ILR

A Publication of Informal Learning Experiences, INC

Informal Learning Review

No. 147
Nov/Dec 2017



Inside: GENIAL Summit Summary

Plus: The Rise of Fake News, Informal Science Learning & Social Inclusion, and More!

In this Issue:

Distrust in experts gave rise to fake news, but can science now save us? 3

Informal science learning as a tool for social inclusion 5

ILE Announcement 9

Little free library meets the museum 10

gENIAL Summit: Executive summary and call to action 14

Death in the Ice: The shocking story of Franklin's last expedition 20

Publisher information: **The Informal Learning Review** is a copyrighted publication of Informal Learning Experiences, Inc. It appears bi-monthly in February, April, June, August, October, and December. **The Informal Learning Review** is edited and published by Informal Learning Experiences, Inc., tel: 720.612.7476, email: ileinc@informallearning.com, mailing address: 1776 Krameria Street, Denver, CO 80220. **The Informal Learning Review** is designed and produced in house. ISSN 1089-9367.

Subscription Information

The Informal Learning Review

1 year, six issues, bimonthly, print and online: $65 in the U.S., $72 in Canada/ Mexico, $80 elsewhere. Online version ONLY, $55. Individual electronic issues can be purchased for $12 and will be delivered via email. Please contact us at ileinc@informallearning.com if you would like to purchase a single issue.

Traveling Exhibitions Database

1 year, unlimited access: $85 worldwide. There is no charge for listing exhibitions in the database. Please contact us at ileinc@informallearning.com for more information. Exhibitions with immediate availability may be placed on the 11th Hour Page.

You can sign up for the Informal Learning Review and the Traveling Exhibitions Database via our website at www.informallearning.com.
Online transactions are made securely via PayPal or Intuit.

Distrust in experts gave rise to fake news, but can science now save us?

By Linda Conlon

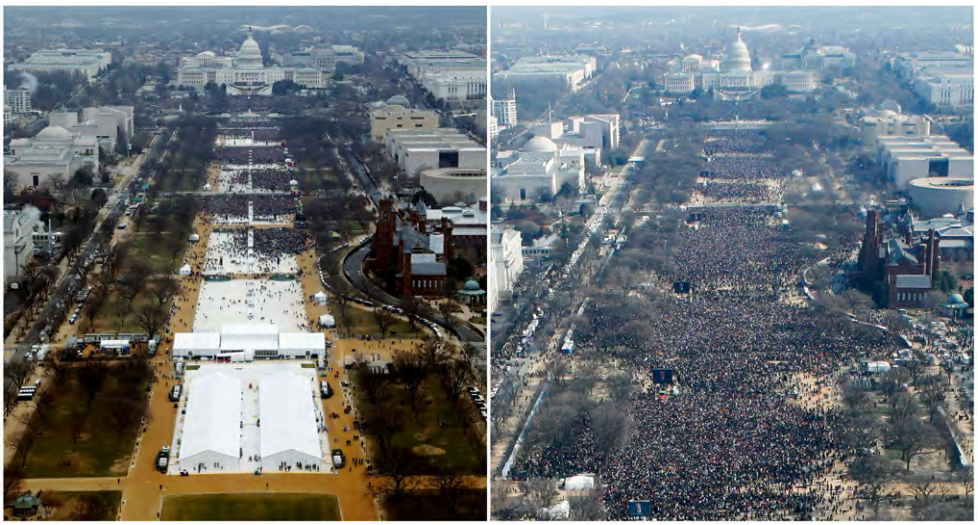


Figure 1: Clear photographic evidence reveals that President Obama's inauguration in 2009 (right image) attracted a larger crowd than that of President Trump in 2016 (left image). The Trump administration had a different take on the facts – defended as "alternative facts." Credit: REUTERS/Lucas Jackson (L), Stelios Varias.

The UK referendum on leaving the European Union in 2016 and the U.S. presidential election held later that same year shared many worrying traits: both were typified by anger against elites, a breakdown in trust in the media, and a widespread and misguided belief among pundits and those running the campaigns that the contests were foregone conclusions. The consequences of each vote could hardly be more serious, and yet the campaigns that decided them were fueled by trivia, half-truths, and downright lies.

There's nothing new in this. Politicians have been saying outrageous things and trading insults for years. In the 1800 presidential election, supporters of John Adams said that a Jefferson presidency would mean that "murder, robbery, rape, adultery, and incest will openly be taught and practiced," while the Jefferson camp slurred Adams as a "gross hypocrite and a hermaphrodite." Hardly honest, highbrow debate! The media have not suddenly become more inclined to lie, and the public have not become more stupid.

What is new, in what has been dubbed this "post-truth" age, is that blatant lies have become routine across society. Public tolerance is now shockingly high when it comes to inaccurate and undefended allegations, non sequiturs in response to hard questions, and outright denials of facts. Indeed, Oxford Dictionaries' word of the year in 2016 was "post-truth," while the Macquarie Dictionary in Australia and the dictionary publisher Collins in the UK both chose "fake news" as word of the year for 2017.

Perhaps the best-known, most recent example of fake news came from President Donald Trump's office regarding the size of the crowd at his inauguration. Sean Spicer, then White House press secretary, said they had "the largest audience ever to witness an inauguration, period, both in person and around the globe." Despite clear photographic evidence to the contrary, the Trump administration defended Spicer's claims, stating they were not false, but that he was presenting "alternative facts."

Not surprisingly, sales of George Orwell's dystopian novel 1984 rose to the top of the Amazon charts days after the "alternative facts" story. The parallels are only too obvious. Here we have a central character, Winston, who objects that the party has no mastery over gravity, climate, disease, or death. However, the party oligarch, O'Brien, silences him saying: "We control matter because we control the mind. Reality is inside the skull… there is nothing that we could not do… You must get rid of those 19th century ideas about the laws of nature. We make the laws of nature."

Post-truth politics is made possible by two factors: a loss of trust in established institutions and sweeping changes in

the way knowledge of the world reaches the public. Across the Western world, trust is at an all-time low, which helps to explain why many people prefer so-called "authentic" politicians who tell it how it is – that is, what people feel. In the UK, Britons think that hairdressers and "the man in the street" are twice as trustworthy as business leaders, journalists, and government ministers. According to a Gallup poll released ahead of the presidential election in September 2016, only 32% of people in the U.S. said they had a great deal or a fair amount of confidence in the media to "report the news fully, accurately and fairly." This is the lowest level recorded in Gallup polling history.

The second big factor in a post-truth age is the internet and the services it has spawned. Nearly two-thirds of adults in America now get news on social media and the numbers continue to grow. On Facebook, Reddit, Twitter, or WhatsApp, everyone is a publisher. Content no longer comes in fixed formats like articles in a newspaper. It can take any shape – a video, a chart, or an animation. A single idea can be shared by millions without any background or context.

Facebook is by far the biggest player in the social network world, but its sheer dominance compared to others in the media industry is what is truly staggering: 1.3 billion people use Facebook every day, which is more than 90 times higher than unique visitors to the most popular newspaper website. Its financial clout is also on a different scale to any of the other players in the industry. Facebook is worth over six times more than Time Warner – at about $500bn.

While Facebook and Twitter may insist that they are technology companies and not media companies, they are an integral part of the media eco-system and play a significant role in how fake information is spread.

Fake news relies on social sharing to survive. And it is this very powerful urge to share that Facebook has harnessed so effectively. As the publication Fortune has said: "Personal updates – including the half-based opinions but also the baby photos, engagement announcements, and vacation photos – are what keep people coming back to Facebook. Without the personal updates, Facebook becomes a glorified content recommendation engine." Personal content is a unique asset, not only keeping users logging into the site to check what their friends are up to but keeping them attached to it as a place that contains years of their own history. Following a decade of acting as if it's not a player in the media industry, Facebook is facing unprecedented demands to use its market power for good.

Science centers and museums face a similar challenge in this post-truth world. We want to believe that we're different and that science is not like business and politics – but it isn't. For decades science has been plagued by inaccurate information; rational debate on subjects as diverse as climate change, gene therapy, and vaccinations has been hampered by a toxic mix of fact and fantasy. What does it say about the standing of science when global warming is dismissed by President Trump – who, like him or loathe him, holds a position of great influence – as "very expensive … bullshit" and "was created by and for the Chinese in order to make U.S. manufacturing non-competitive."

Increasingly, scientific evidence is pitted against emotional stories, which have greater influence on the public when they are told by celebrities. Actress and model Jenny McCarthy appeared on the Oprah Winfrey Show to share her story about her son being diagnosed with autism and how – contrary to scientific evidence – her "mommy instinct" tells her that childhood vaccinations played a part in triggering the developmental disorder. In the interview, McCarthy went on to add that "the University of Google is where I got my degree from."

Science is under direct threat like never before, so it was a powerful statement of solidarity when hundreds of thousands of people worldwide took to the streets in April 2017 to march in support of science. Let's hope that the significance of this event was recognized amidst the daily deluge of fake news and trivia.

There is more that can be done and educationalists need to come together to fight back. Science centers, for example, can team up with schools to help children understand how they can use online tools to validate information that they read online rather than just consume news blindly. It's


SCIENCE
SCIENCE SERVES
SCIENCE
SCIENCE
SCIENCE



Figure 3: The scientific method is a useful approach for deciphering if news is fake – do the facts presented stand up to scrutiny? Science centers can help to explain these concepts. In the Curiosity Zone at Life Science Centre, Newcastle-upon-Tyne, visitors are encouraged to question how things work and devise ways of testing ideas. Credit: Life Science Centre.

also important to show children that the scientific method that they are taught – the process of rigorously testing a hypothesis – has a place in everyday life, not just inside their science classroom.

Similarly, there are other lessons to be drawn. Science isn't always right or wrong, or black or white; there are nuances and complexities that you have to recognize, which science centers can help visitors of all ages to understand.

By adopting a scientific mindset when we scroll through the content on our social media channels, turn on the TV, or open a newspaper, we can start to turn the tide on the proliferation of fake news – hopefully in time for the next crucial election.

Linda Conlon is Chief Executive of the International Centre for Life in Newcastle-upon-Tyne, UK. She may be reached at Linda.Conlon@Life.org.uk.

Informal Science Learning as a Tool for Social Inclusion

By Heidrun Schulze and Lauren Souter

As science communicators, we believe that informal science learning activities should be open to everyone. They should raise curiosity and interest about science and technology in society at large. But there is a growing notion within the science center and museum community that large groups of society do not participate in activities offered by our institutions (Dawson, 2014). Our audiences are not as diverse as we would like them to be, and we are exploring more and more the reasons for this and trying to tackle it.

The motivation to engage more with groups that usually do not visit a science exhibition or send their children to afternoon science workshops or summer camps, may be partly driven by the aim to raise visitor numbers. However, many science centers and museums also recognize that they have a specific role in providing access to sciences, arts, and culture for the increasingly diverse public and thus in contributing to social inclusion and cohesion.

This raises at least two questions: How can we specifically address non-visitors and bring diverse audiences to our museums and science centers? And how can we ensure that these new visitors will then find our places inviting enough and the programs and activities meaningful for them?

In the following article, we will present two different examples of informal science learning projects, which are attempting to learn more about these diverse audiences in order to become inclusive places for engagement with science.

ENGAGING UNDERREPRESENTED AUDIENCES WITH THE MEDICINE GALLERIES PROJECT AT THE SCIENCE MUSEUM, LONDON

This case study focuses on early steps taken to work with underrepresented audience groups as part of the Medicine Galleries project at the Science Museum in London. Set to open in 2019, the Medicine Galleries will be a suite of five object-rich gallery spaces spanning most of the first floor of the Science Museum. The galleries will explore the history

of Medicine and are being developed alongside a learning program, a digitization project, and an online offer.

The target audiences for the project are Independent Adults, Families with children aged 11+, and Key Stage three and four school groups (children aged 11 – 16). Within these three broad categories, the Museum team is also hoping to attract audience groups which are shown to be underrepresented through the Science Museum's visitor profiling. This includes people from Lower Socio-Economic Backgrounds, Black and Minority Ethnic communities, and people with disabilities.

Why Engage Underrepresented Audience Groups?

To understand more about working with underrepresented audience groups, the Science Museum team partnered with an organization called Renaisi. Renaisi is a London based social enterprise which has expertise in audience development and links to local community groups. In collaboration with the Museum team, Renaisi facilitated a cross-departmental workshop with staff from curatorial, education, marketing, and fundraising, exploring four key questions:

1. Why do you want to reduce barriers for those not attending?
2. How will you measure the success of this?
3. How can different departments work together?
4. What are the challenges?

By discussing these questions and listening to the perspectives of different departments, the Science Museum team was able to develop a shared aim for working with underrepresented audience groups. This aim is "to improve the diversity of visitors that feel the Science Museum is a place for them, with opportunities created by the new Medicine Galleries."

Who Should the Museum Team Work With?

Once the Museum team had decided why they wanted to engage new audiences, they were able to start thinking about who to work with. Renaisi helped the team to think about this using the diagram in Figure 1.

Figure 1 places Science Museum visitors and non-visitors on a scale based on their likelihood to visit the Museum. It demonstrates the relationship between likelihood to visit and the type of engagement technique needed to encourage a visit, showing that some non-visiting groups will be easier to engage than others. If the Museum wanted to, for example, quickly increase the number of diverse groups visiting the museum, the Museum team would need focus on those who would be most easily influenced to visit, using engagement approaches that would reach large numbers of people, such as partnering with national brands.

As the Science Museum team's ambition is to change how non-visitors feel about the Museum, rather than increase visitor numbers, a decision was made to work with those on the "potentially interested" to "no interest" end of the scale. This meant working with a smaller amount of people, building sustainable and meaningful relationships.

Understanding More about Underrepresented Groups

Local partner organizations that have established connections within local communities, such as Renaisi in London, have helped the Science Museum team to reach community groups that have low interest in visiting the Science Museum and begin research and relationship building. Using the content and ideas for the Medicine Galleries, the Science Museum team has investigated how people who do not tend to use or engage with the Science Museum, view it, and experience it. This research was qualitative in focus and looked at themes and experiences, trying to understand how background, culture, and socio-economic circumstances shape and influence interactions.

The research was conducted over a period of two months and used various methods, including accompanied visits to the Science Museum with community groups who

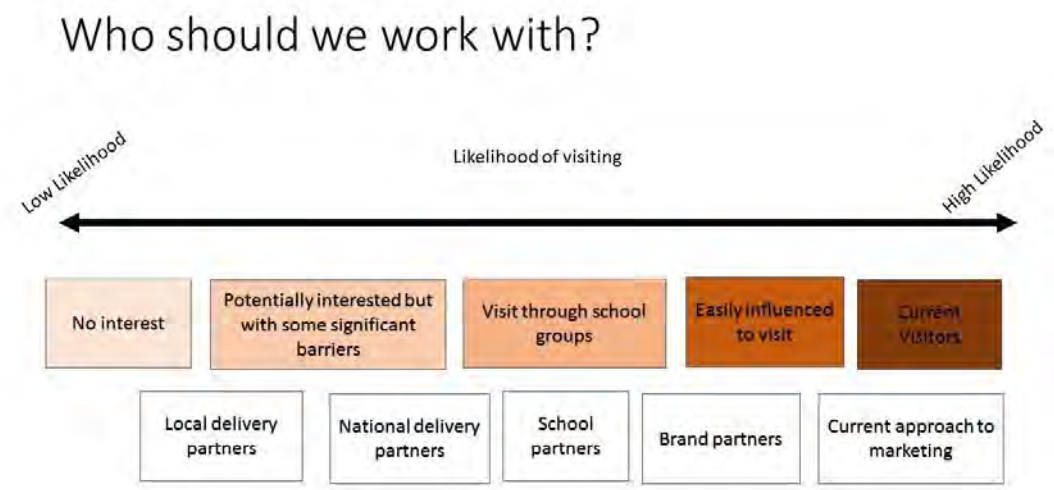


Figure 1: Diagram placing Science Museum visitors and non-visitors on a scale based on their likelihood to visit the Museum.



Figure 2: Focus Group taking place with a community group at the Museum. © The Board of Trustees of the Science Museum, London.



Figure 3: Community group discussing objects from the Medicine collection as part of a focus group at the Museum. © The Board of Trustees of the Science Museum, London.

had not visited before, focus groups on site exploring the medicine collection, and focus groups off site to further explore barriers to engagement. The research highlighted three themes which affected how the community groups engaged with the Science Museum and the medicine collection:

1. Personal connections

People were able to relate more to objects which they had a personal connection to. Either familiar objects which they had personal experience with or through the prior knowledge of topics. People also engaged with unfamiliar objects by using their own frames of reference to find links to personal experience.

2. Science interest

People's interest in and enthusiasm for science affected their engagement. People found it difficult to engage with some topics when their background knowledge of or interest in science was low.

3. Cultural background

It was shown that the Museum team has much to gain from enabling people to engage with cultural reference points. This was seen through feelings of pride or pleasure relating to content from people's country of origin and content connected to people's faith. In some cases, more negative responses were seen toward content perceived as being contrary to people's values.

These three themes relate well to other research being conducted at the Museum and in the wider sector with underrepresented visitors. Such research has identified that visitors may not be able to engage with the frames of reference used in science museums. Instead they may create a frame of reference for engagement by drawing from every day practices and other contexts such as their everyday/personal experiences (Chung, 2017).

The Museum team is in the early stages of its work to improve the diversity of visitors that feel the Science Museum is a place for them. The team is using the research described in this article to help create more inclusive interpretation and displays. Based on a community engagement strategy, the team will also continue to work with underrepresented groups and continue to build meaningful and mutually beneficial partnerships.

THE KNOWLEDGE°ROOM PROJECT—POP-UP SCIENCE AND SOCIAL INCLUSION

The Knowledge°room is a pop-up mini science center, which is set up temporarily in empty shops, former bank branches, or restaurants, sometimes also in co-user spaces, in different districts of Vienna, Austria. For a period of two to three months they become local community and science places where children, teenagers, and adults alike can drop in and engage in a large diversity of hands-on activities linked to science and technology, social and cultural topics.

The main aim of the project, which has been running since 2013, is to contribute to social inclusion by lowering specific barriers, creating a non-threatening environment, and providing low-threshold access to science engagement. It reaches out to individuals and social groups that usually do not visit a science center or museum, making science accessible, understandable, and relevant for them in a playful way. It is also a place where people from different social strands may meet unintendedly and through the means of playful science activities may cooperate with one another and get into an intercultural dialogue.

The Knowledge°room aims to foster self-empowerment, building confidence in individuals to believe they are



Figure 4: Opening of the Knowledge°room in a market booth. © Marko Kovic.



Figure 5: Writing in different scripts. © Marko Kovic.

someone who knows something, can find out things, and can solve problems. Visitors may experience themselves as curious, competent, and accepted by others, no matter which language they speak and what educational background they have.

How Does it Work?

There are some key features that constitute a Knowledge°room and make it a special place for informal science learning.

During the three open days per week people can just drop by, without having to make reservations and without entrance fees. When they enter, they find a room full of different exhibits, a chill out zone, materials for experiments, a tinkering corner with tools, and boxes with recycled materials like cardboard boxes, wood, old toys, wire, tape, etc.

Visitors can freely choose what they want to engage with from a diverse range of activities. These include exploring different plants or insects under the microscope, learning to write their name in different languages/scripts, building a chain reaction, or improving a car they started to design the day before in the tinkering zone. Specific thematic topics, e.g. the "day of water," "music and acoustics," "building bridges," "electricity and e-textiles," and the like, create a diverse program even for regular visitors.

How visitors engage with the diversity of science activities and experiments is open to them, depending on their curiosity, interest in specific topics, and individual learning pace and time available. Many visitors stay more than two hours; children and teenagers often become regular visitors, who come several times a week.

Two explainers host a Knowledge°room during the morning or afternoon. They have a crucial role in making new visitors feel at ease with this open mode of engagement. They help to orientate visitors and support them as they engage, without "guiding" them through the whole process or providing ready-made workshops.

THE KNOWLEDGE°ROOM AS INCLUSIVE SCIENCE LEARNING PLACE

We see a lot of visitors who have never, or very rarely, been to a museum or science center before. The informal atmosphere, the low-threshold access, both literally and on the content-level, and communication at eye-level make them feel at ease. Entering a Knowledge°room for many of them may be a first, playful step into science activities. And it may build a bridge to other science centers and museums if it is an encouraging and inspiring experience for them.

We have observed that many of the regular visitors adopt a notion of being a "science person," i.e. of being curious and interested in science, knowing something and being able to explain or help other visitors in experiments and tinkering activities. For most of our visitors this may make a difference compared to their usual role and position in school, in the family, and with their friends.

A second important effect is that a Knowledge°room is not exclusively for marginalized social groups, but it is open to everyone. It is a place where migrants and non-migrants mingle, where local people meet with people from other districts, who are specifically looking for science learning activities for their children or for themselves.

The multilingual and multicultural team of explainers are trained in establishing a mutually respectful atmosphere, promoting intercultural encounters, and initiating cooperative learning experiences. Visitors are encouraged to



Figure 6: A woman from Iraq presents her self-built scribbling machine. © Association ScienceCenter-Netzwerk.



Figure 7: Engaging in a discussion game on Smart Mobility. © Association ScienceCenter-Netzwerk.

help each other, or sometimes even to step in as "junior explainers." In the Knowledge°room, social inclusion and intercultural dialogue are not so much explicit goals but rather casually develop through the hands-on science activities.

WHAT HAVE WE LEARNED FROM IT?

With each Knowledge°room with have learned new aspects in working at the intersection of informal science learning and intercultural dialogue/social inclusion. It is crucial that a lot of communication efforts and new ways of communication are taken in order to reach out to different community groups and build trust, especially with migrant communities.

Furthermore, making science relevant and meaningful to people who are rather distant to science or in a situation where science is not at all important for them (e.g. for refugees), needs new perspectives on science and everyday life. People from the communities themselves might become cooperation partners or part of the project team in establishing such an informal science learning place, in order to integrate a diversity of perspectives and approaches.

The next pop-up Knowledge°room is planned for spring, where we will attempt to build on these learning experiences and establish together with community partners another creative and inspiring informal and inclusive science learning space.

REFERENCES

Chung, Carol Lo Yun. 2017. "Object Engagement at the Science Museum." Project at Science Museum Group.

Dawson, Emily. 2014. "Not Designed for Us: How Science Museums and Science Centers Socially Exclude Low-Income, Minority Ethnic Groups." *Science Education*, 98: 981–1008; Published online September 11, 2014 in Wiley Online Library. Accessed November 30, 2017 from: http://onlinelibrary.wiley.com/doi/10.1002/sce.21133/full.

Heidrun Schulze is Project Manager at the Association ScienceCenter-Netzwerk in Vienna, Austria. Lauren Souter is Senior Audience Researcher across the Science Museum Group, London. They can be contacted at schulze@science-center-net.at and lauren.souter@sciencemuseum.ac.uk, respectively.

ILE ANNOUNCEMENT

Colby Dorssey will be joining ILE in December 2017 as the consultant associate. Colby graduated from Baylor University in 2016 with her M.A. in Museum Studies. She completed internships in the Library, Archive, and Museum Services department of the Royal College of Physicians in London, England and at the Mayborn Museum Complex in Waco, Texas. Prior to moving to Denver, Colby worked for the visitor services department of the Mayborn Museum Complex. Outside of museums, Colby enjoys baking cookies, playing with her dog Tigger, and exploring all that Colorado has to offer.

After three and a half years as consultant associate, Kim Tinnell will be departing ILE in December. She recently accepted a position at the Colorado Office of the State Auditor where she will be assisting with legislative performance audits.

Little Free Library Meets the Museum

By Jeanne Vergeront

A small wooden box full of books on a post in front of a house, in a field, or on a country road may not seem immediately inspirational. Yet, somehow these book exchange boxes popping up everywhere through the Little Free Library (LFL) have captured imaginations, inspired strangers to share books with others, and created neighborly networks.

Ever since I saw my first one outside of Settergren's Hardware in Minneapolis about seven years ago I've been following the growth of these book hutches with curiosity, delight, and interest. Not long after seeing one at Settergren's, I saw one in Richland Center and another one in Mineral Point (WI) and made my then 90-year old parents stop so I could take pictures of them. Knowing of my delight in Little Free Libraries, my Dutch pen-pal sent me a photo of one in Leeuwarden where she lives.



Figure 1: Little Free Library outside of Settergren's Hardware in Minneapolis

Little Free Library (LFL) (https://littlefreelibrary.org) was started by Todd Bol and Rick Brooks in 2010 in Hudson, WI just across the river from the Twin Cities. As of fall 2016, there were over 50,000 LFL in all 50 U.S. states and 70 countries. LFL's three commitments – increasing book access, building community, and sparking creativity – reinforce one another with natural ease.

The online overview on LFL's website and how to get started are both practical and inspirational. Five easy steps for setting up a library include a material list, plans for building, directions for installing one, and guidelines for finding funds. More tips for building, filling shelves with books, and replacing them are easy to find. Weather and seasonal tips cover waterproofing and snow-proofing a library. Registering a library brings with it an official charter sign and charter number.

In sharing the plans, tips, and videos of designs and construction from others, LFL expands the range of solutions for making books accessible. It highlights creativity and supports a community joined by passion, whimsy, and a love of reading. Builders have improvised designs and customized decorations that reflect personal interests, local architectural styles, and regional pride. Libraries are fashioned as an Amish shed, a Vermont covered bridge, a boxcar, and a British phone booth. Door styles, hinges, and latches to keep out the elements are equally varied and original as are special roof treatments such as a license plate roof and a green roof. Some stewards add reading lights and a bench while others plant small gardens around the library's post. Some leave power bars and snacks for hungry readers and dog treats for readers' companions.

COMMUNITY LANDMARKS

Friendly, neighborhood-based, and accessible, these libraries are created and managed locally and, to a great extent, by the people who use them. Open 24/7, no library card is required. There are no due dates for returning books and no fines.

In a way LFL continues a tradition of traveling libraries. In Wisconsin, Lutie Stearns founded the Wisconsin Free Library Commission that created 1,400 traveling libraries throughout the state between 1896 and 1914. In Kentucky librarians delivered books on horseback to isolated communities in the 1930s as part of the Works Progress Administration.

Once books fill the shelves, a library takes on a life of its own, strengthening connections between people who know one another and forging new ties between book friends who will probably never meet. Neighbors gather at a little library and chat. When passersby stop, browse, take a book, and sometimes leave a book, there's a sense that someone who cares about reading left this particular book for a reason. Fans and book friends leave notes of thanks. Reluctant readers leave notes about being inspired to read. At least one homeless reader left a note of thanks for access to books.



Figure 2: Little Free Library that was designed to look like a British phone booth.

These engaging library boxes have inspired a book club, a book drive for the local library, and some significant community efforts. A middle-school language arts teacher in Paterson, NJ launched a project to bring libraries to 44 parks in urban neighborhoods. In 2013, the Minneapolis School District collaborated with LFL to establish a library on every block in north Minneapolis, one of the most impoverished districts in the city. A group in Lake Worth, FL set a goal to place 100 libraries in the city, a project that involved school children, neighbors, and the Vice Mayor. An even more ambitious vision is being realized by a Sudanese woman who has set a goal to establish 1,000 libraries in her country.

Community efforts are sometimes helped along by LFL's impact program that supports placing book exchanges in areas where they can be a catalyst for improving reading or increasing community connectedness.

MUSEUMS HOSTING LIBRARIES

With an interest in connecting communities, being good neighbors, engaging community partners, and, for many, nurturing reading and learning, museums are natural hosts for the libraries. In towns and cities across the country, museums have installed little libraries on their sites, often using their own building as inspiration.

- The Little Free Library at the Blairstown Museum (http://www.blairstownmuseum.com/library.html) in Blairstown, NJ is "designed to inspire a love of reading, build community, and spark creativity by fostering a neighborhood book exchange."
- The Little Free Library in front of the Pink Palace Museum in Memphis, TN (https://littlefreelibrary.org/libraries-love-pink-palace-library/) is a replica of the museum's façade including its distinctive pink Georgia marble and green tile roof. The museum's hope is becoming an active part of its community by hosting a place for people living next door and visiting to exchange books.
- The Little Free Library at the Children's Museum in Bloomsburg, PA is a collaboration between the museum and the four county libraries.
- The Neville Public Museum (http://www.nevillepublicmuseum.org/the-neville-blog/we-have-a-new-little-free-library) in Green Bay, WI installed a little library on its grounds in spring 2017 built to look like the museum's original home.
- A man in Spearfish, SD built a Little Free Library that stands on site at the D.C. Booth Historic National Fish Hatchery and Archives (http://www.washingtontimes.com/news/2016/aug/29/spearfish-man-builds-little-free-library-as-museum/) and is a replica of the 1899 fish hatchery building that currently functions as a museum.

Fortunately most any museum can install a library in front of its building to serve as an invitation to passersby to pause, browse, take a book, and be inspired to bring one later. Selected books could relate to museum exhibits and programs, feature local authors, or celebrate the region. The library box could also connect with a parklet or museum's placemaking project. Imagined, perhaps, to celebrate a local story or natural feature of the area while carrying the museum's distinctive look and feel, the library could add layers of meaning to a space and bring it to life.

If a museum houses a library branch or has book nooks and reading spots throughout, the library boxes can move inside to offer opportunities to dig into a topic, pursue a



Figure 3: A Little Free Library in Spearfish, SD was built to look like the museum it sits next to.

question, or read for the joy of it in exhibits or the lobby. Designated spots for collecting books can help support the exchange. Museum partners, members, or neighbors could contribute books to keep the supply going with the museum reviewing and selecting them.

BOOKS AND BEYOND

The varied ways the basic book box on a post has been elaborated on and customized across the country and around the world suggest more possibilities for other settings, other users, and other purposes.

For museums these library boxes serve as vehicles for advancing broader organizational goals, varied opportunities for engaging audience groups, and a focus for collaborating with partners. Partners might be a neighborhood group, a community clinic, the parks department, the school district, and, of course, libraries. The interests of these partners are reflected in typical museum goals for community initiatives that readily align with LFL opportunities such as:

- strengthening a sense of community;
- increasing access to books for neighborhoods;
- encouraging a love of reading;
- building awareness of local learning resources;
- introducing the museum to new audiences;
- making museum resources available; or
- extending learning beyond the museum's wall.

The book box's simple, compact, and easy to recognize design helps establish its identity even when distributed across larger outdoor spaces such as a zoo, nature center, or along a hiking trail. In Lynchburg, VA, a partnership of the Lynchburg Public Library, Parks and Recreation, and the Natural Bridge Appalachian Trail Club installed three libraries, including one at the trail entrance. A property owner whose land is adjacent to the Pacific Crest Trail set up a library for thru-hikers. The little libraries can help a museum meet the challenge of serving a large geographic area, for instance, one that spans several cities, counties, or states (for instance, the Quad Cities, Kansas City, the Twin Cities, Dallas-Fort Worth, etc.) as well as low-density rural or remote areas.

The possibilities of a geographic focus are open-ended as Visit Seattle's (https://littlefreelibrary.org/seattle-sets-up-9-book-exchanges-to-promote-itself-and-support-little-free-library/) nine LFL library book exchanges show. A strategy to promote Seattle and invite visitors from cities across the country, these libraries are actually in Austin, TX; Boston, MA; and Chicago, IL. Each library is stocked with books that relate to Seattle, by author, subject, or setting. While a museum might not be marketing to tourists across the country, it may be trying to reach and serve audience groups in rural areas, connect with a nearby tourist area, or have a sister city relationship. Just as the Visit Seattle libraries are thoroughly Seattle (one is made to look like a Seattle ferry, another like Sasquatch, another like a kayak), a museum's library boxes could be made to look like a local icon or a popular landmark.

Book boxes also offer users opportunities for engagement that go beyond taking or leaving books, perhaps contributing information, doing activities, or even building the book boxes. These possibilities are likely to emerge from user suggestions, partners, the museum's interests, selected themes, or current events and issues.

There could be bookmarks or booklists to pick up; a question of the week to investigate; museum program or event flyers; simple directions for making a book or cardboard gizmo; or maps of where more library boxes are located or local areas of interest to visit. Passersby might even find seed packs for native plants in a book box in spring. In Eureka Springs, AR a "little free" library stands in front of the town's 1912 Carnegie Free Public Library. Hosted by the Village Writing School, the library holds books as well as the schedule of the Writing School's current programs.



Figure 4: The Little Free Library in Eureka Springs, AR is hosted by the Village Writing School and holds books as well as a schedule of the school's current programs.

Involvement in bringing the book boxes to their street, school, or park can deepen a group's sense of ownership. Members of a community group could study the area proposed for the book boxes and select their locations. They might be able to design, build, and decorate the boxes in a museum's maker space, stocked with tools and materials and supported by staff with expertise. Photos of the community group throughout the process could be included in the book box with an invitation to library users to send photos of themselves and their books to be posted at the museum.

LITTLE FREE ZIBITS

Several years ago a museum version of this simple, but powerful, idea of little free libraries started incubating in my mind when I came across some portable, temporary exhibits that had sprung up in unlikely places. I wrote about these personal, portable, pop-up exhibits on my Museum Notes blog (https://museumnotes.blogspot.com/2014/10/personal-pop-up-portable-museum-exhibits.html). Since then I have thought of these mini exhibits tucked into unusual boxes such as an old newspaper kiosk, a vintage fire hose box, or a telephone booth, as *little free zibits* (LFZ).

This is not an entirely new idea. Museums have long enlisted artists in creating works of art to interpret place or have installed parklets along their streetscape. Some museums send exhibits into the community in buses that make stops in different neighborhoods. Urban Thinkscape, a pilot project in the West Philadelphia Promise Zone, offers children opportunities for engaged learning around their neighborhood. One project, as an example, built activities into streetscapes where families wait for buses, walk, meet, and connect. These are like *little free zibits*.

So are the Little Free Museum (http://littlefreemuseum.org) exhibits launched by a group in Madison, WI. These miniature sidewalk museums host rotating, bite-sized exhibits that cover a broad range of topics. Some are interactive and some are simply informative, but all aim to ignite a spark of interest or delight in passersby.

LFZ draw on the appeal the LFL has so successfully tapped into: an incidental spot passed by on the way to someplace else that draws on a passerby's curiosity, invites their interest, and encourages a little investigating. With their legacy of cabinets of curiosity and expertise and experience in creating engaging, hands-on and senses-on experiences across a wide range of topics, museums are well prepared to expand on the *little free zibits*.

A promising opportunity for creating and strengthening community connections, LFZ sites and topics could be selected by neighbors, children at a school, or community group. Building on what's interesting to them about that place, their questions, and their local knowledge, experiences could explore the hydrology and geology of an area; the engineering challenges of a bridge in view; or the site's past as an oxen path. This small originally undistinguished spot becomes some place, a landmark, and possibly a destination.

Just as the books in a little library change over time with books being taken and new ones left, zibit activities could be changed out periodically, perhaps on the same topic or on a new one. Like pop-up exhibits, the kiosk itself could change locations. Museums might even discover they can swap their LFZ with another museum to extend variety.

Together, these qualities create on-the-spot exhibits that engage children and adults in a variety of ways as both hosts and as visitors. Neighbors and passersby may be inspired to explore their street, park, or the riverfront more; investigate new questions at the library or with a more informed neighbor; give a helping hand to keep the LFZ going; connect more with their neighbors; or start visiting the museum. These and other possible outcomes of LFZ are an opportunity for museums to evaluate LFZ. In fact,



Figure 5: Little Free Museum exhibits are miniature sidewalk museums that host small, rotating exhibits that cover a variety of topics.

evaluation could be helpful to LFL as well since evaluation has yet to be conducted on them (https://journals.ala.org/index.php/cal/article/view/584).

Over the years Little Free Library has become an extended, connected, and vital online network of hosts and potential hosts supported by LFL staff and volunteers. It has also generated a great web of small, local communities of neighbors, readers, and book lovers. Friends and strangers meet, read, and connect with others because of the many ways stakeholders with different interests can engage, explore, invent, and adapt this simple, powerful idea. Many museums work diligently and seriously toward just this kind of strong, evolving community connection. Bringing their considerable skill and expertise in creating engaging experiences, museums can draw on the possibilities of Little Free Libraries with variations like Little Free Zibits and stretch this community-building from the street corner, park, and hiking trails to the museum and back.

Jeanne Vergeront is the Director at Vergeront Museum Planning based in Minneapolis, MN. She writes the Museum Notes blog (www.museumnotes.blogspot.com) and can be reached at jwverg@earthlink.net.

GENIAL Summit: Executive Summary and Call to Action

Compiled by Verónica García-Luis, Isabel Hawkins, Liliana Blanco, and Amy Oates

This material is based upon work supported by the National Science Foundation under Grant No. 1611143. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.

INTRODUCTION

With generous support from the National Science Foundation, the Exploratorium held the Generating Engagement and New Initiatives for All Latinos (GENIAL) Summit[1] on June 5–6, 2017, in San Francisco, California. The goals of the GENIAL Summit were to:

- Identify needs and opportunities for Latinos in Informal Science Learning (ISL) environments.
- Facilitate and strengthen professional relationships.
- Identify recommendations, emerging research questions, and actionable insights with an outlook toward the future.
- Contribute to a more informed ISL field.

A total of 91 participants[2], a mix of practitioners, community leaders, media specialists, government officials, policy professionals, and researchers from across the United States and Puerto Rico participated in the Summit. This document provides overall context for the GENIAL Summit, executive summaries of articles by GENIAL advisors and panel conveners on important topics discussed during the Summit, and a call to action for the ISL field. Also available are a summary of the proceedings in English[3] and in Spanish[4], as well as a full report of the proceedings.[5]

CONTEXT AND MOTIVATION FOR THE GENIAL SUMMIT

Over the past few decades, a variety of efforts at local, national, and global levels have focused on Latino engagement in ISL to increase access and participation by Latinos in science, technology, engineering, and mathematics (STEM) informal learning, formal education, and careers. Despite sustained work, a divide still exists between Latinos and STEM at all levels. The GENIAL Summit responded to a timely opportunity for the ISL field to come together and improve its ability to engage Latino communities in STEM. By bringing together diverse groups of national stakeholders to integrate and synthesize theoretical approaches, practical methods, and evidence-based findings,

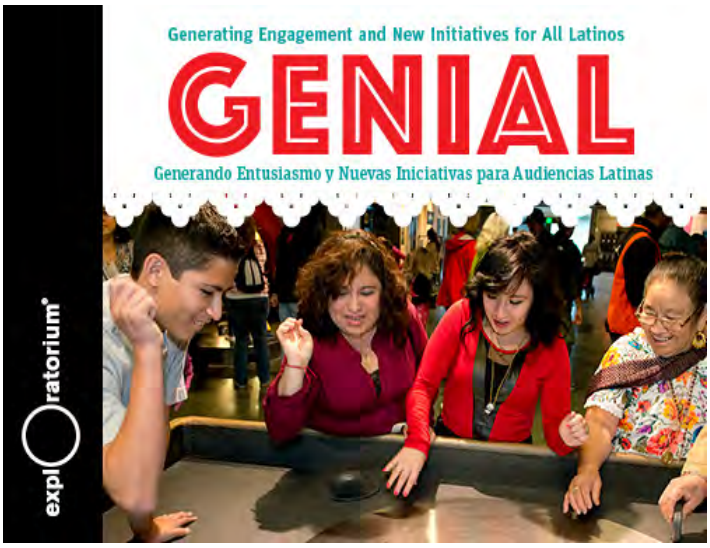


Figure 1: GENIAL Summit. A family at the Exploratorium engaged in informal science learning (ISL). Photograph by Amy Snyder.

GENIAL was designed to inform the ISL field about effective strategies and approaches for sustained and authentic engagement of Latinos in STEM.

The GENIAL Summit set up the conditions for sharing knowledge and fostering discussions on topics and strategies for how ISL environments can provide access, support, and sustain the engagement of Latinos. Authentic engagement takes into account the long-standing cultural and scientific legacy of Latinos; the GENIAL Summit provided rich opportunities for highlighting the diversity and richness of Latino contributions to STEM.

The GENIAL Summit also acknowledged that Latinos are underrepresented in STEM education and workforces, an issue of critical concern to Latino communities and the United States. While STEM skills are recognized as essential to compete in a global economy, in the United States there are currently two science and technology job openings for every qualified job seeker, and not enough students are pursuing degrees and careers in the STEM fields to meet the increasing demand.[6] The situation is particularly dire concerning Hispanics.[7] Even though Hispanics comprise the largest growing segment of the United States population, their participation in STEM is not on par with their demographic representation.[8] This table provides a summary of Hispanic population growth in the United States and STEM degree and workforce statistics.

For moral, equity, sustainability, and workforce reasons, increasing Hispanic participation in STEM fields needs to be a key priority for the United States. The benefits of engaging Latinos in STEM today extend beyond the individual because they will have direct impact in their communities and will serve as essential role models for future generations. Informal science learning environments have a key role to play in igniting the STEM spark.

GENIAL provided a renewed and strengthened platform for exchange of knowledge to inform novel types of ISL experiences for Latinos. Additionally, GENIAL results can inform practitioners, researchers, policy makers, and community-based organizations focused on increasing STEM engagement of diverse communities generally.

GENIAL SUMMIT STRANDS

The GENIAL Summit was implemented by an Exploratorium organizing committee led by Co-PIs Dr. Isabel Hawkins and Verónica García-Luis and project managers Liliana Blanco and Amy Oates, who worked in collaboration with a group of advisors with knowledge and experience in research and practice in engaging Latinos in STEM. The advisors also served in the role of Summit strand leaders and panel conveners. The four strands and corresponding advisors/leaders follow:

Strand 1. Latino Audiences
Advisor/Strand Leader: Cecilia Garibay, Garibay Group, Chicago, IL

Strand 2. Marketing, Communications, and Media
Advisors/Strand Leaders: Lorraine Yglesias, Monterey Bay Aquarium, Monterey, CA, and Julie Nunn, Exploratorium, San Francisco, CA

Strand 3. Community Collaboration and Empowerment
Advisors/Strand Leaders: Salvador Acevedo, Scansion, Inc., San Francisco, CA, and Paul Dusenbery, Space Science Institute, Boulder, CO

Strand 4. Relevant STEAM[10] Experiences
Advisors/Strand Leaders: Cheryl Lani Juárez, Phillip and Patricia Frost Museum of Science, Miami, FL, and Verónika Núñez, Oregon Museum of Science and Industry, OR

EXECUTIVE SUMMARIES OF STRAND ARTICLES

Latino Audiences: Embracing Complexity
Cecilia Garibay, Principal, Garibay Group
Patricia Lannes, Museum Consultant
José González, Executive Director, Latino Outdoors

Efforts to understand the complexity and diversity of Latino audiences are essential for authentic collaboration in any field, including informal science learning. Latinos, like any other cultural group, bring to bear in any endeavor the entirety of their diverse experiences and knowledge. Often, when asked about strategies for engaging Latino audiences in informal learning experiences, we find unexamined

Hispanics in the United States and STEM Fields[9]			
	1980	2015	Projection to 2060
Population of Hispanics in the United States	14.8 million	56.5 million	119 million
% of total United States Population	6.5%	17.6%	29%
In 2014, less than 10% of all STEM bachelor's degrees were awarded to Hispanics and Hispanics represent only 2% of the STEM workforce.			

assumptions and stereotypes or limited ways of thinking about Latino communities. Discussions tend to oversimplify the issues, leading to overly facile approaches to working with Latino communities. The capacity to embrace and value complexity goes hand in hand with any effort to understand Latino audiences. Indeed, the very notion of "Latino audiences" itself is problematic. What exactly are we referring to when we say our organization hopes to engage Latino audiences? Any initiative that aims to engage Latinos cannot approach such a heterogeneous group as if it were monolithic.

This article explores a number of ideas that we hope provide a more nuanced narrative of Latino communities; it is not intended, however, to be comprehensive or provide definitive answers. In that spirit, we offer four key ideas—or building blocks—that can serve as foundations for considering Latino audiences: identity and culture, amplification, decolonization, and risk-taking. The content of these ideas speaks to the need to shift from binary and reductionist perspectives to more holistic models that understand the dynamic and fluid nature of Latino audiences and move from cultural appropriation toward more authentic collaborations with the communities that informal learning organizations seek to reach.

Marketing, Communication, and Media

Julie Nunn, Director of Marketing, The Exploratorium
Lorraine Yglesias, Director of Advertising and Promotions, Monterey Bay Aquarium

During the GENIAL Summit, the Marketing, Communication, and Media strand examined the role of marketing and communications in connecting Latino audiences with STEAM in informal science learning environments. ISL organizations do not generally think to include a marketing perspective early on in the process of developing audience experiences. When ISL practitioners seek to connect with key audiences, specifically, Latino audiences, marketing efforts are often considered when an exhibit or program is fully developed, in production, or already launched. This causes an immediate and inherent disconnect with ISL





Figures 2 and 3: CHISPA Family Science Day. CHISPA is "a national collaboration between the Frost Museum of Science, the National Council of La Raza (NCLR), the ASPIRA Association, and a network of ten other science museums located in cities with growing Latino populations, working together to build stronger communities and increase the engagement of Hispanic children and their families with science and local science resources." Photographs by Alfonso Juárez.

content and those for whom it is intended (i.e., culturally diverse audiences). To eliminate this disconnect, marketing and communications teams must be integrated into the core functions, or DNA, of ISL organizations. This begins by developing and building relationships of mutual trust and respect with key stakeholders and by understanding basic marketing and communications functions and principles at a fundamental level.

Panelists and GENIAL participants discussed a series of strategies to enable a more seamless integration of marketing and communications throughout ISL organizations. It involves embracing the value of marketing and communications within ISL environments, stepping into the shoes of the intended audiences by understanding current research and market trends, and recognizing and leveraging resources inside and outside the organization. This article offers insights and ideas emerging from the Summit discussions to inform the ISL field in moving forward toward new and more effective ways of collaborating with marketing professionals to best engage Latino audiences.

Community Collaboration and Empowerment

Salvador Acevedo, Scansion, Inc.
Paul Dusenbery, National Center for Interactive Learning, Space Science Institute

Community collaboration and empowerment were identified by the GENIAL organizers as an important theme to include in the Summit. ISL organizations strive to engage Latino audiences in their science, technology, engineering, and math (STEM) programming on a long-term basis and recognize the importance of understanding the needs, motivations, interests, and challenges of the diverse Latino community in the context of STEM participation. An effective way to collaborate with a community is to involve them as equal partners in the co-development of ISL experiences. A key idea discussed during the Community Collaboration and Empowerment panel was "co-creating ISL programming with, instead of for, the Latino community." Panelists also highlighted the need to implement organizational changes within ISL institutions and build the internal capacity of staff across the institution for working with diverse communities. During small group discussions, GENIAL participants were asked to consider a set of actionable insights and recommendations. Based on a synthesis of these discussions, the last section of this paper includes a list of recommendations and emerging research questions for the informal STEM learning community to address.

This paper covers three main topics:
- Principles for Co-Creation and Co-Design
- The Inside Perspective: Organizational Change Within ISL Institutions
- Looking Toward the Future

Principles for collaboration with communities include: respect, understanding the community by acknowledging its knowledge base and working with cultural connectors, and building trust through sustained relationship-building efforts. The importance of valuing resilience in communities is also highlighted with a call to recognizing that persistence is part and parcel of the Latino communities' DNA.

The article also emphasizes the importance of identifying internal institutional practices to foster capacity for working effectively with diverse communities. These include a committed leadership, diversifying staff at all levels, and paying attention to power dynamics within the organization and with partners.

In looking toward the future, several recommendations and areas of emerging research are discussed in the context of program sustainability and building long-term community relationships.

Relevant STEAM Experiences

Cheryl Lani Juárez, Frost Museum of Science
Verónika Núñez, Oregon Museum of Science and Industry

ISL organizations that are successful at providing meaningful science, technology, engineering, arts, and mathematics (STEAM) experiences for Latino children, youth, and their families share some common traits. They have leaders and staff who believe in the importance of developing culturally relevant models and frameworks that meet the needs and acknowledge the legacy of STEAM in Latino communities. Such organizations are willing to take risks to create experiences that are culturally meaningful, garner funding and implement programs by working closely with their local communities, and sometimes go beyond by partnering with other organizations to build regional and national networks based on trust, common goals, and deep relationships. They also respond to changes in their communities, from language choice to acknowledgment and appreciation of diverse preferences, interests, lifestyles, and ways of knowing and learning.

These organizations exercise great flexibility, are sufficiently agile to adapt to rapidly changing conditions, and value community partnerships as key to the development of relevant STEAM experiences. These traits make such organizations effective in providing relevant STEAM experiences for Latinos because they recognize that when it comes to such experiences, "one size does not fit all." The idea that STEAM experiences need to be tailored to the nuances of a highly diverse Latino community was the focus of discus-

sion for the Relevant STEAM Experiences panel during the GENIAL Summit.

This article offers recommendations for ISL organizations and their staff for cultivating qualities and behaviors to enable the development of relevant STEAM experiences that are attuned to the diverse needs of Latinos. They include developing the ability to take risks; valuing new perspectives, paying attention to the continually changing landscape of Latino audiences; seeking and responding to feedback from the community; becoming a good listener; seeking to empowering multiple generations and voices; and making space for the entirety of Latino cultural identities. Each recommendation highlights examples provided by the authors, the GENIAL panelists, and participants as a result of small group discussions.

CONCLUSIONS AND CALL TO ACTION

The themes that emerged from the GENIAL Summit speak to the importance of accepting and embracing diversity and inclusion from an asset-based, instead of a deficit, perspective. From an asset-based perspective, ISL institutions are authentically part of communities, not distinct from them. The work takes place on a "two-way street," where all partners—ISL institutions and Latino communities—have things to learn, share, and gain from each other. Recognizing the great cultural capital of Latinos is the first step toward shifting the role of ISL institutions from providers of STEAM knowledge and content to facilitators and supporters of the long-standing legacy of STEAM inherent in Latino communities.

An asset-based model moves the conversation from a simplified, homogeneous view to a holistic understanding of community. In such a model, ISL institutions become reciprocal partners and facilitators working with communities to achieve positive change. Using their own knowledge, skills, and lived experience, all participants can thrive in support of sustainable communities.

The GENIAL Summit brought to light several values—beliefs and behaviors to anchor our professional practice—that are necessary and shared in an asset-based, transforming community.

Accept and embrace diversity and inclusion. Everyone has something to contribute; with an asset-based approach, members of Latino communities are active participants alongside ISL practitioners in content creation, not just empty vessels receiving external knowledge.

Respect one another. A respectful partnership values and understands the power of relationships built over time.



Figure 5: Children learning about helping birds impacted by oil spills during the CHISPA afterschool science program at Brighton Park Neighborhood Council, Chicago. Photograph by Cheryl Flores.

Relationships are strengthened by trust and shared power to achieve mutual goals.

Continue to learn. Deep listening by all partners leads to growth and mutual enrichment. The benefit of continued learning is gaining skills while building our collective capacity.

Take risks to grow and evolve. Decisions that involve ongoing conversation and the willingness to shift decision-making power build trust and enable organizational change. Learning from taking risks is a necessary step toward growth and evolution.

These values can be operationalized into tangible actions, including:

- Spend time and resources to understand Latino communities.
- Restructure power dynamics for authentic reciprocity.
- Co-create STEAM experiences with, as opposed to for, Latino communities.
- Cultivate ownership of the work across every function of the ISL organization to break down barriers and prevent assigning diversity work to only a few staff.
- Use data for analysis, reflection, and action in conjunction with community dialogue.
- Celebrate successes, accept failure as part of the process, and work toward continual organizational change.

As part of the ongoing work leading to the full inclusion of Latino audiences in STEAM, the asset-based collaborative community could approach any of these actions or cycle through them, with the starting point depending on the level of organizational maturity and readiness of the partnership.



Figures 6: Latino youth learn about the human body. High Plains Public Library/ Riverside Branch. Photographs by Marina LaGrave.

As a professional field, the ISL community has an opportunity to develop novel and practical approaches for how partnerships for Latino audience engagement can thrive, including co-designing STEAM experiences and developing authentic measures of success. Eventually, and as a result of sustained effort, we envision a world where ISL organizations and Latino communities engage in mutually beneficial, collaborative work based on trusting relationships and commitment to ongoing organizational change and sustainable growth.

The Exploratorium GENIAL team and participants expressed a strong desire to build on the momentum of the GENIAL Summit and move the conversation forward. As a first step toward this goal, the Exploratorium's GENIAL website[11] includes information about the Summit, reports, articles, and other resources to inform the ISL field. We call on the ISL and Latino communities to support each other, work together, and take action toward a future where the next generation of Latinos can bring the entirety of their cultural identity to bear in every positive endeavor, including STEAM.

END NOTES

[1] GENIAL Conference Agenda: http://www.exploratorium.edu/sites/default/files/Genial_2017_Agenda.pdf.

[2] List of GENIAL Conference Participants: http://www.exploratorium.edu/sites/default/files/Genial_2017_Participants.pdf.

[3] Summary of GENIAL Conference Summit in English: https://www.exploratorium.edu/sites/default/files/Genial_2017_Summit_Report_Summary.pdf.

[4] Summary of Genial Summit Summary in Spanish: https://www.exploratorium.edu/sites/default/files/Genial_2017_Summit_Report_Summary_SP.pdf.

[5] Full Report of GENIAL Summit Proceedings: https://www.exploratorium.edu/sites/default/files/Genial_2017_Summit_Report.pdf.

[6] Fayer. S., Lacey, A., and Watson, A. 2017. "STEM Occupations: Past, Present, And Future." Bureau of Labor Statistics. Accessed December 1, 2017 from https://www.bls.gov/spotlight/2017/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future/pdf/science-technology-engineering-and-mathematics-stem-occupations-past-present-and-future.pdf.

[7] An article on the usage of terms of identity is provided on the GENIAL website: https://www.exploratorium.edu/sites/default/files/Genial_2017_Terms_of_Usage.pdf.

[8] American Institutes for Research. 2013. "Broadening Participation in STEM: A Call to Action." Accessed December 1, 2017 from https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf.

[9] https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf.

[10] The GENIAL team, advisors, and panelists agreed that it was important to broaden the STEM content focus to STEAM, which includes the arts as an effective strategy to engage Latino audiences in informal science learning (Sousa, D. A. and Pilecki, T. 2013. From STEM to STEAM: *Using Brain-Compatible Strategies to Integrate the Arts*. Sage: Thousand Oaks, CA: Sage).

[11] Exploratorium's GENIAL Website: https://www.exploratorium.edu/education/genial.

Verónica García-Luis is Project Director at the Exploratorium. Isabel Hawkins is Astronomer and Project Director at the Exploratorium. Liliana Blanco is Administrative Director at Exploratorium. Amy Oates is Project Coordinator at the Exploratorium. They can be reached via Isabel Hawkins at ihawkins@exploratorium.edu.

Exhibition Review

Death in the Ice: The Shocking Story of Franklin's Final Expedition

By Robert Mac West



"They forged the last links with their lives," William Smith, 1895.

This fascinating exhibition about a mid-nineteenth century fatal Arctic expedition currently is being shown at the National Maritime Museum in London, United Kingdom. It must be viewed from several directions simultaneously and not necessarily in this order. It is a presentation of ongoing research into the deeper understanding of the Franklin Expedition and its tragic end. It also opens discussions of the relationship of the indigenous Nunavut people (Inuit) with the expedition, both during its tragic end and its modern investigation. It also necessitates analysis of the appropriate ownership of and responsibility for the various materials that have been recovered and located. As a collaborative venture, it is an informative example of both international cooperation (Canada and the UK) and increasing involvement of the Inuit people.

THE EXHIBITION

The exhibit is the story, very much still unfolding, of the expedition of two ships, the Terror and the Erebus, carrying crews of 129 men under the direction of the experienced navigator Captain Sir John Franklin. He was on his fourth major Arctic expedition; this one was designed to complete the navigation of the Northwest Passage across Northern Canada although, in fact, it turned south significantly too soon if the intent was indeed to reach the Pacific Ocean (Figure 1). But the point of the exhibition is to document both the elements of the ships and their crews, the places in which they found themselves, and the 160+ years that have been devoted to understanding what happened, why it happened, who was involved, and what documentation both survived and can now be used to answer these questions.

The abridged story is that Franklin and his crew departed from England in 1845, and by 1848 it was understood that they had failed. In the 1850s numerous British and American ships sought evidence of the crew's fate. Relics were found along the course of their movement, and in 1850 the graves of three sailors were found on Beechey Island. Local Inuit provided information about the ships and their locations, but much of the Inuits' account was dismissed by the British searchers. The search intensified in the late



Figure 1: Location of end of Franklin Expedition.

20th century resulting in the location of more graves and remnants of the sailors' activities – including graves with mummified remains.

Investigations further intensified in the 1980s as bodies and other physical evidence of the Franklin parties were found and studied. One of the conclusions was that a significant cause of deaths was lead poisoning from poorly manufactured food cans. Another conclusion, not at all attractive, was that cannibalism was practiced on several men. In general, the sailors were in an intolerable environment where the combination of lead poisoning, starvation, disease, and generally inadequate clothing and shelter were fatal combinations. Parks Canada initiated more serious investigations in the 21st century, with truly exciting results – which likely stimulated the development of this exhibition. In September 2014 the Erebus was located, and in September 2016 the wreck of the Terror was found. These are now a National Historic Site of Canada, with the specific locations being held in confidence.

The exhibit actually begins outside of the main entrance to the museum. There, a mock graveyard presents rectangular cloth flags bearing the names of all 129 Franklin Expedition fatalities.

The linear exhibition itself begins with a section that explains the basis of the Franklin Expedition with full acknowledgment of what is still not known about the specifics of their deaths and the research that is aggressively underway. This introduction gives the exhibition a level of uniqueness associated with that uncertainty and some of the changing conclusions and interpretations of what actually did happen.

The sections that follow are titled Inuit Witnesses, The Spirit of Discovery, Trapped by Ice, Jane Franklin's Campaign, The Search Begins, What Killed the Crews?, Finding the Ships, and An Enduring Mystery. These titles, and the remarkable objects, models, and works of art within each section of the exhibit, provide excellent insights into the story of the exhibition. In essence, we start out with the reason for the expedition, what happened to it and who observed it, what searches began in 1848 and are continuing today, what data are these searches providing about the events of the tragedy, and what is research uncovering today.

The role of the Inuit people in documenting the series of events is a very significant part of the exhibit and one which has levels of controversy and challenges associated with it. The Inuit historic documentation, via observations passed down through the generations for over 160 years, has been vital to the ongoing research. They had the skills and knowledge to survive while the English sailors did not. The objects on display – clothing and tools – effectively present the significant role of the indigenous technology that clearly was superior to the naval technology and European equipment of the ships and sailors.

Recently, information provided by the Inuit along with various remnants of tools, clothing, and even human bones that may have been subjected to cannibalism have led to the discovery of the Erebus in 2014 and the Terror in 2016. Remarkable videos of the examination of these largely intact shipwrecks are a fascinating part of the exhibition. Similarly, there are Inuit tools which have taken advan-













Figure 2: Memorial flags near the entrance to the National Maritime Museum.
Figure 3: Inuit and canoe.
Figure 4: Franklin materials.
Figure 5: Array of materials collected by various searches.
Figure 6: Inuit tools with and without metal.
Figure 7: Video of exploration of ships; ship's bell from Erebus.

tage of the metallic debris from the unsuccessful efforts of the sailors to walk away from the disaster. Metal blades inserted into wood and bone shafts very nicely point out this situation.

The exhibition opened at the National Maritime Museum in London, United Kingdom, on July 14, 2017 and closes there January 7, 2018. It then will be presented at the Canadian Museum of History, Gatineau, Quebec from March 2 to September 30, 2018. It is not clear whether it will travel after that.

There are numerous informative (and sometimes contradictory) media reviews of this exhibition. It clearly has caught the attention of many people – and for many reasons.

COLLATERALS

One of the relatively unique attributes of "Death in the Ice" is that it is dealing with resource investigation that is ongoing, not by any means completed. When it was decided by the participants in the exhibition to go ahead, neither the Erebus nor the Terror had been located. Thus the exhibition has the opportunity to make very clear to the visitors that we are still very much in the information-gathering stage of this project. And that means that we are sharing with them materials that have just emerged and likely are different than what was being said a year ago or even more. This is clearly presenting up-to-the-minute information (and objects/specimens).

A very important part of the information and materials presented in the exhibit are the result of close collaboration with the Inuit residents, both current and past. As is so clear, they observed the arrival and demise of the Franklin Expedition members and placed this into their oral history. They also took advantage of the "unnatural" resource of the debris left behind by the now-dead sailors and used it in their handmade tools and weapons. And then, as the search for the two ships intensified, they had information regarding the last places they had been afloat. Finally, given the long-term relationships between the Inuit and the Caucasian "invaders," this cooperation on the development of the exhibition was not all that easy.

A significant part of the ongoing cross-cultural and legal stress has to do with the ownership of the materials being discovered and recovered, including the ships. In 1999, Canada formalized the province of Nunavut, essentially the Inuit homeland. But long before that there were discussions about the ownership of the Franklin materials being recovered and the ships themselves (if they were ever located). Modern ownership of historic materials is frequently contested between the descendants of the artifacts and the locations where they are recovered. The ships, while they were British, were located underwater in Inuit territory. As it turns out, in 1997, an international memorandum of understanding between Canada and Britain specified that upon discovery of the ships the UK would transfer ownership to Canada. This had not happened until, on October 23, 2017, the UK government said it would transfer ownership to Parks Canada, a government agency. While this somewhat moderates the circumstance, it does not satisfy the Inuit. The leader of the province of Nunavut had formally protested the current situation to the Canadian prime minister. But, while all this is going on, the Canadian Museum of History and its curators are collaborating with the government of Nunavut and the Inuit Heritage Trust with the expectation that legalities, ownership, and actual possession of materials are in the process of rationalization.

The final interesting aspect of this exhibition is that it is indeed a product of international collaboration as well as full engagement of the Inuit in the development of the messages and stories as well as full attribution to their significant participation in the provision of data and information that is essential to the continued research into the details of this historic expedition and its failure. The collaborating organizations – Canadian Museum of History, the National Maritime Museum in Greenwich, UK, Parks Canada, the Government of Nunavut, and the Inuit Heritage Trust – all participated in the development of the historical and contemporary stories while working out the challenging issues of ownership of materials, research and collection permissions, and proper attribution of ideas and materials.

ACKNOWLEDGMENT

I was fortunate to be able to visit the exhibition at the National Maritime Museum on October 14, in conjunction with my visit to the revised Hintze Hall at the London Natural History Museum (see "A Whale of a Change in London" in ILR 146). My visit was facilitated by Mike Sarna, Director of Programming and Exhibitions.

Robert Mac West is the editor and publisher of The Informal Learning Review. He may be reached at ileinc@informallearning.com.

The Informal Learning Review
1776 Krameria Street, Denver, Colorado 80220

On the cover:

Children exploring the immersive digital exhibition River of Grass at the Phillip and Patricia Frost Museum of Science, Miami. This experience was one among many that were shared during the GENIAL (Generating Engagement and New Initiatives for All Latinos) Summit in San Francisco in June 2017. One of the goals of the conference was to identify needs and opportunities for Latinos in Informal Science Learning (ISL) environments.

Full story on page 14.

