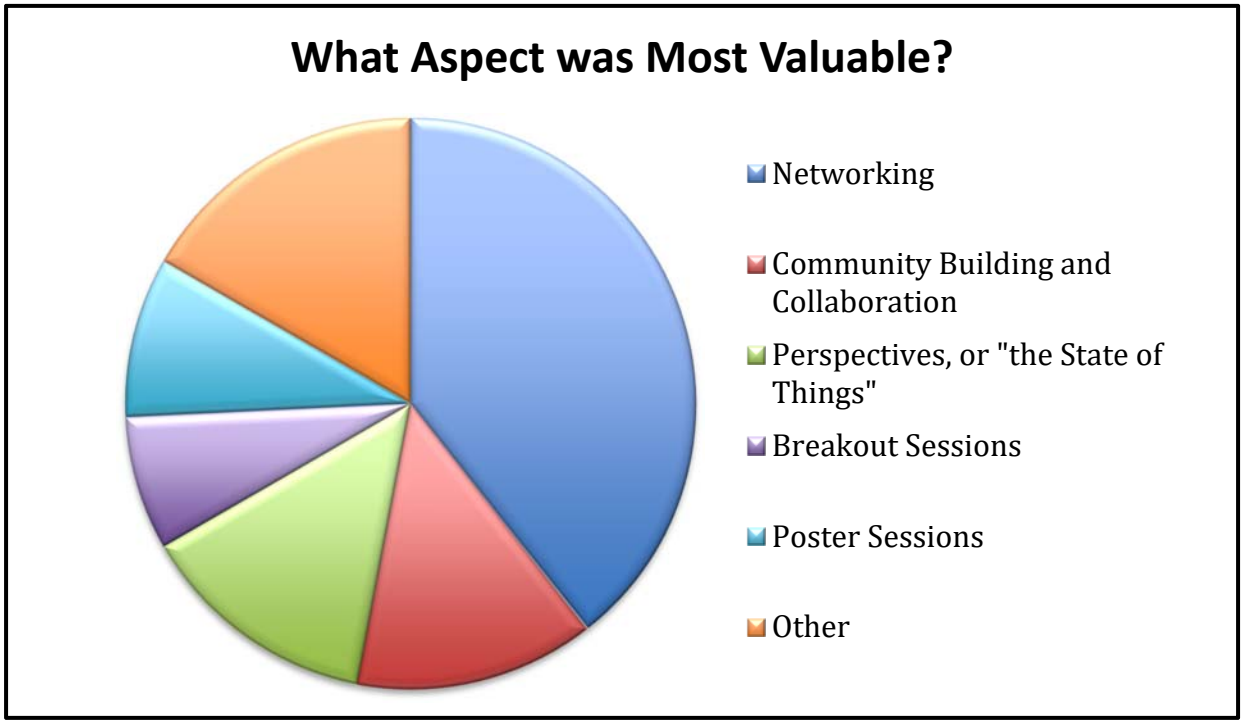


Poster (15%) and breakout sessions (20%) were very popular and helpful, as was Miguel Figueroa's discussion of trends in libraries (23%). Lectures by David Lankes (7%) and Lee Rainie (7%), as well as the panel on funding (5%) also ranked especially high. The most mentioned presentations in the "other speakers" category were John Falk, Marsha Semmel, and Bill Penuel. "Other" responses included: "Denver Public Library," "open discussion," and "research."

On the second day, 57 (95%) respondents stated that programming met their needs, as opposed to 3 (5%) who felt it did not.

Among the "least helpful" programming, no single aspect stuck out, although a trend emerged. Participants felt that they needed more time for networking, that there was "not enough time for conversation between people." **Several commented in the strain of "information overload" and "needed breaks to be longer to promote networking."** Participants also requested hands-on training: "would have liked to see hands on experience/training to see good practices at work."

On the third and final day, respondents were asked to identify the most and least valuable aspects of the conference. Because the question was open-ended, they were allowed to fall into general groups. The responses are depicted in the following graph.



Networking (39%) proved the most valuable aspect of the conference for most attendants. "Other" responses were varied: speakers (3, 4%), programming ideas (2, 3%), research and evaluation (3, 4%), and resources (4, 6%).

Further comments included: "Let's be sure to do this again!" "Yes – another conference like this, and be sure to cast a wider net to get folks here that aren't already doing this but want to." **"As a non-librarian, this conference has been incredibly eye-opening and inspiring and a great way to get connected to new partners (librarians). I feel energized to do new work supporting these institutions."**

Focus Group Results

10 attendees were invited to participate in a brief focus group immediately following the conference. 5 participated in the focus group, which was structured as a free-flowing discussion around a set of eight questions. Responses were recorded with participants' permission.

Participants were first asked what the best "takeaway" from the experience was; whether any specific sessions proved especially helpful. The opportunity to network, particularly through poster sessions, was noted, alongside learning about evaluation instruments, outreach resources, and the trends session. When asked whether the networking functions successful,

the consensus was a resounding yes and a request for more time specifically devoted to table discussions and mingling.

Attendees were asked, “How has the conference influenced your decisions for the future?” Primarily, their responses related to reaching out to their communities for collaboration: “contact[ing] local STEM workers and local schools,” a plan to share research, and a list of connections from the conference were all mentioned. **Goals included branching out beyond K-12 education, broadening the scope of programming past maker spaces and tech to include math, and experimenting with ideas presented at the conference,** such as Keva planks.

When the topic of a future conference was introduced, participants were strongly in favor. They suggested inviting many of the same attendees in order to gauge progress, feeling that there was a good range of people from different areas and experiences represented. The call for more practical tools and training sessions was reiterated, with particular emphasis on learning to engage those less invested in STEM. Attendees suggested more time for poster sessions, a comprehensive list of links to posters and power point presentations to be made available, and more information about marketing STEM in libraries for a future gathering.

As to whether they felt anything significant was overlooked, participants responded that **they would have liked training with evaluation instruments, instruction on how to get the community to support public STEM programming, and the involvement of formal educators and homeschoolers.** One contributor stated that, “libraries can teach museums abut outreach,” stressing the need for collaboration and shared resources.

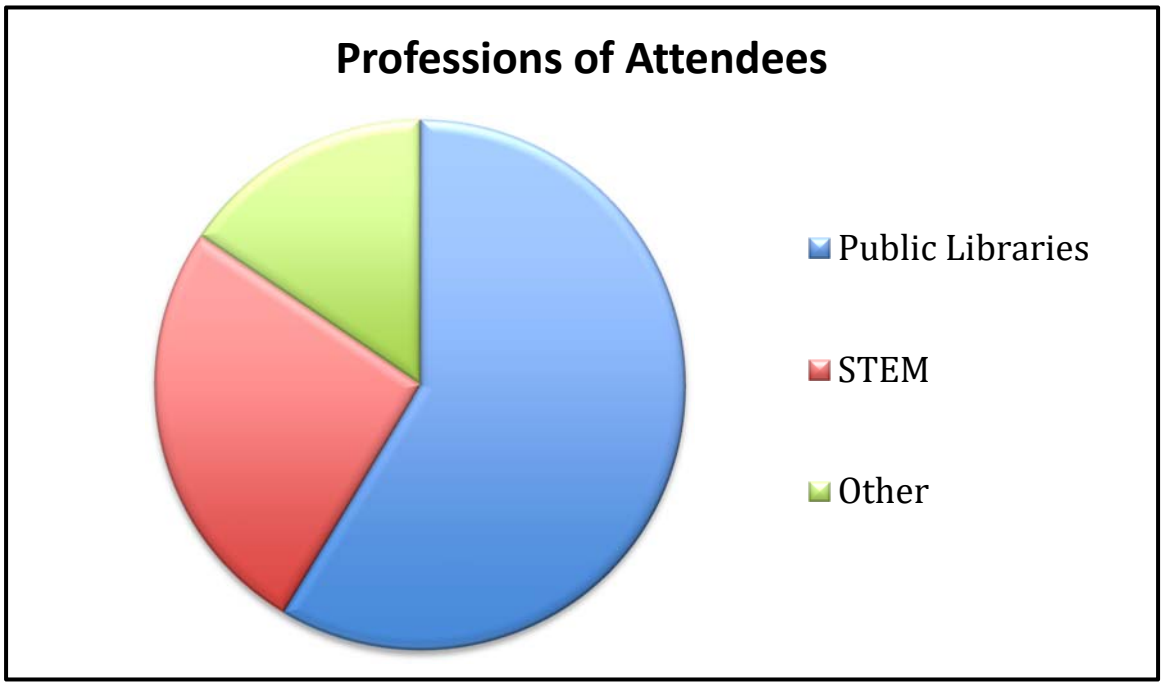
Attendees stated that they would disseminate information from the conference to their colleagues via twitter, poster sessions, webinar, a local bulletin, an online library network, and presentations to their coworkers. **All seemed eager to share their experiences with their coworkers and to connect with people they met at the conference to create new resources.**

The focus group was successful in reiterating more concisely the trends that emerged in the daily questionnaires, and it brought up several new ideas, as well. **Participants felt strongly that future efforts and conferences must include educators and administrators working in formal education, particularly public schools.** Partnerships could be formed across the divide of formal and informal education and resources could be shared. They felt such a relationship would be mutually beneficial, that contributions from both parties could better inform and equip future efforts in STEM education across the board.

Follow-Up Survey Results

A follow-up survey, hosted on Qualtrics, was active and available from October 5, 2015 through November 5, 2015. The survey had eight questions, five of which requested text entry responses for more qualitative results. It was designed to gauge the effectiveness of the conference in generating real collaboration amongst its attendees. In total, the survey received 63 responses.

1. "In which field do you primarily work?"



34 (59%) respondents work in public libraries, while 15 (26%) work in STEM. "Other" responses (totaling 9, or 16%) primarily included informal education organizations and museums.

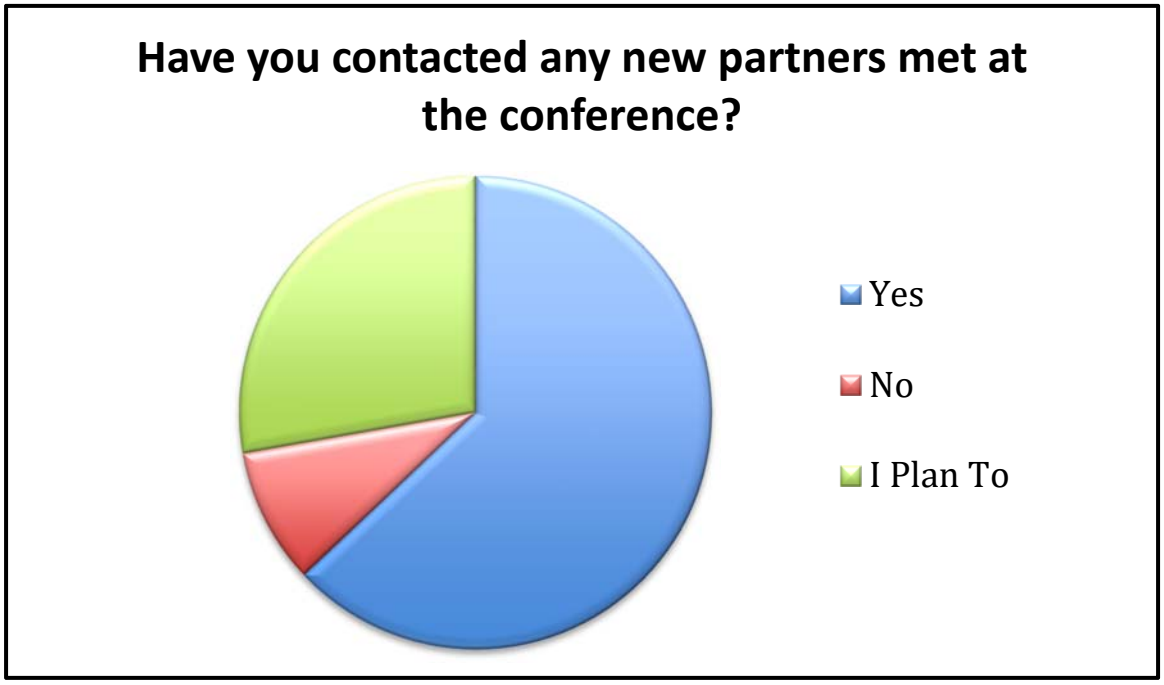
2. "Have you contacted any new collaborators since the Public Libraries and STEM Conference?"

#	Answer		Response	%
1	Yes		40	69%
2	No		18	31%
	Total		58	100%

Most participants (69%) had already contacted new collaborators since the conference. It is important to note, too, that a majority of participants work in libraries. These results provide a picture of library staff reaching out to new collaborators. In light of the results from the national survey report (Hakala et al., 2015), in which it was found that an overwhelming majority of library programming is produced by library staff, this connotes a change of direction and a willingness to form new partnerships.

This question was designed to gauge the effectiveness of the conference at fostering collaborative initiative. The following question gave more precise insight into the conference's success at facilitating new relationships.

3. "Have you contacted any new partners met at the *Public Libraries and STEM Conference*, or do you plan to?"



Of 54 respondents, 34 (63%) have already initiated new collaboration through the conference, and 15 (28%) plan to do so. Only 5 (9%) participants answered that they do not intend to contact fellow attendees. Considering the results of the daily questionnaires, in which attendees focused on networking, it is clear that the opportunity to meet with fellows in the field, to see what they are creating and doing, was instrumental in forging new partnerships.

4. "Have you planned to launch any programming inspired by your experiences at the Public Libraries and STEM Conference within the next year? If so, please tell us about it!"

32 respondents out of 51 (63%) had plans to launch new STEM programming or expand existing programming within the next year. 19 (37%) responded, "no" or "not yet." Of the "yes" responses, the following were particularly exciting:

> "**We are seeking local people to talk about their experiences...many can be related to STEM in one way or another.** We have someone who served on a military base in the Antarctic coming to speak, for example. We hope to host another local person who spent 30 days alone on a river in Canada with just his dog and the canoe he built for the trip. **We want to fuel our community's imaginations and inspire them to chase their passions.** We are also applying for a STAR_Net exhibit, and have been **involved in meetings with local STEM hub coordinators, trying to bring them and our area's libraries together. We hope**

this will become the beginnings of a local community of practice. There are several good things in the works for us after this conference!"

"Yes - we are having a big STEM resource fair next week, with lots of fun, hands-on activities for all ages. **The big takeaway for me was to partner, partner, partner, so I plan to work closely with more community groups and the university, rather than try to come up with original programming all the time**."

Programming included STEM camps, Creative Building for Families, pre-school science experiments and storytime, Family Science Saturdays, KEVA planks, and lots of afterschool programs. Participants mentioned applying for IMLS grants, STAR_Net exhibits, and reaching out to community organizations, including local Parks and Wildlife, Parks and Rec, the Austin Paleontological Society, SciGirls, the Boys and Girls Club, and local museums. Additionally, many commenters noted incorporating STEM themes into existing programming.

5. "Have you accessed any of the resources you learned about during the Public Libraries and STEM Conference? If yes, which ones, and for what purpose?"

36 (67%) of respondents have accessed at least one resource they learned about at the conference, while 18 (33%) have not; or, in some cases, "not yet." STAR-Net, NASA, and white papers from presenters were mentioned most frequently. Also noted were a number of websites and organizations that provide programming ideas and funding.

6. "Would you attend a future Public Libraries and STEM Conference?"

Overwhelmingly, participants responded that they would attend a future conference: out of 57 responses, 55 (96%) replied yes.

7. "What elements should a future conference incorporate?"

The responses to this question broke down into two basic groups. The responses to this question broke down into two basic groups. The first suggestion, encouraged by 8 (16%) respondents, was to include more parties in the discussion. "Don't make it invite-only**. Include wide range of stakeholders.** Provide lots of interaction opportunities." "More non-library organizations participating - what they would like to gain from the partnerships with libraries." The second suggestion, endorsed by 27 (54%) respondents, was the inclusion of more practical resources: **"perhaps some more "how to" sessions. Some of the breakout sessions became Q&A sessions and I think some hands on planning STEM in your library would be great."** "More vendors with toys! Bring in Sphero, Spark Fun, Finch, etc. so they can demo how to use their products in STEM and we have access to them."

In this grouping, networking time and experience sharing from others in the community figured largely. "Additional networking time, more shared ideas regarding STEM programming for

lower-resource libraries." "Sharing best practices, lots of time to see where we can connect - maybe through brainstorming best practices?"

Particularly interesting was the desire to see the results from the first conference in future conferences. "This one was pretty brilliant. Perhaps a second go-round could include discussion opportunities for those who were present the first time and have follow-up information to offer about what they've added to their organizations as a result." "**I would love to hear libraries present how they have developed STEM programming in their communities.** I'd also like to hear more about research and evaluation of STEM in informal spaces--especially libraries."

8. "Do you have any other comments, suggestions, or experiences to share? What was the most important take-away you got from the conference?"

Answers to this question can also be sorted into two general groups. The first is awareness of opportunities for collaboration. "**My most important takeaway was thinking about the library as a single entity in a larger learning ecosystem.** Completely revolutionized the way I think about what we need to be doing, and where we can simply direct to others doing other work!" Another commenter said, "That there is help out there-motivated organizations and persons who want to help libraries achieve their goals in reaching as many patrons as possible to provide STEM and STEAM programming."

The second group was concerned with the state of the field and the ability to interact with other stakeholders. "1) Community as collection. 2) Library staff should not try to be the experts in STEM. 3) We all want to have better evaluation methods for our programming." **"I appreciated knowing where other libraries stood in terms of programming offered, and that STEM professionals were generally willing to collaborate."**

4. Conclusion *and* Suggestions for a Future Conference

> "The most important takeaway from the conference for me was the fact that public libraries have never been obsolete. We just lost our way in the miasma of explosive shifting technology. We have been and are centers for informal learning and as important as formal learning settings to the development of an intelligent and engaged public. […] This conference has been one of the most formative and transformative experiences of my career."

The passage above, one attendee's response to the request for comments, highlights a sentiment I found expressed repeatedly: revitalized excitement about libraries. Attendees were inspired to share resources, generate new ideas, and, primarily, to form new relationships. As another attendee said, "STEM providers want to collaborate with libraries—don't be shy about asking, but do be clear about the goal of the partnership, and what each partner's role will be"

Networking was the most prominent goal and success of the conference. One attendee commented, **"The conversations were insightful and created a bonding."** Those activities which promoted open discussion, poster and breakout sessions, ranked highly as most helpful. One participant stated as most valuable: "The ability to talk to other people, not just library

staff, about STEM and how we can collaborate for the future." **This networking has the potential to foster real, productive collaboration. In the words of another attendee, "I made so many connections with smart people who are doing great work. I will be following up with lots of people I met."**

A theme that emerged throughout discussion at the conference was access to resources and partnerships. The resources exist, and partners in both fields are ready and willing to collaborate, but organization is lacking. Professionals in both camps are unaware of resources, or they don't have the time and staff to research them. Adding more resources is not necessary; finding easy access to them and to feedback about them is. The next step in this process ought to engage professionals socially, to provide a platform for discussion, collaboration, and feedback that is readily accessible. As one participant stated: **"I hope that a strong CoP is developed through this effort, so that focus and engagement continues."**

Going forward, a cohesive community of practice will be critical to maintaining the momentum initiated at the Public Libraries and STEM Conference.

It is clear that participants are in favor of a future conference, and they willingly offered a number of suggestions to guide its development. Considering the responses collected from attendees, **the most vital component of a future conference will be more networking opportunities with longer timeframes.** Poster sessions saw great success with participants as time to network and share ideas**. Longer poster sessions in a larger space are ideal for a future conference.** Leaving posters out and available to attendees, giving them the opportunity to absorb more information and provide feedback would be a useful modification to the sessions. Participants also requested that posters be made available to them in digital form for future reference.

Also crucial is the involvement of formal education. As one participant said, "I think including schools in the discussion would be helpful. **Partnering with schools is a mission of most public libraries, and finding ways to have them involved with after-school programming would be great.** Libraries could possibly coordinate some of the STEM programming with the school curriculum. Teachers could also be a great program instructor."

Organizers could also dip even deeper into the informal education community: "Again, coming from the children's museums field, I found the conversations with librarians incredibly enlightening in terms of overlap with the work children's museum professionals are doing. I would very much like to see more children's museum professionals invited to future conference and/or asked to present." **Participants want to see a broader range of stakeholders in this endeavor in order to expand the pool of resources and partnerships.**

A final suggestion for a future conference is a request that emerged during the conference and persisted through the final survey. **Attendees need more practical, hands-on training sessions.** They want to know exactly how ideas were executed, exactly how evaluation was performed, and exactly which kinds of programs see the most success. Respondents want to hear from

professionals in libraries and STEM organizations who have experimented with programming and assessed the results, and they want to know how to do it themselves.

The most direct way to accomplish this is, firstly, to have presenters share their experiences and then, secondly, to have time for all attendees to discuss these experiences and share their own. **Question and answer sessions, table discussions, and breakout groups all saw success in this conference. In a future conference, they could be further honed to serve practical needs.** For example, one breakout group, led by an evaluator, could compare methods of assessment. Another could be a walkthrough of a successful program led by an educator. Yet another could address gaining support in one's local community, led by professionals who have already done so and seen success. The conference steered itself in this direction, influenced by the needs of the participants. The next step is to explicitly seek to fill these needs through programming.

On the whole, attendees expressed great satisfaction with the conference and a vested interest in shaping a future one. It is clear from these results that conference-goers found value in the information presented, the opportunities for networking, and the resources discovered. One participant, asked for their take-away from the experience, stated eloquently:

> "What we are doing in Public Libraries truly IS important to the lifelong education of our citizens. It's more than something `nice to have' or `just for fun'. **It's given us a whole new perspective knowing that there is research behind the efficacy of programming in informal environments like ours. We now feel empowered to own that position**."

Appendix A: Daily Questionnaires

Day One Questionnaire

1. What are your personal goals for this conference? Are you here for networking, programming ideas, forming partnerships, or something else?

2. Do you feel that these needs were met by today's programming?

3. Which presentation, breakout group, or other activity helped you the most today?

Day Two Questionnaire

1. Do you feel that today's programming was valuable to you? Why or why not?

2. Which presentation, breakout group, or other activity helped you the most today?

Day Three Questionnaire

1. Which presentation, breakout group, or other activity helped you the most today?

2. Overall, what aspect of the conference has been most valuable to you?

Appendix B: Focus Group Outline and Questions

Public Libraries & STEM Conference
Focus Group
August 22, 2015, 12:30-1:30pm

The focus group will be oriented towards the future plans of participants. How has the conference influenced their decisions for the future, and how will they use this information going forward? Which sessions/aspects of the conference were most helpful to them? What would they include in a future conference?

Outline:

The focus group will serve as an environment for free-flowing discussion about the events of the conference. Participants will be encouraged to discuss personal experiences and opinions. We will open with introductions and the simple ice breaker, **"What is the best thing you did this weekend?"** I will then steer the discussion into prepared questions.

Focus Group Questions:

1. Which sessions/aspects of the conference were most helpful to you? What provided you with the most "takeaway" that you can use in the future?

2. How has the events of the conference influenced your decisions for the future? How will you use this information going forward?

3. Part of the purpose of this conference is to foster collaboration and new relationships. Do you think the networking functions (ice breakers, small group discussions, etc.) were successful in this regard? Do you have any personal experiences you'd like to share?

4. What major themes/trends did you identify? How do you plan to address them?

5. What would you include or remove from a future conference?

6. After this conference, do you plan to utilize any of the resources you learned about? Which ones?

7. Do you feel anything significant was overlooked in this conference?

8. How will you disseminate information to your colleagues?

Appendix C: Follow-Up Survey

1. “In which field do you primarily work?”

2. “Have you contacted any new collaborators since the Public Libraries and STEM Conference?”

3. “Have you contacted any new partners met at the Public Libraries and STEM Conference, or do you plan to?”

4. “Have you planned to launch any programming inspired by your experiences at the Public Libraries and STEM Conference within the next year? If so, please tell us about it!”

5. “Have you accessed any of the resources you learned about during the Public Libraries and STEM Conference? If yes, which ones, and for what purpose?”

6. “Would you attend a future Public Libraries and STEM Conference?”

7. “What elements should a future conference incorporate?”

8. “Do you have any other comments, suggestions, or experiences to share? What was the most important take-away you got from the conference?”

Appendix D: Selected Quotes

Selected Quotes from Daily Conference Questionnaires:

"Yes – another conference like this, and be sure to cast a wider net to get folks here that aren't already doing this but want to."

"As a non-librarian, this conference has been incredibly eye-opening and inspiring and a great way to get connected to new partners (librarians). I feel energized to do new work supporting these institutions."

"The ability to talk to other people, not just library staff, about STEM and how we can collaborate for the future."

"I made so many connections with smart people who are doing great work. I will be following up with lots of people I met."

"I hope that a strong CoP is developed through this effort, so that focus and engagement continues."

Selected Tables from 10/27 Report of Follow-Up Survey:

Would you attend a future Public Libraries and STEM Conference?

#	Answer		Response	%
1	Yes		54	98%
2	No		1	2%
	Total		55	100%

Have you contacted any new collaborators since the Public Libraries and STEM Conference?

#	Answer		Response	%
1	Yes		40	71%
2	No		16	29%
	Total		56	100%

Selected responses to: "What elements should a future conference incorporate?" from 10/27 Report of Follow-Up Survey:

"Don't make it invite-only. Include wide range of stakeholders. Provide lots of interaction opportunities."

"perhaps some more "how to" sessions. Some of the break out sessions became Q&A sessions and I think some hands on planning STEM in your library would be great"

“sharing best practices, lots of time to see where we can connect - maybe through brainstorming best practices?”

“This one was pretty brilliant. Perhaps a second go-round could include discussion opportunities for those who were present the first time and have follow-up information to offer about what they've added to their organizations as a result.”

“Additional networking time, more shared ideas regarding STEM programming for lower-resource libraries.”

“more non-library organizations participating - what they would like to gain from the partnerships with libraries”

“I think including the schools in the discussion would be helpful. Partnering with the schools is a mission of most public libraries, and finding way to have them involved with after school programming would be great. Libraries could possibly coordinate some of the STEM programming with the school curriculum. Teachers could also be a great program instructor.”

“I would love to hear libraries present how they have developed STEM programming in their communities. I'd also like to hear more about research and evaluation of STEM in informal spaces--especially libraries.”

“More vendors with toys! Bring in Sphero, Sparkfun, Finch, etc. so they can demo how to use their products in STEM and we have access to them.”

Selected Responses to: “Do you have any other comments, suggestions, or experiences to share? What was the most important take-away you got from the experience?” from 10/27 Report of Follow-Up Survey:

“My most important takeaway was thinking about the library as a single entity in a larger learning ecosystem. Completely revolutionized the way I think about what we need to be doing, and where we can simply direct to others doing other work!”

“That there is help out there-motivated organizations and persons who want to help libraries achieve their goals in reaching as many patrons as possible to provide STEM and STEAM programming”

“STEM providers want to collaborate with libraries—don’t be shy about asking, but do be clear about the goal of the partnership, and what each partner's role will be”

“1) Community as collection. 2) Library staff should not try to be the experts in STEM. 3) We all want to have better evaluation methods for our programming.”

“What we are doing in Public Libraries truly IS important to the lifelong education of our citizens. That it's more than something "nice to have" or "just for fun." It's given us a whole

new perspective knowing that there is research behind the efficacy of programming in informal environments like ours. We now feel empowered to own that position."

"I appreciated knowing where other libraries stood in terms of programming offered, and that STEM professionals were generally willing to collaborate."

"The most important takeaway from the conference for me was the fact that public libraries have never been obsolete. We just lost our way in the miasma of explosive shifting technology. We have been and are centers for informal learning and as important as formal learning settings to the development of an intelligent and engaged public. It was a great conference. I also can't say enough about the young ladies who handled much of the day to day logistics of the conference and the planners...and the speakers. This conference has been one of the most formative and transformative experiences of my career."

"Again, coming from the children's museums field, I found the conversations with librarians incredibly enlightening in terms of overlap with the work children's museum professionals are doing. I would very much like to see more children's museum professionals invited to future conference and/or asked to present."

6. Bibliography

Hakala, Jim; Keelin MacCarthy. STAR_Net Phase 2: Broad Implementation Front-End Evaluation Final Report. 2015.