Communicating Sustainability in the Green Science Museum

Laura Cole  
*University of Missouri at Columbia*

Georgia Lindsay  
*University of Colorado Boulder, Georgia.Lindsay@Colorado.EDU*

Caroline Lesch  
*University of Missouri at Columbia*

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Laura Cole, PhD, Georgia Lindsay, PhD, & Caroline Lesch

Introduction
Green-building construction was among the fastest-growing industries in the United States in 2012 (Katz, 2012). Unfortunately, the broader public, even those who use green buildings daily, have few opportunities to engage with and learn about them (Cole, 2013). Green building certification systems, such as LEED for Schools and the Living Building Challenge, encourage design teams to use green buildings as educational “teaching tools.” However, we have much yet to learn about the social performance of green buildings and how to engage occupants in the sustainability narrative of the building.

Increasingly, museums are using green-building construction practices for new buildings, and some go so far as to consider the surrounding landscape as part of the museum’s “collection” to be preserved (Lindsay, 2016). Science museums in particular are uniquely positioned to advance architectural literacy while communicating the values of earth stewardship to the general public, as one of the core values of these institutions is often science literacy. Science museums with examples of green building practices on campus have the institutional mission and necessary infrastructure to make novel connections to advance green building literacy under the broader umbrella of science literacy. But do they?

The Study
To answer this question, we are exploring the use of green museum architecture as a communication tool for sustainability education. As scholars of museum studies and green buildings, we are in the early stages of a research project that explores how and if science museums with green buildings or green additions are using these facilities to enhance their educational missions. Our project spans across the United States to develop eight unique case studies through document analysis and in-depth interviews with key informants.

Throughout the spring of 2017, one of the researchers developed a spreadsheet of science museums in the United States,
searching the Internet for museums with “science” or “natural history” in the name of the museum. It yielded a list of 275 museums. Of those, 143 indicated on their Web sites that they had built a new building, addition, or wing since the year 2000. We selected that year as a starting point for our investigation because that was the year LEED unveiled its rating system. Of those, 26 museums indicated on their Web sites that their new building or addition was LEED certified in some way. From those 26, we selected eight to study in more depth.

Our goal was to conduct two museum case studies in each U.S. time zone with differing levels of enthusiasm for their LEED building, as demonstrated in their communication on their Web sites and through marketing materials. Within this smaller sample of eight museums, members of the research team visited the buildings, taking building tours when offered by the museum. Five out of eight museums agreed to participate in interviews. We contacted the facilities department, marketing department, or general information line, depending on what information was available online. We requested an interview with someone who could speak to the decision-making process about the building and about exhibits relating to it.

Over the last year, our team was comprised of the two faculty members plus undergraduate research assistants working virtually across three time zones. Our geographic spread gave us the opportunity of visiting museums near various team members across the United States. While our analysis is far from complete, we share here the emerging insights from two Midwestern case studies that show opposite ends of the spectrum of engaging visitors in green building design.

The Flint Hills Discovery Center
Manhattan, Kansas

Building Type: New Construction
Opened: 2012
Square Footage: 35,000 SF
Architect: Verner Johnson, Inc.

The Flint Hills prairie is an underappreciated, beautiful landscape that spans from Kansas to Oklahoma. The mission of the Flint Hills Discovery Center, located in Manhattan, Kansas, is to inspire the public to learn about the Flint Hills and develop a sense of care in protecting them. The museum is a LEED Gold building (see Figure 1). Key green building strategies include a green roof, LED lighting, a heating and cooling system supported by a geothermal well field and heat pump technology, and over 85% of building materials and labor sourced from a 50-mile radius of the site. In keeping with the educational mission of prairie stewardship, native plants encircle the building from the green roof down to street level. Visitors can take self-guided tours of the landscape and learn about plants that are native to Kansas. On
the third floor of the museum, there is an in-depth diagram of the LEED features in the building (see Figure 2).

From the landscape to the signage, conscious efforts were made to connect notions of environmental stewardship to the museum’s key mission to protect the Flint Hills. The result is a fascinating combination of traditional values and progressive environmentalism, where a multi-story American flag hangs in the lobby of this modern, green building (see Figure 3). In the words of the Director, “Well, it is a balancing act but there’s something about the traditional philosophies that we Midwesterners just have in our communities and the ways we raise our families and the pride…but we have to be forecasting ahead with our message or we won’t be successful.”

The Saint Louis Science Center
St. Louis, Missouri

Building Type: Building Addition
Opened: 2011
Square Footage: 13,000 SF of additional exhibition space
Architect: PGAV – Destinations

The overall mission of the Saint Louis Science Center (SLSC) is to make science fun through interactive exhibits to spark an interest in science for youth (see Figure 4). The SLSC is a large building full of exciting exhibits with one LEED Silver exhibit hall (see Figure 5). However, a striking feature of this green building addition is that no evidence of the LEED certification...
or the technologies required to achieve it are visible to the public (see Figure 6). The Web site does not contain information about it, nor is there a LEED plaque on the wall. When we arrived on site, we additionally learned that the museum staff was not informed of the green addition, another hint that this LEED renovation was not well publicized internally or externally.

Upon interviewing staff, we learned the deeper story. The LEED effort was advocated by the architect and pitched as a cost-saving measure. The green features are largely invisible to the public, with the exception of the green roof (currently inaccessible), which could become a future educational tool for the public.

The museum’s CEO was quite skeptical about the true benefits of pursuing LEED as opposed to using basic green building strategies without pursuing certification. Based on his years of experience in the science museum world, he further reminded us of the heritage of science museums as linked more directly to industry than nature. In his estimation, science museums were slowly moving away from this dominantly anthropocentric view of the world to a more eco-centric one, but it is happening slowly.

**Conclusion**

In comparing these two museums, we find that the mission of the museum might explain differences in the use of architecture to communicate sustainability. The Flint Hills mission includes explicit language about caring for the environment, whereas the mission of the St. Louis Science Center is more generally about science and technology. However, both museums share a desire to infuse a sense of joy into learning, make intentional efforts to minimize bad news (e.g., climate change), and focus on the beauty and excitement of their respective subject matter. Additionally, the leaders of both museums told us that our interview questions inspired them to think in new ways about how their green buildings could be more effectively aligned with pedagogical missions. Successful strategies for this can include signage at key moments throughout the building, such as information on water sources and water usage near water fountains or signage explaining material choices. If possible, early in the design process decisions can be made to ensure that the sustainable features are visible and part of the experience of the museum, such as including an observation deck on part of a green roof, or making photovoltaic panels visible from event spaces.

It may be differences in educational objectives that made a difference in how each museum engaged with their building. The Flint Hills Discovery Center strives to connect the public with the Flint Hills ecosystem, and their building itself is an extension of that landscape. The leadership is enthusiastic about their building and eager to continue communicating its greenness to their visitors. At the SLSC, on the other hand, the
building is a container for the wonders of science and human technology, and the green building itself is deemphasized. In their own ways, these buildings are already communicating their institution’s values to the public, regardless of whether they actively promote the building as a learning tool. With green buildings on site, each museum additionally has unique opportunities to advance sustainability education through increasingly intentional uses of their own facilities.

1 “The Flint Hills Discovery Center inspires people to celebrate, explore, and care for the Flint Hills” according to https://www.flinthillsdiscovery.org/148/Our-Mission

2 “Our mission is to ignite and sustain life-long science and technology learning” according to https://www.slsc.org/about/mission/.

Next Steps
Now that data are collected from eight science museums across the country, the next step will be an in-depth analysis of data from all eight museums. Examining data from across these case studies will allow us to see the unique situation of each institution while still drawing patterns from them collectively. As we analyze the data, we will identify design suggestions for architects and exhibition designers. We also seek to understand the political and financial realities that constrain museums in their use of their building as part of educational strategies. Furthermore, there might be knowledge gained via this study that would be informative to museum administrators and capital campaign managers. They provide critical direction regarding who they partner with to fund these museums that have so much to teach the public about science and the environment.

References

Additional Sources

Images Courtesy of:
Figures 1-3, 5-6: Caroline Lesch
Figure 4: St. Louis Post-Dispatch (7/20/2010), PGAV Destinations, St. Louis, MO artist’s rendering. Available at http://www.stltoday.com/entertainment/st-louis-science-center-to-build-million-exhibition-hall/article_a7c1dd0-3fb7-5074-9a78-a1991a8324b0.html
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