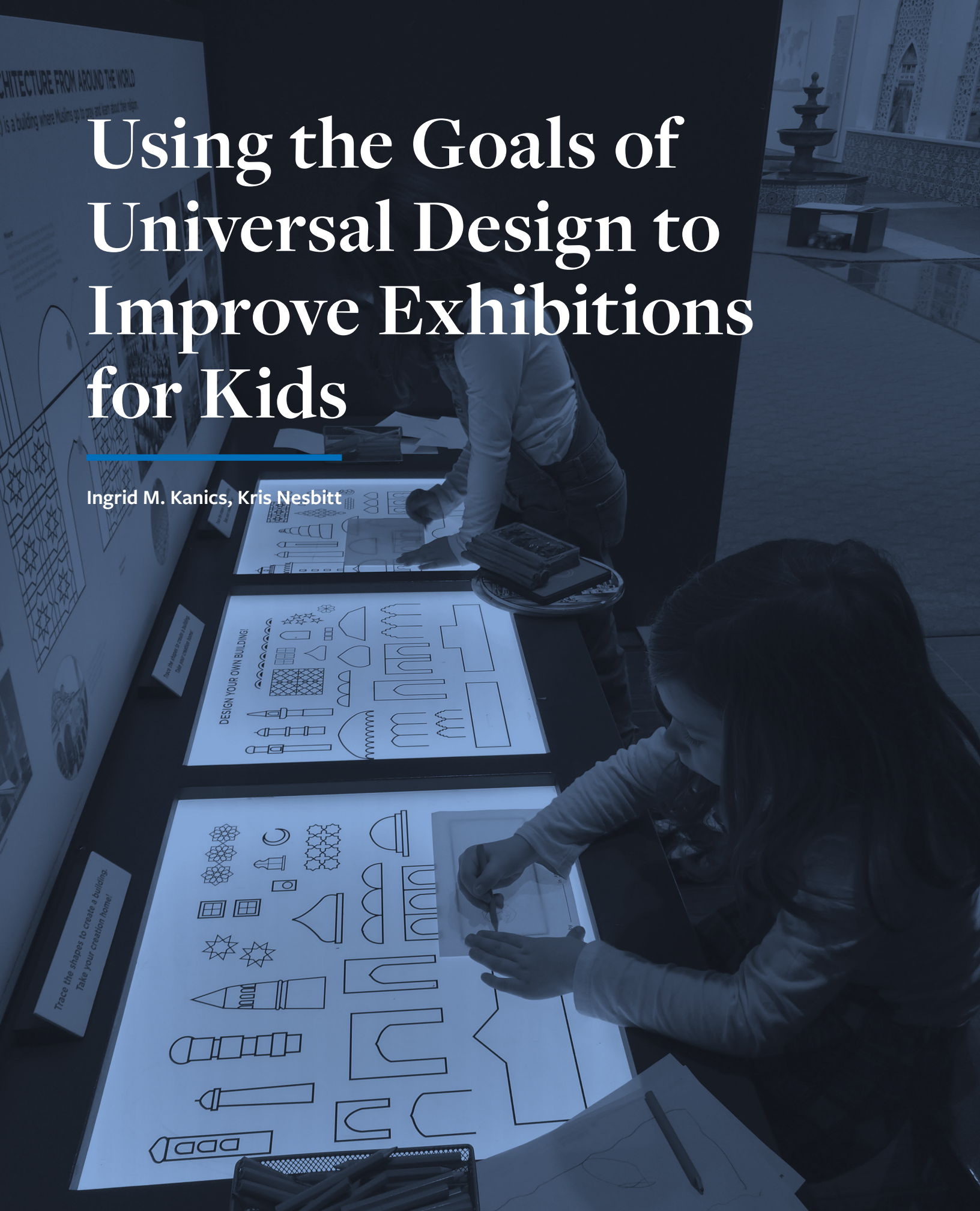


Using the Goals of Universal Design to Improve Exhibitions for Kids

Ingrid M. Kanics, Kris Nesbitt



Trace the shapes to create a building.
Take your creation home!

Here are the shapes you need to make your own building.

DESIGN YOUR OWN BUILDING:

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In the spring 2008 edition of *Exhibitionist*, Ingrid M. Kanics coauthored an article about creating universal play spaces using the principles of universal design, defined by architect Ronald Mace as “the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or special design.”¹ The article focused on the seven principles (equitable use; flexibility in use; simple and intuitive use; perceptible information; tolerance for error; low physical effort; and size and space for approach and use) developed in 1997 by the Center for Universal Design. These principles intended to communicate the ethic of universal design to a wider audience, and Kanics’ article shared how these principles could shape inclusive play-based exhibitions.

As an inclusive play consultant, Kanics partnered with Kris Nesbitt and a team at Shedd Aquarium working on *Polar Play Zone*, a universally-designed play-based exhibition for families with kids ages two to seven, which opened in 2009. For Nesbitt, the learnings from the project reshaped her approach to planning exhibitions and sparked the development of Shedd’s award-winning, organization-wide accessibility and inclusion initiative. In the intervening years, both Kanics and Nesbitt have worked on many other projects, expanding learnings about universal design approaches.

Now, together, we are writing this article to discuss one of the most valuable shifts for both of us. We have switched our focus from the principles of universal design to the more holistic *goals* of universal design, as asserted by Edward Steinfeld and Jordana Maisel in their 2012 book, *Universal Design: Creating Inclusive Environments*.

In the book, Steinfeld and Maisel, both from the University of Buffalo’s Center for Inclusive Design and Environmental Access, list significant concerns about the original principles, including their focus on product design, the difficulty for designers to apply them consistently, and, perhaps most importantly, the fact that their terminology raises challenges for measuring and benchmarking. In response to these concerns about the *principles*, Steinfeld and Maisel take an evidence-based and holistic approach to develop eight *goals* for universal design. Their intent was to create a more actionable, applicable, and achievable set of guidelines for universal design that would be imbued with more holistic dimensions, including social participation, wellness, and cultural relevance.

The principles have been widely discussed in museum exhibition design literature – including Kanics’ original article – but Steinfeld and Maisel’s goals have less widely permeated the field. As practitioners in inclusive design

for museums, we suggest that these eight goals not only provide a more effective tool for design teams than the principles, but also offer a crucial framework for shaping teams’ approaches and mindsets. Steinfeld and Maisel developed the goals so that they can be drilled down to objectives and tactics in a measurable way. While the goals were developed with all people in mind, the aims they express are especially important when designing experiences for kids, who learn through play and experimentation in ways that make a lifelong impact on their development. The use of these goals to design children’s spaces ensures that the great diversity of children’s abilities and needs can be addressed to allow all children to thrive in museum environments.

In this article, we use Steinfeld and Maisel’s goals to shape a series of questions that exhibition teams can ask themselves to put universal design into practice. We share several examples of projects we have worked on or have visited that we felt offered a shorthand example, and include food-for-thought images that help illustrate the ideas we discuss. We’ve refrained from giving rules or specific instructions for universal design; instead, we ask exhibition teams to interrogate each goal and identify for themselves how they can put it into practice in their exhibition projects.



Fig. 1. *Seated Catalog of Feelings*, Cooper Hewitt Museum.

GOAL

2

Comfort

Keeping demands within desirable limits of body function and perception

Why this is especially important to consider for children: Kids learn and grow when they are challenged; experimentation, and even failure, are key. But that shouldn't be at the expense of comfort. Comfort as a goal helps ensure that children can focus on the task at hand without wasting energy getting their basic needs met. Nor does it require them to reach, move, and feel in a way that introduces unnecessary frustration or danger.

Questions to ask your team: What are the reasonable or desirable limits of the activity? Are we asking children to stand or pay attention too long for the context? Can we test prototypes iteratively to ensure we are not asking too much of visitors? Can we remediate when we see that visitors are uncomfortable or frustrated with an exhibit element?

Some solutions: Make sure movable items, like cranks and flaps, can be lifted easily and without too much effort. Provide options with comfort in mind. Offering different table heights and chair options ensures that children can stand or sit with the support they need.

GOAL

1

Body Fit

Accommodating a wide range of body sizes and abilities

Why this is especially important to consider for children: Like adults, whose body sizes and abilities are all over the map, growing children run the gamut too. And children bring even more widely varying developmental needs and abilities at each age. The needs of children are constantly changing as they acquire and build new skills, which requires that the museum environment be able to accommodate their changing needs from day to day.

Questions to ask your team:

How can your design better adapt to – and accommodate – varying heights, weights, abilities, disabilities, and body shapes? In what ways can you offer flexibility that accommodates the widest range possible?

Some solutions:

In *The Senses: Design Beyond Vision*, a 2018 exhibition at New York City's Cooper Hewitt museum, a sensory interactive allowed visitors to choose how to engage with the interactive in the way that fit their body best. Vibrating pads on the chairs allowed for visitors with a variety of shapes to participate, and a vibrating pillow could be held, hugged, or placed in a lap.

Fig. 2. Clay head table, Chicago Children's Museum.



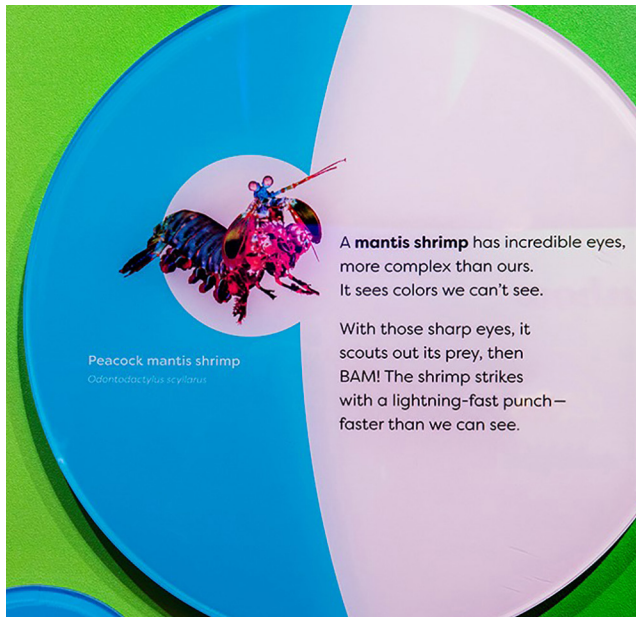


Fig. 3. Mantis shrimp label, *Underwater Beauty*, Shedd Aquarium.

GOAL

3

Awareness

Ensuring that critical information for use is easily perceived

Why this is especially important to consider for children:

Children’s reading levels, along with their ability to follow instructions in a series (both useful for understanding text or interactive directions), are still developing, and their caregivers typically have a lot to think about during a museum visit. Making sure kids and their caregivers can easily read, understand, and act on the information you share helps them learn and experience more.

Questions to ask yourself: Does your exhibition have a clear “big idea” that’s shared with visitors? What’s the most important thing in the label, interactive, or space, and can visitors “get it” right

away, whether they’re kids or adults, readers or not? Can you push your design to activate those critical pieces in multisensory ways, such as auditory or touch-based repetition along with visual and text-based elements? Can you make your exhibit labels shorter, clearer, and more direct? Does the important information come across when read aloud?

Some solutions: This label from a current Shedd Aquarium exhibition about aquatic animals, *Underwater Beauty*, offers multiple channels to identify the animal: text; an image; a tactile model; and braille. The main text appears as dark type on a white background, making it easier to read. The label itself is clearly written and uses multisensory language (BAM!). Legibility would have been improved, though, by making the animal name under the image larger with higher contrast.

GOAL

4

Understanding

Making methods of operation and use intuitive, clear, and unambiguous

Why this is especially important to consider for children: Kids learn by doing and rarely read before starting an activity. While they might have a caregiver facilitating their experience, just as often they do not.

Questions to ask yourself: Examine your design. Can children with a range of abilities easily understand what to do, with or without adult facilitation? Can they get started right away without non-productive frustration or confusion?

Some solutions: Kids of a range of ages could jump right into this unambiguous tracing interactive from the Children’s Museum of Manhattan’s traveling exhibition, *America to Zanzibar: Muslim Cultures Near and Far*. Softly glowing light tables were always lit; children didn’t need to turn them on. The museum placed pencils and paper directly adjacent to the drawing area, making them easily accessible. And examples and instructions were demonstrated visually.

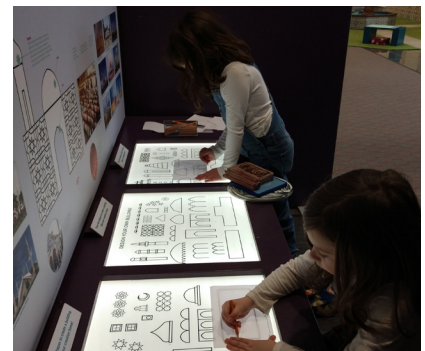


Fig. 4. Light table, *America to Zanzibar: Muslim Cultures Near and Far*, installed at the Sabeel Center in Des Plaines, Illinois, 2019.



Fig. 5. Forts! at Chicago Children's Museum.

GOAL

5

Wellness

Contributing to health promotion, avoidance of disease, and protection from hazards

Why this is especially important to consider for children: Keeping kids healthy and avoiding injury is top of mind when designing for children. We can't support learning and growth unless we do. In 2021, physical and mental health outcomes for children saw a decline, in part because of the COVID-19 pandemic. It feels as if museums – and museum exhibitions – could play a role in improving children's health and well-being (as John H. Falk argued for adults in his 2021 book, *The Value of Museums: Enhancing Societal Well-Being*).

Questions to ask your team:

What can you do to ensure that touchable activities will minimize the spread of germs and disease? How can you minimize hazards

in your exhibition? Can your design encourage kids to be more physically active? Can you support mental health by being trauma-informed in your approach and creating a safe and nurturing space?

Some solutions: The design team working on the open-ended fort-building play space at Chicago Children's Museum faced a challenge. Central to the experience was giving children the supplies and the freedom to build forts wherever and however they wanted in the gallery. But, they still needed to maintain safe egress in case of an emergency situation. They landed on a simple pathway of low profile red carpets which intuitively outlined a "no-building" fire safety lane. This pathway ensured that a clear path of travel remained in the space at all times. This enhanced ease of movement in general, and provided easily identifiable emergency egress.

GOAL

6

Social Integration

Treating all groups with dignity and respect

Why this is especially important to consider for children:

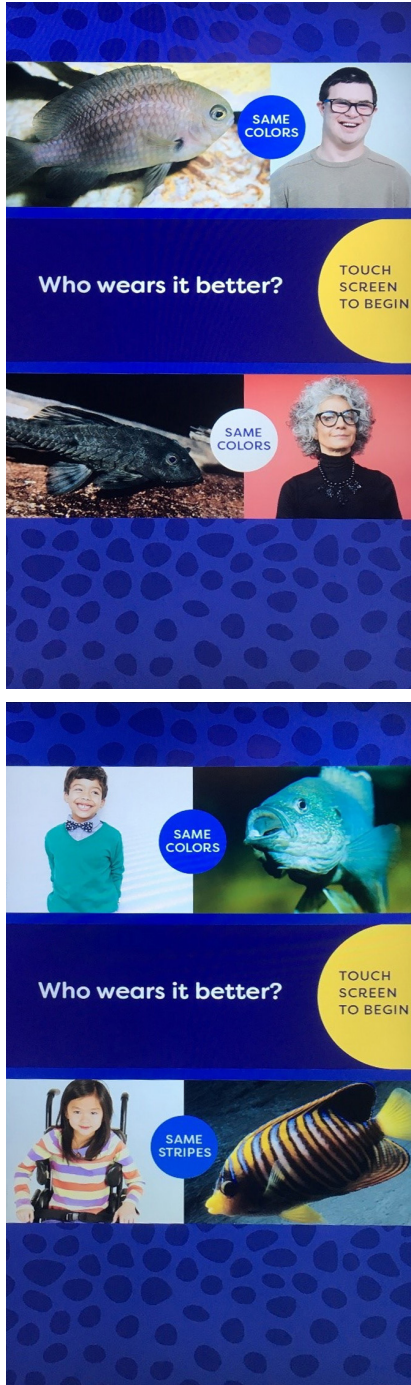
Representation matters, especially for developing children. Stigma, lack of respect, and erasure can harm developing identities, and inclusive environments nurture the humanity in us all – but especially in children.

Questions to ask your team:

Does your design ensure that everyone feels included? Is there space for people to gather and share an activity? Is there representation in imagery so that kids and families see themselves? Does your language reflect the diversity of families and gender identities in your audience? In what ways can you consider your design from different perspectives, and what changes might that lead to?

Some solutions: This touchscreen interactive from Shedd Aquarium's *Underwater Beauty* exhibition featured imagery of individuals who have often been left out of visual depictions: kids with disabilities, people with Down Syndrome, older adults, and gender nonconforming individuals.

Figs. 6 & 7. Touchscreen interactive, *Underwater Beauty*, Shedd Aquarium.



KRIS NESBITT

GOAL
7 Personalization

Incorporating opportunities for choice and the expression of individual preferences

Why this is especially important to consider for children:

Children’s physical, social, and emotional abilities are developing, and their individual identities are forming. The opportunity to flex their decision-making skills and express themselves supports growth.

Questions to ask your team:

Do kids with differing abilities have only one choice, or do you offer everyone multiple options or ways to participate? Is there only

one accessible spot in a fixed place or can the context be flexible to visitors’ needs? Can visitors customize how they experience the activity in some way?

Some solutions: During a meeting with community partners reviewing a design for a playground, one mom pointed out that accessible swings didn’t allow her child to choose which direction to face. The designers, at no additional cost to the project, were able to mount the swings facing different directions so kids could have a choice of which way to face.



INGRID KANICS

Fig. 8.

Accessible swings facing each other. Shaw Family Playground, Sheboygan, Wisconsin.



LANDSCAPE STRUCTURES, INC.

Fig. 9. Lincoln Heights Recreation Center’s playground features the red and yellow punched patterned elements on the right, modeled after *papel picado*.

GOAL
8 Cultural Appropriateness

Respecting and reinforcing cultural values and the social and environmental contexts of any design project

Why this is especially important to consider for children: As previously stated, representation matters. Design projects can reinforce social and majority-culture hierarchies that undermine children’s self-esteem, sense of safety, and intellectual and emotional growth. Conscious efforts to engage and co-create with

audiences – and to leverage the strengths and particulars of the social and environmental context – creates stronger and better experiences for all children.

Questions to ask yourself: Do your designs reflect the cultural values and social and environmental contexts in an effective, affirming and respectful way? Can you partner with local residents for design reviews or bring community partners to the table early on to help shape designs to reinforce cultural values? Can you push your project to support equity?

Some solutions: Designers of the Lincoln Heights Recreation Center playground in Los Angeles worked with the local community to develop visual elements that reflected cultural values of the Mexican American residents in the surrounding neighborhood. For example, tactile elements echo *papel picado* designs. This traditional cut-paper folk art, widely found throughout Mexico, was the inspiration for a series of brightly colored, playful panels, providing visual and tactile play for all visitors.

Conclusion

Especially when designing for children, we believe that the eight goals of universal design can be used as a meaningful tool to strengthen exhibitions. Encourage your teams to interrogate the goals at the start of each project. Use the goals to flesh out a series of measurable objectives and tactics you'll use in your project, and embed these in your earliest planning documents. Return and reconsider them as the project develops, making them key benchmarks and criteria that each aspect of your project must meet. Evaluate them too, both in formative and summative phases – and tweak or remediate as necessary. As Steinfeld and Maisel suggest, universal design is a “process that enables and empowers a diverse population” making “life easier, healthier, and friendlier” for all. Universal design is an iterative, innovative and evolving practice, one that makes the final product better for everyone, including our youngest audiences. ■

1 See Ingrid M. Kanics and Heather Scrivner-Mediate, “Creating Universally Accessible Play Environments for All,” *Exhibitionist* (Spring 2008), https://static1.squarespace.com/static/58fa260a725e25c4f30020f3/t/594981182994ca9f4e529ec4/1497989436911/EXH_spg08_Creating_Universally_Accessible_Play_Environments_for_All_Kanics-Scrivner-Mediate.pdf. *Exhibitionist* was renamed *Exhibition* in 2016.

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OH WOW! The Roger and Gloria Jones Children's Center for Science and Technology, Youngstown, OH