



# Green Exhibitions in Children's Museums: Setting the Bar Higher

by Brenda Baker

*Brenda Baker is Director of Exhibits at Madison Children's Museum and Founder and Director of [greenexhibits.org](http://greenexhibits.org). She may be contacted at [bbaker@madisonchildrensmuseum.org](mailto:bbaker@madisonchildrensmuseum.org).*

It's been ten years since we opened *First Feats* at Madison Children's Museum, the children's museum field's first "green exhibition," built with local, sustainable, and natural materials. Designed as a healthy space for our youngest audience and not as a "sustainable or green exhibition" or new building expansion, the design and fabrication practices we employed questioned the inherent health dangers of commonly used exhibit materials. For our first foray into green design we opted out of plastics (no Plexiglass, Sintra, fiberglass, Corian, laminates, plastic toys, etc.), carpeting, toxic paints, adhesives, formaldehyde-containing products or anything else that seemed vaguely toxic to our untrained but passionate minds. We started with our audience's needs first and worked from there.

We've been working ever since to make green practices integral to our museum's exhibition program, identity, mission, and vision. With the introduction of our website [www.greenexhibits.org](http://www.greenexhibits.org) in 2005, the goal was to share emerging green exhibition practices, techniques, and guidelines and to highlight case studies of successful green exhibitions and museums. Our board of directors adopted a sustainability mission statement in 2004, and we plan to open a LEED (Leadership in Energy and Environmental Design) certified museum in 2010.

By all measures we've come a long way in our thinking about sustainability as an institution and as a larger museum field. When we first received a Promising Practices Award from the Association of Children's Museums (ACM) for our innovation in green exhibition design our approach was considered interesting but a bit out there. Now, ten years later, Rick Fedrizzi,

CEO of the U.S. Green Building Council, will be a keynote speaker at this year's ACM conference, as 10% of all children's museums have already attained or are working toward LEED certification. We've gone from zero LEED certified children's museums to fourteen completed projects and twenty-six more in the works in five years! As we face a mounting urgency to address climate change, model environmental stewardship, and respond to economic challenges, museums of all sizes are incorporating sustainability into their missions as part of their survival plan. Clearly, we're seeing a sea change happen within the field, and not a moment too soon.

Children's museums have developed and modeled green exhibition strategies with approaches that are as varied as the communities, museums, staff, and audiences themselves. This article will share some of these practices, success stories, observations, and challenges faced by museums trying to green their exhibition programs, offering ideas about rethinking how we build and design exhibitions.

## **History of Children's Museums as Purveyors in Reuse**

Children's museums have been paving the way in the green design field unwittingly since their inception over a hundred and ten years ago. Brooklyn Children's Museum, the first children's museum in the country, was first founded in an unused building with hand me down artifacts from the Brooklyn Museum. A discerning eye or two knew that these cast offs were gems waiting to be transformed into a new context to delight families. Indianapolis Children's Museum also had humble beginnings, with collections serving as the backbone of their early offerings. Boston Children's Museum produced the field's first

“green exhibition” before it was ever considered such, by opening The Recycle Shop in the 1970s. The shop still sells enormous quantities of cast offs from local businesses, encouraging creative reuse of materials from plastic coins, to mini Paul Revere statues, to cardboard yarn spools. And so our field proudly began. While our heritage lies with those early salvage mavens, now nearly 400 children’s museums worldwide have flourished using those same tenets of frugality, adaptive reuse and a local, collaborative, and community minded spirit.

### Setting the Bar Higher: Children as a Standard for Safety

Sustainability expert and author David Orr (2002) surmises that if children were held up as the standard for safety in everything we make, we wouldn’t be using toxic chemicals, period. We would have clean rivers, clean air, a hole-free ozone layer, healthy children, healthy communities and a healthy planet. However, the green model that we have currently bought into doesn’t begin with children as the standard for safety nor does it significantly challenge our lifestyles or pursuit of the “American Dream.” Instead, we’re encouraged to buy hybrids, but not walk or ride a bike; to buy compact fluorescent lighting, but not to turn off lights; to build new Platinum LEED certified buildings, but not to repair existing ones; to buy carpeting with recycled content, but not to stop using carpeting altogether. (Orr, 2008) In a nut shell, our approach to green has been about preserving rather than deeply examining our way of life, without thinking of children first. I’m struck by this message and its relevance to our work designing exhibitions for children. I believe that children’s museum should set the bar higher and become models of healthy spaces inside and out, with green exhibitions at the core.



**First Feats** exhibition at Madison Children’s Museum, designed and built using green and sustainable materials. Courtesy of Madison Children’s Museum.

### Creating Green Buildings and Using Them as Teaching Tools and Exhibitions

Many children’s museums that have received LEED certification for their buildings have applied portions of the LEED criteria to their exhibition process, making green choices whenever possible. Materials like wheat and sorghum board, low volatile organic compound (VOC) paints and adhesives, recycled plastics and metals, linoleum countertops and sustainably harvested woods, high intensity discharge lighting (HID) and LED lighting, top the list of common material choices used in green exhibition fabrication of these LEED buildings.

Most all early LEED adopters have used the building itself as an exhibition and teaching tool. From signage highlighting the building’s green aspects, to guides and tours pointing out hidden green features, to wall cut-aways revealing green materials, to programs, workshops and events, museums have made a concerted effort to highlight their largest financial investment in green design. Kohl

Ten percent of all children’s museums have already attained or are working toward LEED certification.



**Little Sky Country** exhibition at ExplorationWorks in Helena, Montana. Built using sustainably harvested woods, mechanical fasteners, and green finishes by Paul Orselli's Workshop (POW). Courtesy of Paul Orselli.

(continued from page 59)

Children's museums have been paving the way in the green design field unwittingly since their inception over a hundred and ten years ago.

Children's Museum of Greater Chicago and Brooklyn Children's Museum both created temporary exhibitions about the building process and choices involved in creating a green building. Pittsburgh Children's Museum and Boston Children's Museum developed green guides and school tours of the building, while integrating signage about green features throughout the building. Madison Children's Museum, which currently has green exhibitions and not a green building, offers a Green Scavenger Hunt.

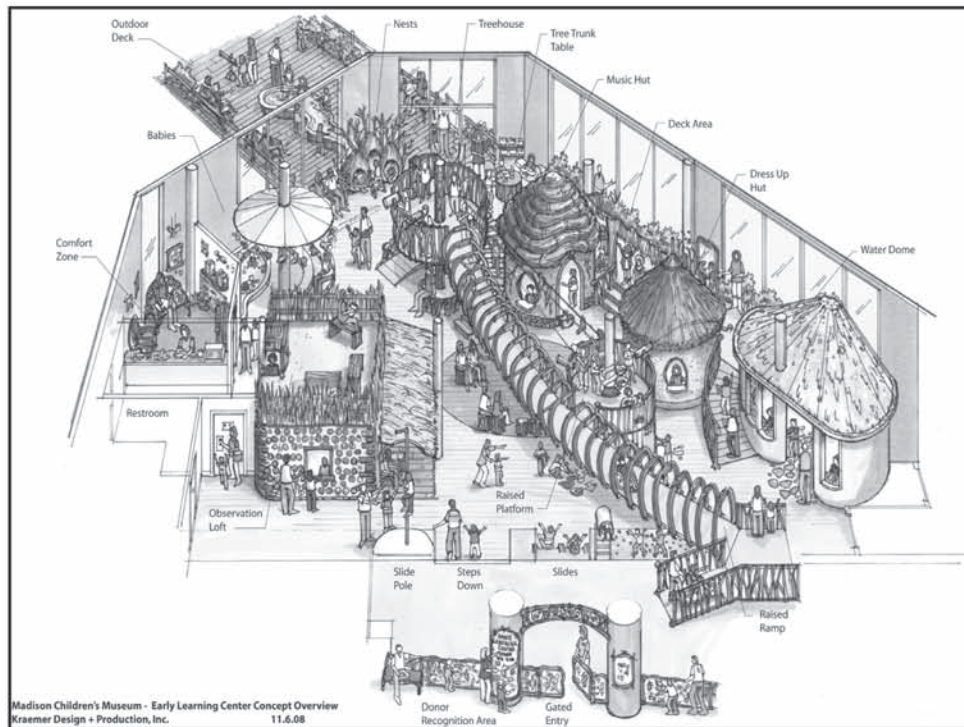
Boston Children's Museum is developing **Green Trails Game**, a game-based museum-wide exhibition that brings the building's green features to life. For example, kids will play "Green Roof Pinball" near the museum's green roof, seeing how better or worse choices affect the amount of runoff. The game metaphor will help children continue the experience at home while the online extension will help the museum evaluate its impact. Shenandoah Valley Museum and Children's Museum of Naples will also highlight their green choices through signage, green guides and tours once the buildings open in 2010.

#### **Moving Green Criteria from Buildings Only to Include Exhibitions**

Few among the fourteen LEED certified

children's museums set out with the goal of creating green exhibitions. Instead, they incorporated green thinking into their plans whenever possible. Unlike LEED with its built-in certification, there has been little external incentive for museums to make less in the first place, design for reuse, or to have a goal of zero waste. A few notable exceptions come from smaller museums with nimble exhibition processes, less square footage and smaller budgets, as is the case with Madison or museums like ExplorationWorks in Helena, Montana. It built its **Little Sky Country** exhibition with sustainably harvested wood, green finishes, mechanical fasteners, and no glue in order to reuse materials once the exhibition closes.

I'd like to suggest that green exhibitions could provide a fertile testing platform for museums to think, design, and build differently. Unlike buildings, with a 75-100 year life expectancy, exhibitions come and go, are comparably fast and flexible—great grounds for experimentation. While some might argue that the return on investment for a green exhibition wouldn't pay for itself, I argue that the opposite is true. By thinking, designing, and building with a reduction mentality and a reuse standard from the outset; by looking at the entire life cycle of components; and by using a local approach, museums could actually save money and engage the community in profound new ways, enhancing their bottom line. Designing for reuse, simplifying and localizing the supply chain, and recycling exhibits and materials at the end of their useful life echoes the cradle to cradle design process we see in nature, where there is no waste. This cradle-to-cradle ethos needs to be adopted as the new standard for museum exhibition design.



Madison Children's Museum **Early Learning Center** design, featuring 100% locally grown sustainable woods for exhibits and flooring. Courtesy Madison Children's Museum.

### Exhibitions with a Green Approach

At Madison Children's Museum, we're experimenting with three different approaches to sustainable exhibition design and fabrication in the new museum's largest galleries. **The Early Learning Center** uses 100% locally grown sustainable wood procured by local foresters and civic minded landowners within 100 miles, showcasing both native trees and the local conservation ethic. This partnership will yield all of the wood for the museum's new exhibits and **Early Learning Center** flooring. We'll also use green printing techniques, organic fabrics, recycled glass, stone, straw clay, little to no glue and mechanical fasteners.

In **Possible-opolis**, a free-form, people powered exhibition dedicated to creativity and innovation, the ideas of the day are reuse, reclamation, and energy reduction. With a 100% reclaimed and recycled materials use construction goal, we're mining the museum for reuse opportunities, while acquiring parts from salvage yards, community members, Craig's list, the Madison's Freestuff, and recycling programs. We're modeling the kind of free-wheeling fun in the exhibition making process that we hope visitors feel when

they're in **Possible-opolis. Rooftop Ramble**, our year round green roof and outdoor space, focuses on alternative energy and sustainable agricultural and cultural practices, and features photovoltaics, rain barrels, wind generators, a cultural vegetable garden, chickens, a clubhouse, native grasses, a stream, and a natural building area.

The Children's Museum of Naples will open **Green Construction** in 2010, an exhibition entirely powered by rooftop wind turbines. The centerpiece is a large human scale model of the new building, where children "build" the museum using the same recycled and reclaimed materials used in the museum's actual construction. A bicycle powered conveyor belt will help children move building materials around the site.

Several outside exhibition design firms specializing in children's museums have created new green exhibit products for the marketplace. Two notable examples are Skyline Design (Chicago) and Kidzibits (St. Paul, MN). Undertaking the most thorough green approach to date, Skyline's **Greenplay** exhibit components are made with interchangeable parts using recycled plastics, formaldehyde free MDF,

While some might argue that the return on investment for a green exhibition wouldn't pay for itself, I argue that the opposite is true.

I'd like to suggest that green exhibitions could provide a fertile testing platform for museums to think, design, and build differently.

*(continued from page 61)*

forest waste panels, vegetable dyes, mechanical fasteners rather than glue and low VOC paints. Skyline standardized its hardware, designed for limited waste, and offers a take back program for old exhibits. Kidzibits' **Water Factory** exhibit pieces are small modular self contained water play tables made from 100% recycled



*Raceway and PipePlay watertables, designed and built by Kidzibits LLC using pre-used 55 gallon drums and recycled plastic lumber. Courtesy of Kidzibits.*

plastics, allowing easy recycling after the exhibit is no longer useful.

### **Green Exhibition Process as Community Engagement Strategy**

Shenandoah Valley Museum's decidedly local approach to exhibitions thoughtfully integrates green design into the fabric of the museum. Currently slated as the first Platinum rated children's museum, Shenandoah Valley has literally taken their exhibitions to the streets, engaging the entire community in the greening process through creative exhibition development strategies. From a scrap metal drive that helped purchase recycled metal, to the school newspaper drive to collect papers for the museum's insulation, the museum brought the community together to support their sustainability goals while educating their audience about their plans. The community process also yielded donated exhibit components and materials, including a log cabin, a barn, a longhouse, donated vehicles, and simple machines. Boston Children's Museum likewise engaged hundreds of museum families in planting their green roof!

### **The Challenges and Barriers to Creating Green Exhibitions**

There are many reasons why green exhibitions have not gone mainstream yet, most notably the fact that green thinking has only been a part of our larger museum conversations for the past decade, and only more widely in the past four or five years. In 95% of the cases, the impetus for green thinking started with a new building project first, not with the exhibitions. With LEED as the guideline, museums generally learned the ropes of green thinking through their building project first, then applied that learning next through instituting green cleaning

and operational strategies. Both of these come after the building planning. Since ideally building and exhibition timelines progress in tandem, LEED instigated learning could not transfer immediately to exhibition design.

### **Lack of Knowledge; Need for Materials**

Additionally, there is a perception that creating green exhibitions is difficult. To date information about green materials and exhibition applications has been limited to: several green design websites, blogs, and wiki's; one book; several thesis projects; sessions at museum conferences; a smattering of articles in museums journals; and a new PIC committee at AAM. (Many of these are featured or discussed in this issue.) As a result there are relatively few examples of successful green exhibition projects to use as models. Carol Scott, Executive Director echoed a sentiment expressed by several museums in smaller towns, "We wanted to work locally, but simply don't have the local expertise or local materials to make this a true option." The Children's Museum of Naples, for example, is surrounded by water on half of its area, severely limiting its ability to get materials within a short distance.

The lack of industry standards for green exhibitions gives no clear guidance about prioritizing, both for museums and the fabricators they work with. Additionally many fabricators are not well versed in green practices or struggle with limited material palettes, budgets, or their own or client's limited visions of how to do things differently.

Mark Catton of Murphy Catton, whose firm recently built Brooklyn Children's Museum's new **Neighborhood Nature** exhibition using sustainably harvested hardwoods, said it very



*Children planting green roof at Boston Children's Museum. Courtesy of Cambridge Seven Associates & Boston Children's Museum.*

plainly, "We simply don't have all of the green materials we need yet to build the kinds of exhibits that can take the beating they receive at children's museums." He maintains that every RFP he receives has sustainability goals front and center. While it's something they're eager to help clients accomplish, equivalent materials for certain applications are simply not available yet. Joe Cox, Director of Naples Children's Museum shared similar concerns, "We simply couldn't find an alternative to fiberglass or plastics for our exhibit's centerpiece, a large Banyan tree, as much as we tried."

### **The Cost Issue**

There is also the perception that green exhibitions always cost significantly more. However, this depends greatly upon who is doing the work. Museums that rely on outside fabricators have often found green exhibitions to be between 10-15% higher in cost, because of a combination of higher materials costs, increased research and development costs for each exhibition, and increased cost of materials acquisition. Children's Museum of the Upstate in South Carolina, is opening a new exhibition called **Talking Trash**, with its building opening in 2010, but found the significantly higher price tag for a green exhibition from their outside fabricator prohibitive, despite the fact that the display is about making responsible choices with trash and recycling. With exhibition costs of \$365 per square, they couldn't justify the additional expense, despite their great desire.

...the museum paid for its green research and development costs with the first exhibition, and each subsequent exhibition has benefited from that initial research.

All of this can inspire our field to rethink and broaden its concentration on green buildings, raising the bar to include green exhibitions as well.

(continued from page 63)

**References:**

Benyus, J. (1997) *Biomimicry: Innovation inspired by design*, New York: William Morrow.  
Conlon, H. Hub Group, Inc., personal communication, April 5, 2007

McDonough, W. & Braungart, M. (2002). *Cradle to cradle: Rethinking the way we make things*. New York: North Point Press.

Orr, D. (2002). *The nature of design, ecology, culture and human intention*. Oxford: Oxford Press.

Orr, D. (2008, October 15). *Earth lessons*. Lecture at Wisconsin Book Festival, Madison, WI.

At Madison Children's Museum and Shenandoah Valley Museum, tight budgets have encouraged the museums to take a more active stance in developing a reuse ethic, working locally, and using local materials. The cost per square foot for Madison's *First Feats* exhibition came in at \$162 per square foot, including in-house fabrication staff time, significantly lower than the industry average of \$225-\$400 per square foot for mid-sized, mid-budget children's museums. The average cost for MCM's new building's exhibitions currently in production, all of which will use a minimum of 90% sustainable or green materials, will be far less than \$200 per square foot. One reason for this is that the museum paid for its green research and development costs with the first exhibition, and each subsequent exhibition has benefited from that initial research.

**Ideas for the Field**

The museum field has much to be gained by setting green exhibition standards, creating training opportunities, new models and incentives for museums to further their sustainability work. The children's museum field should put sustainability on the forefront of our collective agenda, by joining forces with AAM's new PIC Green and by creating our own

field-wide green initiatives and sustainability task force working at the national level to create a vision, set priorities and guidelines, and develop training opportunities. Items on the table should include developing a regional website for used exhibitions or components, easy to use evaluation tools and green exhibition environmental impact calculators, cradle to cradle exhibition design and fabrication guidelines, and new models for regional traveling exhibits exchanges.

A Green Exhibit Initiative (modeled after the Asian Exhibits Initiative) could be developed as a way to encourage creativity and advancement and sharing of new green exhibition models with museums of all sizes. Most importantly, we should get visionary thinkers from Janine Benyus, author of *Biomimicry*, (1997) to David Orr, to William McDonough, as keynote speakers for our conferences. All of this can inspire our field to rethink and broaden its concentration on green buildings, raising the bar to include green exhibitions as well. ☀