Sometimes, after a year like we’ve all had, you need to take a chunk of time to reflect. On September 24, I did that with Panca, the artist creating a new installation at The New Children’s Museum in San Diego, California. In an alternate, COVID-less universe, on the day of this interview Panca would have been the 107th artist to open an art installation at The New Children’s Museum. Panca will also be the first artist commissioned by the museum who visited the museum as a child, having been brought by a neighbor in the mid-1990s for one memorable visit where she wore provided coveralls, painted an actual truck, and left thinking, hey, art might be something I can do.

Panca’s project, now called El Más Allá, will open in 2021. In keeping with the museum’s practice of commissioning artists to create each exhibit, it will be a space unlike most children’s museum exhibits. Vibrantly colored, twenty-foot-tall murals will cover the walls. Kids will explore inside and around fifteen-foot-diameter sculptures representing characters Panca developed in collaboration with families in the community (think: a unicorn who roller skates, followed by her pet balloon, or a constantly shape-changing creature named Pinky). And to enter the installation, visitors can choose to swoop down a forty-foot-long slide, or, alternatively, take the elevator to a beautifully lit corridor, both entries acting as portals into a world that—like the English translation of the title, El Más Allá—is “beyond” this one.

In what follows, Panca and I reflect on creative work as medicine, great ideas as a digestive process, and whether a giant slide can transform the way we view our ever-changing world.
MEGAN: We began developing your art installation in 2019. We had planned to prototype your project at seven community centers starting in spring 2020. But then COVID hit. Suddenly, we were doing Zoom drawing classes where you could work with families to develop characters and other ideas for your project. Today is the day that we had originally planned to open your project. How has the pandemic changed how you think about this installation? About the world?

PANCA: I can only say that I’m glad that it’s being pushed back because, mentally and emotionally, I am not there. From Breonna Taylor to George Floyd to the wildfires here on the West Coast, it’s overwhelming. And in the middle of all that, you have to think: CHILDREN’S MUSEUM and… COVID! How can we teach kids to be good humans through art, but at the same time, how can we protect them from this virus? During our Zoom meetings, I see our faces and sometimes we are just like, “Uh, are we okay?”

M: We have spent a lot of time over the past seven months debriefing about whether we are okay.

P: The hardest thing for me, to be honest, were those [online] drawing classes with the kids, which we did right as the pandemic started. Those hit me hard. I’m used to being alone, living a hermit life. But the kids reminded me that I have to be strong, not only for myself, but because I have a job I need to do. Although I’m depressed—half the world is. But I’m the artist-in-residence in the freaking museum! After a drawing class, I would hear all these heartfelt thank yous from the kids and parents. It was like medicine for me. I would think, “Okay, everything sucks. The world is on fire, literally, but you have a job to do, and in the end, just think about the good influence that this can have on children.”

When you use art to process what is happening in the world, it comes out in a different way. It comes out as empathy. I didn’t want any of my bad vibes to go into this project. The museum project is a beautiful escape, but without ignoring what’s going on. Meditation and creativity can be an escape, but they’re also constructive for your mind.

M: So, the role of the artist, and maybe children’s museums too, is to help us digest everything that’s happening?

P: Yeah. It almost sounds like I’m going to say yep, chew it up, swallow it, and poop out something great, but it is!

M: [Laughing] How did working with the community in the spring change the art installation you had planned as of February 2020?

P: First, I thought about eliminating the slide because of COVID. But I started thinking, the whole museum is about touch. At some point, we will figure out safety measures that aren’t that difficult so you can use the slide. So, no, the slide stays because we all miss and need that safe adrenaline rush that flips you fast into thinking you’re in a new world. Leave everything else behind. You’re here, have fun. Explore and move around.

M: Tell me about the characters you developed for the imaginary world of El Más Allá.

P: There are these characters in the world—Maslow, Pinky, Mimo, Chelo—that are expressions of everything that we’ve all felt during this time—a little bit of fear,
A Novel Approach to Exhibit Interactives amid the Pandemic
Melissa Pederson and Stephanie Eddleman, The Children’s Museum of Indianapolis

We want to be candid: this article may not be what you anticipated. We are not going to talk about cleaning practices, antiviral surface materials, or air purification systems. However, if you are interested in a story about a design team grappling with the messy, confusing implications of how the novel coronavirus could affect the future of interactives in exhibits, you have come to the right place. This story takes place at The Children’s Museum of Indianapolis, and features a dedicated team of exhibit creators. Our mission: save exhibit interactives from a COVID-19-instigated extinction. But be warned, the story ends with a big “To Be Continued.”

The Children’s Museum of Indianapolis

The Children’s Museum of Indianapolis (TCMI) serves a core audience of children and families to fulfill its mission of creating extraordinary experiences across the arts, sciences, and humanities that have the power to transform the lives of children and learning families. Our facility sits on thirty acres and houses thirteen permanent exhibitions and four temporary galleries that draw on a collection of more than 130,000 artifacts. We also have a 7.5-acre outdoor experience called Riley Children’s Health Sports Legends Experience®. Permanent galleries are updated every five to twenty years, and temporary galleries change constantly, so the museum’s exhibit department includes teams of developers, designers, and fabricators who conceptualize and produce multiple experiences per year.

Enter the Novel Coronavirus

On March 13, 2020, most of us were sent home. Museum leadership, facilities, and production staff immediately began planning and implementing strategies to prepare our galleries for reopening. The focus of these changes was to create the safest environment possible for our staff and visitors by removing high-touch interactives, creating policies and infrastructure to encourage social distancing, and providing materials that empowered families to sanitize their hands and touchable surfaces.

Exhibit development did not stop, but we became acutely aware that we were designing pre-COVID exhibits that would be launched in a world with the virus. The hope was that everything would return to normal by the time our newest exhibitions opened in a year or two. But there was, and still is, a nagging uncertainty. What if things never return to normal?


Coronavirus: An Overwhelming Challenge for Children’s Museums?

Anyone who works in a children’s museum knows that the sense of touch is our friend. Time and time again research has shown that children learn by hands-on, active exploration of their environment. Children’s museums have embraced this knowledge and created environments where touch is one of the primary ways to engage and learn. So in March when the world changed and touch suddenly became an undesired activity, we were left with an existential question: how do we continue to provide extraordinary learning experiences for children and families when the ability to touch is off the table?

While touchable interactives are the go-to method for our design teams, we know there is value in delivering content via other senses through which visitors perceive the world. For decades, exhibit creators have been enhancing learning environments by experimenting with techniques that encourage visitors to manipulate and immerse themselves in sounds, sights, and smells.

For example, people make meaning through gross motor, large body movement. The Move2Learn project (www.move2learn.ed.ac.uk/embodied-learning/), an international collaboration between informal science educators and learning scientists, focuses on “embodied learning,” in which children use representational hand gestures and body movement to better understand scientific concepts. The best part— they can do this without touching anything! An example of this type of learning interactive can be found in The Children’s Museum of Indianapolis’ Corteva Agriscience ScienceWorks, an exhibit that encourages children to explore careers in the sciences. Partic-

By mid-April we had acclimated to the work-from-home life, and understood that COVID-19 was going to keep us there for some time. Exhibit development did not stop, but we became acutely aware that we were designing pre-COVID exhibits that would be launched in a world with the virus. The hope was that everything would return to normal by the time our newest exhibitions opened in a year or two. But there was, and still is, a nagging uncertainty. What if things never return to normal?

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continues on page 14
MAHER: What was your first museum experience, and what led you to a museum career?

ORSELLI: When I was a little kid, my father took me on a visit to the Cultural Center in downtown Detroit, which housed the Detroit Institute of Arts. The Detroit Historical Museum was nearby. At least that’s the story I tell myself. I used to kid my father when he was alive, that if he had brought me to a courtroom or a hospital that day he would’ve gotten a lawyer or a doctor. But instead he got a museum person. I think in the end he was quite happy with that.

On a later visit with my family to the Ontario Science Center in Toronto, we spent the whole day there. Afterwards I wrote them a fan letter saying how much I enjoyed the museum—especially the chemistry demonstrations—and asked if they could send me some of the “recipes.” They sent me a letter back with a photocopy of their floor chemistry demonstrations that included stuff like sulfuric acid. I remember riding my purple banana seat Sears bicycle back from school with a big bottle of sulfuric acid that my seventh grade science teacher gave me. And I did the experiments (with some near catastrophes!) from their booklet of floor chemistry demonstrations. I wish I had saved that letter.

M: Growing up in Cleveland, my family never went to museums, and Catholic schools didn’t take field trips. But my dad had a boat and we used to sail around Lake Erie. On one trip with him and my two friends when I was about eleven, we docked in a little marina in Vermilion, Ohio. He handed me $10 and told us to go find some dinner. So, we walked downtown, found a hot dog stand and then a museum, the Vermilion Nautical Museum. It was in an old Victorian Nautical House. The front door was wide open, no one there. We walked in, wandered around, and saw a display of jars of an invasive species, lamprey eels, with those big sucker mouths, all sizes. These looked like green beans in a jar, grey green beans by then. My friends dared me to steal one, so I grabbed one, and we ran out, I took it back to the boat. I carried it around for years. Later, I majored in art history major, spending a lot of time in the Cleveland Museum of Art. But I didn’t lift anything.

O: I just learned something about you! Great Lakes lamprey eel stealer! Holy Mackere! No, Holy Lamprey!

M: On to exhibits. Basic question: What is an exhibit anymore?

O: Like that old question of what is a museum anymore, an exhibit can be anything. I’m averse to coming up with a dogmatic definition because the boundaries keep shifting, which is good.

Olafur Eliasson, one of my favorite living artists, does a lot of phenomenological art, playing with light, art, and motion. Some of his pieces look like high-end, very aesthetically-pleasing science center exhibits. Someone described the experience of seeing his work as a “wow” followed by an “aha.” There is my definition of the exhibit.

Eliasson had a show called Look Again at the Museum of Modern Art. Riding the escalator, making this stately museum ascendancy to the second floor, you noticed something weird. Everybody moving where you were headed looked like a black and white movie. It was like a reverse Wizard of Oz. That was the “wow”: what’s going on? Then the “aha” when you realized a set of yellow sodium lights, perfectly aligned to the floor landing, took out the color and made everything look monochromatic. A lot of the best exhibit experiences—and they don’t have to be interactive—are wows and then ahas. Seeing the Diego Rivera frescoes at the Detroit Institute of Art is a very transcendent experience. I’ve probably been in that space dozens of times. But it’s still very, very impressive.

M: You’ve taught exhibit design at the Fashion Institute of Technology, Bank Street, the University of the Arts, and in places around the world. How do you begin to teach people to initiate a design process that leads to a wow-aha exhibit?

O: That’s easy. It’s the same process I use for myself: fall in love with what you’re
Working on. I have to get so excited that I am just bursting to share what I’ve learned with other people. For example, recently, I’ve been working on the D&H Canal Museum in Upstate New York. I didn’t know a thing about canals, much less the Delaware & Hudson Canal, which opened in 1828 and stretched from the Hudson River to Upstate New York. The exhibit development process started with a very fundamental question: why would anyone go to the trouble of digging something like this? There were no steam shovels, bulldozers, or dynamite at the time. It was all done with picks and shovels by Irish and German immigrants. They essentially created a huge watery highway, a gigantic trench, with locks—for what? Coal.

A canal was the most efficient way to move coal from Pennsylvania mines to east coast shipping ports! Basically, what I think about and what I tell students, is if you can’t be genuinely excited about an exhibit, why in the world do you think a visitor would?

When I see what I consider a “bad” exhibit, it’s not the idea that was bad, but the implementation. You could do a cool exhibit about anything if you can find something in the idea that is legitimately exciting for you. I once met the president of the International Sand Collectors Society. He had samples of sand from every country in the world, from locations like the Great Pyramids to Gettysburg. He even had some trinitite, a fused glass radioactive sand from the White Sands nuclear testing grounds, which was technically, probably dangerous or illegal to obtain. But nevertheless, his knowledge and enthusiasm were so contagious, that interaction got me excited about sand.

M: What important changes have you seen in exhibits in the last five years, and why do you think they are happening?

O: One of the biggest changes is the increased interaction with our audience. Museums are no longer “Moses coming down from the mount” with tablets of wisdom for visitors, who are merely the vessels to receive it. That sort of curator über alles approach has shifted, and I think for the better. Because if we really want to make our experiences as accessible to as many people as possible, we have to meet them where they are and treat them with respect, engage them to think about a topic and make them part of the process.

M: Do you know if this shift has increased attendance at museums that now work this way?

O: Speaking with Randi Korn recently on this subject, it turns out that even though the United States population is growing, museum attendance relative to that population and also across demographic strata is not growing. How do you crack that? It’s a challenge to balance audience interests and needs with what a museum can offer. If a museum decided to hold a pie-eating contest and give everyone free ice cream, a lot of people would come. But is that what a museum wants to do? Would visitors to a museum interested in mathematics be interested in this? Or is it important to them to be entertained somehow?

That word “true” leads into a related word, which is “trust.” Because if somebody feels like they are a token or you’re just engaging with them to check a box or get a grant, you’ve broken trust. That’s not how you continue any relationship, let alone a relationship between an institution and its communities. It’s a tricky. But you know it when you see it. How do museums measure success? The blunt force instrument of admissions numbers are relatively easy number to come by. But what do they really mean? If your admissions numbers went up 5 percent from last year, does that mean you’re a 5 percent better museum?

M: Well, admissions numbers are a measure, but they aren’t the sole measure. You can’t totally throw them out.

O: Well, I’ll accept that you can’t throw them out completely, but we over rely on them. How can we measure not just quantity but also quality of visits?

Another way to measure a museum’s value relates to the stories we tell each other at the beginning of this call. Some museum visits are not just one-time experiences but inspire life-changing stories. Kids visit a natural history museum, see the dinosaurs and become paleontologists. Or go to the Air & Space Museum and became an astronaut or a pilot. There are plenty of these stories, but how do you harvest them? I’m not minimizing the difficulty of this endeavor, but I am saying that what you measure and how you measure it matters. As a visitor, you can tell when a museum clicks. You go there and it feels welcoming and interesting. You’re not thinking about yourself as the one millionth visitor there that day. You’re just thinking, “This is an awesome place.”

M: How does a museum get this way? How is this “awesome” experience created?

O: That goes back to the authentic feelings and efforts of the people who created the museum experiences. In one of my museum FAQ video interviews with museum educator Leslie Bedford, she talks about an experience she had in a Japanese museum connected with Zen Buddhism. Sitting quietly near a placid lake on the museum grounds, she heard a plop in the lake. She didn’t know if this was a natural plop or a water drop that was programmed to fall. Nevertheless, it was a very impactful moment that made her think of a haiku related to that kind of experience.

There are plenty of experiences in museums and other places where people have really sweated the details because they want to frame the possibility for something awesome to happen.

M: Children are very good at sensing a flat exhibit. They’re less inhibited by social expectations, “Oh, I’m in a museum, I’m supposed to like this.” They vote with their feet, or their attention span.

O: “This is boring. Let’s leave.”

M: In your work with museums and other exhibit designers, are you seeing any COVID-inspired changes in either the process or the product in terms of exhibit design? Are people adjusting their plans?
Two Museums and a Design Firm: Thinking about How We Design Exhibits Now
Developed by Kate Marciniec, Boston Children’s Museum

In early 2020, as COVID-19 made its way across the globe, children’s museums closed their doors not knowing what the future had in store. Under challenging circumstances, they learned how to adapt and identify new ways to serve audiences while their facilities were closed, such as through virtual programming and activity kits to support at-home play. Eventually for some institutions, efforts again shifted back to building operations and re-opening safely for visitors. Across the field colleagues shared resources on cleaning, ticketing, and exhibit modifications.

Now, having entered a new phase of living with the pandemic, museums are exploring long term implications of COVID on our operations, programmatic offerings, and new exhibit projects. In the exhibits world, it is not uncommon to be looking to the future, working on projects that won’t see the light of day for several years. COVID brought many of these projects to a screeching halt. But, as museums tentatively begin planning for the future, what impact has the pandemic had on development and design projects? What new challenges are present, and what strategies and criteria have emerged?

We consulted three museum colleagues on how the pandemic has influenced their design and development practices.

Karima Grant (KG), Founder and Executive Director, ImagiNation Afrika, Dakar, Senegal
With over twenty-five years’ experience working in the field of human development and education on three continents, Karima now “seeks to change the ecosystem of learning for over one million young changemakers in Africa.” She leads a diverse team, designing and developing innovative educational programming that integrates local culture, play, and experiential learning to develop creative and critical thinking in children ages six months to nineteen years. ImagiNation Afrika implements an ecosystem approach to support young African changemakers across West Africa.

Is your institution—or are your clients’ institutions—open to visitors? If so, have you invested in or recommended any major changes—long-term or short-term—to respond to shifting design criteria related to mitigating transmission?

KG: Senegal was not as severely hit by COVID-19 as other countries around the world have been, but ImagiNation Afrika is not open now. We are planning to open in January, but are waiting to hear from government officials when it’s safe. The museum is moving from a traditional building in a seaside community location to a new, more centrally located site in the city with lots of indoor and outdoor space. Our exhibits—installation pieces created jointly by children, artists, and designers—were already planned. We are using this unexpected extra time to do more careful planning for our outdoor spaces and for new programming.

In the short term, at the end of October/beginning of November, the museum will participate for the third year in Partcours, a city-wide art initiative that involves lots of museums, galleries, and cultural spaces. This year, ImagiNation Afrika will create outdoor, public art installations.

Maeryta Medrano (MM), AIA, Founder and President, Gyroscope Inc., Oakland, CA
A licensed architect, Maeryta leads her staff of imaginative, creative designers with holistic design strategies integrating learning environments with buildings and sites. Place-based family learning, equity, and inclusion for all abilities are values she instills in every project. Maeryta believes all children are full of potential and listens with a Reggio Emilia inspired ear. She is Principal-in-Charge of the new Louisiana Children’s Museum in City Park, Explore & More at Canalside, the Thinkery, MOXI, Minnesota Children’s Museum, and the emerging El Paso Children’s Museum.

MM: Depending on our clients’ geographic region, responses have been very different: “open” for essential workers’ children; “open” with limited capacity; “open” with staggered time slots with cleaning between each set of new visitors; “open” one day a week; and some have completely closed to visitors. At this writing, a few more clients are opening up with limited capacity.

We might be going out on a limb here, but suggestions to eliminate or reduce hands-on, interactive, and sensory experiences in children’s museums seem shortsighted. More than ever, museum-going families will likely seek out social interactions, sensory experiences with real objects, and physical environments without being surrounded by digital projections and glowing screens. We are Zoomed out!

With that said, obviously, technology is a valuable tool right now. Pre-pandemic, some of our clients did not have capability for video conference calling, high-speed internet, or newer computers. This has all shifted over the last six months as museums have re-evaluated operational and communication solutions best supported by technology.

Strategies we have been recommending over the years, but now even more, are to invest in robust, networked, museum-wide technology platforms, software, and capacity to connect, communicate, collect, and
analyze information to allow museums to quickly update exhibits, programming, and operations. Children’s museums can be a welcome escape from screens. However, technology in support of interactive, learning environments, such as embedded RFID tags, can make the experience even more engaging.

**SW:** Flint Children’s Museum is not currently open to visitors, and at this writing we have no projected opening date.

How are you balancing responding to immediate needs while also looking to the future?

**KG:** We’ve always been a community-focused museum. Now, with social distancing and no-touching, we are focusing on a major campaign among schools, teachers, parents, and children to provide information about the social emotional impact of COVID on children. Future planning revolves around opening the museum in its new location.

**MM:** The most important skill right now is to be able to think outside of the box—the museum box. For example, could your parking lot become a drive-in school, like the old drive-in movie theaters but instead with museum staff facilitating fun activities in the car? Or could you use the same parking lot for a car wash—children wash their family cars, parents take selfies, upload to social media, and celebrate at the end with a giant bubble fest! Creative problem-solving is always needed and now, all museums are being forced to try something new. The unknown is an opportunity for change.

To leverage design strategies into effective potential future pandemic responses, we encourage our clients to carefully consider architectural schemes that allow for a flexible structural system and museum layouts that accommodate reconfiguration. This includes efficient adjacencies for staff operations (quick access to cleaning areas and equipment), nimble ticketing systems (adjusted prices and schedules to support fluctuating capacity), smart building systems that can be managed remotely, and communicating to visitors in real time.

**SW:** In the first several months of the pandemic, we spent most of our time creating and revising a reopening plan. We didn’t know when the plan would be put in place, but we knew we needed to be prepared. With no reopening date yet, we’re still in that liminal space, but constantly thinking of new ways to stay active and present in our community.

The circumstances are obviously unique, but this is familiar territory for small museums with limited staff and resources—your immediate needs and your vision of the future always coexist as interrelated concerns equally clamoring for your attention.

What new design and development projects are you now working on?

**KG:** As a result of COVID, we are rethinking classically built indoor museum spaces and focusing on how we can do more outside in natural spaces, all continuing with our basic philosophy of hands-on learning. In Dakar, a lot of new housing construction is being built with no yards or not much outdoor space.

In our previous location, we had six to seven exhibit spaces, including a maker-space, art lab, early childhood space, gallery, and cafeteria, all in 1,200 square meters. The new museum will have the same basic plan, but the design emphasizes a greater fluidity between outdoor and indoor spaces.

COVID-19 slowed down our fundraising and with no income almost completely decimated our operating funds. We are starting again, slowly. We’ll build and reopen with three of the six to seven planned exhibits. New exhibit designs are in a circular format with a center hub and smaller activity stations built around it. For example, our new makerspace will continue with our customary woodworking activities indoors, but with added gardening activities in built garden spaces outside.

**MM:** The entire museum world has been hit hard and we are all still trying to figure it out. But it’s a great time to ask, “What do we do best?” By partnering more with schools, libraries, hospitals, can we affect those learning environments to be as engaging as our children’s museums? In what ways might our children learn better in museums than in typical public classrooms? Would an National Science Foundation (NSF) or Institute of Museum and Library Services (IMLS) grant investigate those situations to learn what works best?

Gyroscope has been fortunate enough to be part of a very inspiring NSF research project to design activities for critically ill children in hospital settings. We will share what we learn over the next few years.

The types of projects in design and development right now have one thing in common: they are all hybrids.

**SW:** I am working on redesigning and transitioning our small satellite location at the local farmer’s market into a retail space, since local capacity restrictions prohibit the hands-on activities we normally run there.

We recently restarted a longer-term project begun two years ago: a partnership with our local dental association to create a large-scale interactive dental health exhibit. Design and fabrication will hopefully begin in the next few months.

What are the biggest challenges you’ve faced when designing and developing a new exhibition during a pandemic?

**KG:** Money and access to the workforce. Usually a team of local craftspeople builds our exhibits. They very much want the work now, but we must assure their safety and follow COVID guidelines. If they need new materials, for example, we don’t want them traveling to new communities to get them (increasing their risk of acquiring or spreading COVID). There have also been curfews in Senegal, which limit workers’ ability to travel.

Our exhibit development process involves highly guided workshops to elicit kids’ contributions to the designs. As we plan for new exhibits, such as our upcoming Partcours installation, we are working with well-known designers, including Bibi Seck, whose exhibit will imagine the future of transportation with a new type of vehicle. Normally, we would involve children in designing this outdoor event installation, the only space in the whole festival dedicated to children, but this process is more complicated this year.

Our communities include children living with many levels of care; some are basically taking care of themselves. Although Senegal is on the downside of COVID, a big religious event is coming up and we worry about a spike. Dakar is a densely populated city. The new museum is in a much bigger public space and more accessible to a cross-section of children. We have been working with the mayor to choose the best temporary space for our Partcours exhibit installations. But, there is not much open, green space. How much is available? Should/can we fence it off to limit access for health reasons?

**MM:** Museums are implementing far-reaching changes to their operational and business models, and yet the bases for these changes are constantly evolving. In response
Walking through an empty children's museum, it's easy to spot the exhibits that need work. Finding the time and space to fix everything without interrupting guests too much is another story. In July, the team at Children's Discovery Museum in Normal, Illinois, suddenly had plenty of time.

After first closing our doors to visitors in March 2020, we planned to reopen during the summer. We spent weeks planning and investing in new sanitation equipment, adding air filters, and changing operations protocols. Then, Illinois officials surprised everyone with a last-minute rule change that forced all hands-on exhibits to remain closed. We went from a 60-day shutdown to a 200+ day closure … and counting.

Despite present limitations, fortunately we are able to repair and upgrade exhibits and plan for the future even as peer institutions are fighting to survive. Fifteen years ago, the museum's founders strategically partnered with the Town of Normal to become a catalyst project for its downtown revitalization project. The town supports the museum's overhead and owns the building. After laying off forty part-time workers and cutting spending, this partnership allows remaining staff to keep planning and working.

Before the pandemic hit, the museum's nonprofit foundation had announced plans to fund a new medical exhibit. In fall 2019, local health experts gathered to help us decide the exhibit's learning objectives...even with their broad range of health expertise, they all agreed on the No. 1 health lesson they wanted visitors to learn: “Wash your hands.”

It seemed almost simplistic at the time, but a year later it has become a centerpiece of the exhibit. We changed a digital hand-washing game into an actual working sink to allow visitors to wash their hands while they play. Additional plumbing expenses were considerable, but we felt the upgrade was necessary.

The shelter-at-home order delayed fabrication and our fundraiser to raise money for the exhibit turned into a virtual event. Still, the project had community support. The creative challenge of updating content and working with a remote team to engineer complicated pieces kept our staff and board focused, and we did our best work in years. Healthy Me is a light at the end of the pandemic tunnel. It provides a new experience for our museum members and visitors to look forward to as they wait for the museum to reopen.

Healthy Me also includes a tele-health interactive with two cameras and screens that encourage role playing. We targeted this topic because remote technology is becoming vital for pediatric mental health in our region. Before COVID, we often had to explain the importance of helping kids become familiar with using screens to talk with healthcare providers. That isn't a problem anymore.

Other features include an ambulance, a lab with microscopes, a digestion maze that ends with a wall of Whooppee cushions and facts about bodily noises. The exhibit is now complete. Until we are able to reopen to the public, our foundation board is using the space to develop existing and prospective donors. Small groups in masks can take tours and learn about our future exhibit plans.

Several of our “original” exhibits and our Luckey Climber are showing their age and need to be replaced. During Zoom design sessions with Spencer Luckey in April and May during the travel moratorium, he and our skeleton crew talked with local architects and engineering firms to establish our vision and budget. The redesign includes important COVID-revealed upgrades, such as selecting materials that are easier to clean and improving access for staff to reach the nooks and crannies.

The silver lining of this experience is that our staff has much stronger ties now. We discovered hidden skills: our education manager showed a critical eye for construction drawings and our membership director redesigned traffic flow. Our exhibits manager helped build STEAM activity kits for remote learning. Our whole team had to trouble-shoot design and budget gaps to get exactly what we wanted for Healthy Me and the Luckey Climber.

The Children's Discovery Museum will reopen when this crisis ends. We will welcome back visitors and members with our usual high standards. Just as important, we will reemerge with a stronger vision, a better sense of our value, and exciting exhibits that will inspire the love of learning through the power of play!

Beth Whisman is the executive director of Children's Discovery Museum in Normal, Illinois.
Like many other closed museums, we spent some time reviewing and refurbishing our still fairly new exhibits in addition to continuing to plan new ones. We had already raised the money, contractors were less than busy, so we took advantage of the visitor-free building. In our Construction Zone exhibit, we decided to replace a balance beam and bridge building activity that had never worked well with a crane to lift blocks. In our Kids’ Co-op Natural Grocery Store, we added a “refrigerated” section and “baking table.” A local art teacher with time on his hands helped us make other small repairs and improvements. These exhibit tune-ups also contributed to a marketing message to our waiting visitors: look at the cool stuff we will have for you when you return.

Reopening with limited capacity began in August, with four weeks of nearly full themed camps. These camps gave us a chance to test out our new health and safety protocols, including daily health and temperature checks. Kids enrolled in our video game camp created our reopening video. Kids can often deliver serious messages (“If you are sick, please stay home!”) in ways that adults can’t.

On September 2, we reopened to the general public. We follow New York State indoor museum mandates, which, at this writing, limit capacity to 25 percent and require masks for all visitors two years and older. At the now-shielded front desk, families are asked health-screening questions per CDC guidance; anyone who has been in a high-risk state within the last two weeks is not permitted to enter. Visitors must sign the log with their name, phone number, and time and date of entry should we be notified by public health contact tracers.

While some COVID-based modifications have been made, the 3,500-square-foot museum’s original exhibits remain intact. In addition to our own increased cleaning, we give visitors a baggie of sanitized wipes and ask them to wipe down toys and manipulatives after use. We’ve added wall-mounted hand sanitizing dispensers and social distancing signage throughout the museum. A “reopening” tab on our website recommends online sign-ups for weekend hours to ensure a spot, just in case we are full. In September, we only filled to the current capacity twice. In general, attendance has been about 15 percent of our pre-COVID numbers, but that number is increasing weekly. Fee-based, drop-off STEAM class sessions for school age children have been added to fill the gaps in childcare, as schools in our district are partially online.

As we maintain and adapt our current exhibits, for our own sense of joy and agency, we decided to move forward with planned exhibits. With Clarkson University Digital Arts faculty and students, we’re finishing our History of a North Country Childhood digital interactive exhibit. A portion of my salary while working on this exhibit and other cultural programs is covered by an award from the National Endowment for the Humanities CARES Act. The exhibit’s stories, already recorded pre-COVID, will be presented in shadow boxes, the sound activated by pressing a button. We are also moving forward with expansion plans for our undeveloped second floor. Still in the early planning stages, this is projected to open in early 2023.

Have we adjusted these new exhibit designs based on COVID-19 experiences? Not in any direct way. Perhaps we will factor in new considerations as we work with an exhibit design firm on the second-floor expansion. We are hopeful, like everyone, that the scientific and medical community will have answers by that time and people will be eager to reenter the public sphere for play and connection.

Sharon Vegh Williams is the executive director of the North Country Children’s Museum in Potsdam, New York.
Creating a World beyond This One
continued from page 2

anxiety. Normally, kids would experience these emotions at very low levels. But now they’re fairly high for kids and for adults. I started out wanting this to be a kick-a** exhibition for kids. And now I want it to be a soothing escape for adults AND kids that have been in the same boat—confined and stressed.

M: The character name “Maslow” is an homage to Abraham Maslow’s hierarchy of needs, a model for thinking about how our needs (physiological, safety, love, self-actualization, etc.) interact with each other. You were talking about the hierarchy of needs even pre-COVID.

P: The hierarchy of needs is the backbone of this whole project. That hasn’t changed, but with the pandemic, and what has been happening socially, it has been enhanced. It has been difficult but constructive to emphasize security, home, and love and try to represent it through Maslow’s system.

M: The installation is called El Más Allá. What does the title mean to you?

P: In my family, when we say, “whoa, El Más Allá,” it’s like saying “we’re in The Twilight Zone.” How was that described on the TV show—“that middle ground between light and shadow”? The phrase can also mean death, like, “No, ya se fue al más allá,” or, “he’s gone.” Or it can mean “in another time,” like way over yonder. For me it’s the same feeling as the movie The Neverending Story, you know? I always liked the basis of that movie, that creativity was ending and their world was dying, and in order for the world to stay alive, kids had to keep believing and using their imagination. El Más Allá has a lot of that.

M: It’s like saying “We don’t know,” and it’s okay to not know.

P: Yes, it feels like we are in this weird limbo, from the project to life. El Más Allá is a place in between all of that.

M: There are some children’s museums that focus on emotions, and how the way you are feeling when you are creating something affects the thing you are creating. And then there are others who might say, “Maslow’s great, but what exactly are kids going to learn from that? Can you make a list of what they are going to learn?” Sure, we can, but the main point is we don’t know. We can only say this is how we hope they will feel.

P: All this emotion, all of this processing of what has happened over the past year, is going to be represented through visual language. I don’t want to go all the way and say, “this is therapy art.” No, it’s not therapy art.

M: You’re very emphatic about that. Why?

P: I’m not qualified to give therapy!

M: Ha, you’ve been my therapist over the past months!

P: [Laughs] Yeah, inadvertently! But you know what I mean… I think a lot of it will rely on the visual language. I want to split up the areas and the art is going to give you a feeling. All of that is going to happen with the paintbrush. I can’t explain it. It happens with my hands. [She holds out her hands to the camera].

The hardest thing for me, to be honest, were those [online] drawing classes with the kids, which we did right as the pandemic started. Those hit me hard. I’m used to being alone, living a hermit life. But the kids reminded me that I have to be strong, not only for myself, but I have a job that I need to do.

M: I put myself in your hands, and you put yourself in my hands! Trust. I would say that’s what children’s museums can learn from working with artists. I don’t need you to create an exact diagram of what the painting is going to be on this wall, and this wall and this wall. There are walls, and there is paint, and there’s you. I trust it’s going to be fine. It always works out. And it gives you and us the ability to be flexible if a new idea comes up. Or, for example, if… A GLOBAL PANDEMIC EMERGES in the middle of developing the project. With trust and flexibility, we can do what needs to be done. Not just stick to the original script because that makes us feel more in control.

P: Yeah, someone might wonder, “What is she going to do? Draw a giant police car on fire?” No, context people, context! That’s what’s in my brain, but not what I am going to show the children who visit. I’m using shapes and color. There’s no hidden message except to be free. And if that’s a problem, then I don’t know, that’s your problem!

M: That brings me to my final thoughts. I know we have also talked about how you came to this museum as a kid, and you have often wondered: if I came back here as a kid now, what would I need from it, especially after what we have experienced and continue to experience?

P: I go back to my first visit at the museum. I remember wearing my little suit, and painting, and feeling really free, and just thinking, “I can’t believe I can do this! I can do this! And they’re actually giving me paper, and they’re giving me a car to paint…” And when I came home, I realized that drawing wasn’t stupid. I wasn’t exactly told it was stupid, but my parents were immigrants and they told me, “you’re going to die if you don’t get a normal job.” Well, I knew what they meant, but visits to museums were very helpful because I was able to see like, whoa, there are some wacky people out there making some cool stuff for kids. It just blew my mind, to the point that I can still describe that realization and I’m thirty-five years old and obviously this is what I do now.

I’m super excited about creating this world for kids. I think at first, when everything was happening with COVID, I got really depressed thinking, “man, am I up for this?” But now, even though everything is still happening, and often seems even worse, I feel like almost more of a sense of responsibility to make my work even better. There was a point where I was like, “Oh, maybe I should pull back, maybe I should just minimize all of it, the structure.” But then you think, “No, this is going to work out, and it needs to be 100% great.” Whoever does see the final installation, it needs to be great for them. It’s motivating. In the time I’ve already spent at the museum, and everyone who I’ve seen work there, and the kids, and I’ve seen how it affects them. And it’s really needed right now.
After nearly twenty years without a permanent home, National Children’s Museum finally reopened its doors to families on February 24, 2020. Located in downtown Washington, DC, this next-generation institution sparks curiosity and ignites creativity for children and their families through interactive STEAM-based exhibits that invite everyone to learn and discover together.

In its first few weeks, the museum welcomed nearly 10,000 visitors and delivered twenty-four free, hands-on field trips to local public schools. After only eighteen days, COVID-19 forced the museum to temporarily close. This closure was swift and necessary, as the virus spread quickly in the metropolitan area, but left us scrambling to maintain our momentum.

In order to continue to serve new members and families, we needed to find ways to support STEAM-based learning from home. From the jump, our small Climate Action Heroes exhibit was a natural fit to achieve this objective, while staying true to our mission “to inspire children to care about and change the world.”

Presenting exhibits and programs that are thought-provoking and relevant to children’s lived experiences and challenges is at the center of our design goal. The museum’s exhibits focus on inspiring children to become the next generation of thinkers, doers, and innovators, and present topics that most affect children today. Arguably, no topic is more relevant than climate change.

**Climate Action Heroes**

In 2018, the museum contracted with Design I/O, a creative studio specializing in the design and development of immersive, interactive installations and new forms of storytelling, to present Weather Worlds in our Innovation Sandbox rotating exhibit space, focused on emergent technologies and topical content. Weather Worlds invites visitors to use their bodies and gestural movements to create, manipulate, and control the weather through greenscreen technology and to explore the broader impact of human activity on the planet.

Early in the development process, we decided to engage children and families in climate activism by creating our Climate Action Heroes: Community Captain, Water Warrior, Pollinator Patrol, Mighty Meteorologist, and Arbor Avenger. These characters and the corresponding exhibit, adjacent to Weather Worlds, were developed with the National Oceanic and Atmospheric Administration to ensure that the content was solidly based in science.

Through a series of playful and thought-ful questions in the Climate Action Heroes exhibit, visitors identify their inner climate action superpower. The questions twist, turn, and jump throughout the space much like the classic hero’s journey. At the end, based on their answers, visitors are led to one of five large panels highlighting each character’s mission and superpowers. Water Warriors, for example, “protect our ocean and freshwater by keeping them clean. You focus on access to clean drinking water. You also help with drought preparation and response.” Each panel includes factual information about each hero and the rotating climate action challenges they face, encouraging repeat visitors to stay engaged in the fight.

Climate change can be a scary topic for children. Superheroes, however, are both hopeful and powerful figures. In Weather Worlds, children engage in imaginary play in ways that allow them to control the weather with superhero-like powers. By donning an imaginary (or real!) superhero’s cape, children have the courage to tackle any issue.

**Five Characters and an Exhibit Lead the Way**

After closing our doors on Friday, March 13th, the entire team came together the following Monday to decide how to pivot. Our team is small, our member base is new, and we don’t have the sometimes burdensome historical expectations to navigate. Plus, we had newness on our side.

Before the museum opened in February, the team had begun to develop a website, climate-heroes.org, to house additional climate action content to engage children and families after their visit, as well as support field trips. Head in the Clouds, the museum’s in-person field trip for children grades PreK-2, used Weather Worlds and the Mighty Meteorologist superhero to support learning about weather and climate and the science of meteorology. Because Climate Action Heroes had a previously-established digital platform, these five characters and the small exhibit quickly became the focal point for our digital offerings during the museum’s initial closure.

In June, the team premiered our STEAM Daydream podcast on all available streaming platforms. The August episode focused on climate action and drove listeners to climate-heroes.org and the virtual exhibit superhero identity quiz. Through all of these digital offerings, we are able to tie our climate action content to our physical space,
Over the past six plus months, our industry has had to shift the way we plan, fabricate, and install museum exhibits. In many ways, exhibit planners like my organization have taken lemons and made lemonade. Instead of giving up, we've become flexible and agile.

These days, it seems like every conversation begins with, “during these uncertain times,” and for good reason. While many aspects of daily life are beginning to return to a pre-COVID state, things also continue to change every day. Museums, museum staff, and the firms that serve them are adapting to the “new normal”—another phrase we hear all too often. The reach of the COVID-19 pandemic extends beyond our personal lives, into the way our industry creates and maintains exhibits.

Starting at the Beginning: Exhibit Planning

Historically, the exhibit planning process has involved a variety of stakeholders (museum staff, designers, fabricators, media producers) coming together, often in the same space, to brainstorm and collaborate. The social distancing protocols, travel restrictions, and concerns associated with COVID-19 have turned this on its head. Many museums are closed, with staff furloughed or working from home. Consultants are no longer traveling to job sites, even if they’re just down the street. Human contact has shifted from in-person to virtual interactions. In spite of these challenges, we’re enjoying some benefits of quarantine culture, such as reduced travel costs, increased flexibility, and acceptance of sweatpants as work attire. The importance of proximity of team members has diminished, allowing museum teams to select the absolute best partners rather than those who happen to be closest. But, where there are pros, there are often cons, and some important aspects of the planning process have to be rethought.

In the world of design and fabrication, accurate site dimensions create the foundation for an exhibit. The floor plan defines traffic flow through the space and anchors different experiences to the gallery’s key story or big idea. Design drawings that rely on architectural plans that have not been site-verified simply aren’t as accurate. Without access to museum galleries due to closures or travel restrictions, we have to get creative! Over the past few years, some very cool large format scanning technology has become available. These scanners are relatively easy to use and can capture entire rooms and even artifacts with a high degree of accuracy. And the added bonus? The data collected builds a 3D model that can be exported to CAD (computer-aided design software). So not only are dimensions more accurate, but teams can use this technology to save the step of creating the digital model, on which the design is based, ultimately saving time and money while providing a great result.

Prototyping and Testing

Once the planning is complete, we move on to fabrication. As we know, a key component of children’s museums is hands-on interactivity. When fabricating interactives in our shop, we conduct prototyping and testing to ensure exhibits are safe, durable, and function in the way they were designed. For our firm, these two critical steps have always been collaborative activities. The project team, including the museum staff, designer, and fabricators, come together in the shop (often with kids and families) to play. Prototypes are put through the ringer and tested to failure, while the project team takes notes and documents the experience with photos and videos. Based on these collective experiences, we specify modifications or make approvals.

With current travel restrictions and social distancing protocols, this hasn’t been possible, so we’ve shifted our process. Instead of hosting project teams in person, we’ve moved prototype testing and reviews into the virtual space. This allows us to collaborate in real-time while also recording the testing sessions for team members not able to join. We were concerned at first, but we’ve found that we often have more participants than we previously had in person. Museum staff who might not have traveled to our shop due to budget constraints or museum responsibilities are now able to join and contribute their insights. Participants can go back and review the video afterwards to collect their thoughts to provide better and more detailed feedback. The results have been fantastic. This has been so successful that we intend to add a virtual component to every shop review in the future.

Materials: What Works Now and What’s Available

Let’s dig into materials and their supply chains. Most fabricators and museums who build exhibits in-house rely on standard fabrication materials such as plywood, medium-density fiberboard (MDF), Sintra PVC board, and acrylic sheet goods. Before March, these materials were readily available. At the beginning of the pandemic, there were material shortages and longer lead times for many items, but our firm was very fortunate as we already had a stock of...
standard materials. Unfortunately, smaller organizations and in-house teams may have been (and continue to be) impacted. In order to overcome shortages, many organizations have begun considering alternative materials or making trade-offs.

If your organization is considering an alternative material, be sure to test it out. Any time a new material comes into our shop, we treat it as we would a prototype. We consider different use (and abuse) scenarios, constraints, and limitations. There are several key factors to keep in mind. Safety and durability are always first on the list. With hands-on or interactive exhibits, we have to ensure that materials will hold up to the inevitable wear and tear of little learners, always keeping in mind potential hazards such as pinch points and sharp corners. While it has always been important to clean exhibits, COVID-19 has made sanitizing a top priority. Materials must now withstand little hands and the chemicals used for disinfecting. Some material choices we would have made a year ago simply won’t hold up to disinfectants or scrubbing. A painted MDF surface may need to become solid surface, laminate, or boat board. Exhibits with soft surfaces and foam objects that are more difficult to clean may need to be redesigned or modified.

**Scheduling—and Protecting—Installation Labor**

In addition to material shortages and delays, COVID-19 has created challenges with installation labor. When the pandemic began in March, our firm had installation crews onsite at several museums across the U.S. Some sites, such as the American Museum of Natural History in New York, closed immediately and sent crews home. Others delayed installation starts by days or weeks, depending on local protocols. Eventually all job sites shut down for several months. This has created an opportunity to put our logistics skills to the test. Our project managers and site supervisors stay apprised of the different safety protocols for each state, some of which still include a fourteen-day quarantine before entering the job site. To overcome these and other challenges, every site installation is carefully planned with each task, including travel and quarantine, accounted for on a master schedule. This way, we are able to tackle uncertainties as they emerge. While the installation process may look different than it did before COVID-19, just like with planning and fabrica-

**An Industry Evolves**

Over the past six-plus months, our industry has had to shift the way we plan, fabricate, and install museum exhibits. The current landscape remains uncertain, and will continue to be so until either effective treatments or a vaccine are developed. Children’s museums and the organizations that support them continue to move forward and develop new and better ways to serve children and families through informal learning experiences. To do so, we must be creative, proactively seeking new and different ways of doing things. In many ways, exhibit planners like my organization have taken lemons and made lemonade. Instead of giving up, we’re become flexible and agile. We’re digging into technology to meet our communication needs and even enhance the ways in which we collaborate. We’re finding new material solutions and optimizing site logistics. We’re still working together and doing our best to serve our clients. Someday, we will return to the world of in-person meetings and travel, but we’ll continue using this new toolkit of virtual skills to enhance our collaborations and produce optimal visitor experiences. It definitely hasn’t been easy, and we will continue to face challenges, but if we focus on what we’ve learned and maintain our focus, the future will be bright.

Cathlin Bradley is director of business development at Kubik Maltbie, Inc., an exhibit design and fabrication firm that works with museums, visitor centers, and specialty environments.

**Climate Action Heroes continued from page 11**

...even though our doors remain closed. The generous support of donors and grants has allowed us to keep all of these resources free for families, educators, and partner institutions. As our physical closure has continued, we have garnered more and more attention for these virtual offerings, inspiring further expansion in that realm.

**What We Learned**

Children are already living in an increasingly digital world, and now one which has expanded exponentially due to COVID restrictions. But this world is also increasingly disrupted by climate change. Though this daunting challenge is currently eclipsed by immediate COVID-related and other crises, developing Climate Action Heroes helps inform and inspire children about this escalating planet-wide problem. A second virtual field trip will focus exclusively on the Climate Action Superheroes in a way that will extend its relevance beyond our COVID closure. Because the Climate Action Heroes exhibit is only a temporary installation, this virtual field trip will continue to use the content and brand in future applications.

The new iteration of the National Children’s Museum has been a virtual museum ten times longer than a physical one. But this closure has taught us invaluable lessons in the power of digital expansion. We have reached nearly 650,000 people from all over the world through our digital offerings. As soon as we are able to safely re-open, we plan to maintain, and continue to expand, this virtual presence.

In a time when children and families are spending more time online, it is important to create digital content that supports and promotes learning away from screens. The Climate Action Heroes website sparks the learning and discovery for families to help in their homes and communities in real time. The COVID closure process has also taught us an important lesson in designing physical exhibits with the digital experience in mind. The demand for online learning will continue into the future, by both families and educators, with or without a global pandemic. Expanding our reach outside of our local and tourist communities is will drive our work in the future. If we want to inspire children to care about and change the world, we need to be able to reach that world.

Langley Lease is the exhibits coordinator at the National Children's Museum in Washington, DC.
pants are prompted to imagine themselves as an entomologist by taking a sample of insects from a field of crops to study helpful and harmful insects. Children and families see the field projected on a screen in front of them, and Kinect technology allows them to sweep their arms back and forth to move a bug-catching net over the crops—completely touch free. By reframing our thinking, we realized the coronavirus actually presented us with an opportunity to create exhibits in new ways. Interactivity is still possible if we challenge ourselves to innovate. Of course, we hope that one day soon we will be able to return to our tried-and-true hands-on learning methods, but no matter what the future holds, there is value in exploring alternatives.

How Are We Approaching the Problem?

When our exhibit team began thinking about creating low-touch interactive exhibits that still preserved the quality of the visitor experience, we knew we needed to bring order and clarity to a challenge that still felt nebulous. We convened a workshop of exhibit developers, designers, and creative media staff to discuss and define our problem so we could begin to plan potential solutions. We mulled over questions including: What is it about high-touch interactives that makes them so effective? Are all touch interactives the same, or are there varieties that promote interactivity for unique reasons? Can we develop engaging interactives with low- or no-touch components? Had we already developed low-touch interactives for previous exhibits that could inspire interactives for new exhibits?

We started by creating a list of touchable interactives in the museum building and categorizing them into types. We articulated how each type delivered exhibit messaging or achieved learning goals and what made it appealing to visitors. We then brainstormed low- or no-touch alternatives with similar appeal and capacity to achieve learning goals.

 fluorlabels or reveals

Visitors manipulate parts of the exhibit component that swing or slide away to reveal additional information.

Before: Visitors touched a hinged flap or similar device to reveal exhibit information like an image, fun fact, or answer to a question.

Looking Ahead: Instead of touching the component, visitors could be directed to wave their hand over a beam break sensor. When the sensor is triggered by movement, it could activate magic glass, LED glass, or scrim technology that disappears to reveal hidden information.

Touchable interactive types and their alternatives

Touchable objects or casts

Any item that is mounted within an exhibit component with the express purpose of providing the visitor the opportunity to touch an instructive object.

Before: Visitors touched items like fossil casts or accessible pieces of art.

Looking Ahead: Museum floor staff could exclusively facilitate opportunities to touch an object. 3D printing technology could create multiple copies of object casts, with each visitor receiving their own object to touch. Museum staff would immediately sanitize objects afterward.

Touchscreens

Digital interfaces that can be touched to reveal information, move through a process, create art, or participate in a game-like activity.

Before: Visitors touched a screen with their fingers to move through the interactive.

Looking Ahead: The exhibit workgroup proposed three alternatives to this touch interactive type. First, in lieu of touching screens with fingers, the museum could provide a stylus to each visitor to use with the touchscreen. Alternatively, this type of interactive could be designed with motion sensors that allow visitors to use movements like gestures to navigate through the activity. Finally, touchscreen interactives could be transferred to tablets, and only a staff member would touch the screen as they facilitate the activity with a visitor.

Costume dress up

Special exhibit-related clothing and accessories that can be worn by visitors.

Before: Visitors were invited to wear costumes that fit an exhibit's immersive environment or supported learning goals.

Looking Ahead: Visitors could see themselves in unique clothing pieces with the aid of technology. The interactive would capture an image of the visitor's face and apply it to
Before: Visitors manipulated physical pieces while building or completing a puzzle. Usually these interactives involved numerous loose parts.

**Looking Ahead:** A high tech alternative would be to utilize technology like Kinect, a motion-tracking technology, or interactive projection where visitors would use large-body movements to manipulate pieces on a screen to complete the activity. Alternatively, a low-tech solution would involve using metal pieces housed in a case while visitors moved the pieces from outside the case using a magnetic stylus (much like magnetic maze board games). Each visitor could be given their own stylus or the stylus could be wiped between uses (much easier then cleaning a large number of loose pieces).
When helping museum leaders lay the groundwork for good design, we talk about how to get a project off to a good start: finding the right team; preparing your internal team for the path ahead; understanding design as an iterative process; and acknowledging that the building and site will be the setting for reaching your strategic goals and realizing your vision. Project teams work together to address questions about what to design, how much to build, and how to move a project forward in a prudent way given the huge number of variables.

Prior to March 2020, these questions simply represented a typical design challenge: designers using their “crystal ball” to determine what will best serve the organization, at least in terms of the physical space. But in this incomprehensible and ever-changing year, the crystal ball is foggy. We’ve found our immediate way forward through a lot of observing, re-thinking, and learning by doing in the short-term. Long-term, big picture thinking has been harder. As national and international crises play out, project teams are asking: What now? And what’s next?

Some days, the pandemic pause seems long and drawn out, but really, it’s been five minutes in “design time.” Capital projects can only shift so quickly. In the meantime, museums are working hard to respond in real time. The first design responses have shown up in logistics, circulation patterns, new equipment, revised operations, and modified service models. A lot of great work has happened, but the bigger thinking has just begun: examining what makes museums essential in our uncertain future.

The medical aspect of this pandemic will be managed, eventually. But while COVID-19 has been called a “once in a lifetime” event, subsequent pandemics are possible, because as a society we are not yet doing what it will take to prevent them. To think intelligently about the future of hands-on, immersive, interactive museum experiences, designers and museum staff must key in on fulfilling the museum mission. Is the organization looking at what carries the field forward, instead of “waiting it out” until we can go back to where we were before. That return may not happen, and in many ways, we may not want it to.

The design task right now is to focus on what carries the field forward, instead of “waiting it out” until we can go back to where we were before. That return may not happen, and in many ways, we may not want it to.

In planning new museums and expansions, we are learning from existing ones.

What is happening inside their facilities, and what is happening virtually? What is key to their survival? What have they changed?

DISCOVERY Children’s Museum in Las Vegas opened their empty temporary exhibit gallery as socially distanced remote schoolwork space for kids with limited internet access at home.

KidsQuest Children’s Museum in Bellevue, Washington, doubled down on outreach, kits, toy libraries, and online resources for parents of preschool kids.

Both museums acted quickly, finding funding for the programs only after they were underway. These museums are taking cues from their community, their elected and appointed officials, their members, and their boards. They are agile. They are reconfiguring and shifting strategies, learning as they go. Their responses go beyond stanchions, hand sanitizer, or thermometers at the doors, but include big moves that support their true work.
The growing interest in outdoor space now holds even greater appeal.

Outdoor space is often the least expensive way to build usable program, exhibit, and visitor service spaces. Providing distance between people and groups may be easier outdoors. But even these spaces require organizational flexibility. Inclement weather of all types—now including air quality concerns that affected so much of the Western United States this summer—significantly affect the utility of the space. Design for resilience: instead of designing around rain or extreme heat or cold temperatures, these weather variables can become part of an outdoor exhibit when they occur.

Being resilient must be more than a catch phrase. In designing for the future, resilience should be a core value, link directly to other core values, to sustainably guide everything the organization does.

- Can communities who are currently underrepresented in the museum audience be invited to participate more fully in its offerings?
- Can our income stream be further diversified to include operating income, sponsorships, corporate giving, major gifts, individual contributions, and an endowment?

Designing for resilience does not mean building “generic” spaces, or galleries that are so flexible they blur your identity. On the contrary, each museum’s solution must enhance its connection to its community and strengthen its relationship to its place. Design for spaces that allow you to highlight unique offerings and support essential services. Create a museum that belongs firmly in its geographical, historical, and cultural setting, so that it is easy for your audience to feel a sense of belonging there.

Design with a hard look at future audiences, both the near future and beyond. Will you serve tourists anytime soon, given the drastic reductions in family travel this year? Once things calm down, which visitors will return first, and who will come consistently? Has your core audience recovered financially, or are they still reeling from the shrinking service economy?

As we imagine the ways in which children’s museums will be needed going forward, we can respond by designing spaces that will add value in the future, and we can look at how to monetize them, either through operations income or targeted giving. The design task right now is to focus on what carries the field forward, instead of “waiting it out” until we can go back to where we were before. That return may not happen, and in many ways, we may not want it to.

As design professionals, it is hard to say “we don’t know yet” when asked about future of museums and what it means for our projects. Especially when we are laying the groundwork right now for a new or expanded museum. But we are learning, and we are hopeful that museums will fill an essential space in our communities going forward. Capital projects are intense and exhausting in the best of times. Optimism is an important tool in the toolbox for anyone thinking about a new exhibit, a new museum, or an expansion. But the work is important. Determine what makes you essential and design like your museum depends on it.

Alissa Rupp, FAIA, is the founder of FRAME | Integrative Design Strategies, which focuses on the design of places for community building, informal education, and lifelong learning.
One of the biggest changes is the increased interaction with our audience. Museums are no longer “Moses coming down from the mount” with tablets of wisdom for visitors, who are merely the vessels to receive it. That sort of curator über alles approach has shifted, and I think for the better.

Even if 500 people had stepped on that floor projection thing, the 501st visitor isn’t going to wig out by touching a spot with their feet. A low-tech example could involve installing a mat switch instead of a push button in an interactive exhibit. This is an opportunity to be more creative.

**M:** Some of the initial responses to remove the touchables came from museums trying to safely reopen as soon as they could, both to serve their audiences and for financial reasons.

**O:** The notion of the touchless museum hasn’t gone away. You can say, “Well, we can’t go back to how things were before March 2020.” But a lot of people haven’t internalized that verbiage. They really want to go back to how things were exactly before March 2020.

Most museums don’t have a large endowment to ride out COVID-19 with no changes. They should be thinking about what they can do to provide a better museum experience for more people. Forget COVID even happened.

**M:** Well, that’s impossible.

**O:** Okay, but let’s just say you acknowl-

dge we are still in the midst of COVID, but your decisions going forward are still the same whether COVID happened or not. How can we provide the best, most interesting, entertaining, fun, engaging experience and still be mindful of people’s legitimate concerns—access, financial, physical, societal? That’s still going to be the move five weeks, five months or five years from now if you are a great museum.

**M:** Some children’s museums have decided not to re-open until they can offer the experience they want to, so they’re going to wait until the environment is safer.

**O:** I applaud those museums. New York Hall of Science, a large museum in a major metropolitan area, announced that, unlike a lot of other New York museums, they’re not re-opening until after 2021. That was a really tough decision. But difficult situations show you who people and institutions really are. Who are the people, the institutions, the directors, the boards, the museum workers, who made these tough decisions? Those are the museums and the leaders in the field who I want to pay attention to. Some museums are looking for creative ways to respond to immediate needs, such as a UK museum selling grocery items through its gift shop, because the local community needs them and they aren’t easily accessible otherwise. Other museums are using their parking lots for deployment of COVID testing. Some museums have stepped up in ways that don’t neatly fit into a pre COVID understanding of what their mission is, but they still felt compelled to respond in the ways they could.

**M:** But many children’s museums are reopening, fully or in some capacity, for good reasons. They provide important services to children and families in their communities.

**O:** The question of whether—or when—to reopen relates to the question of what happens after you reopen. Anybody making predictions further out than two weeks or so is just full of beans. Too many things are changing too quickly. The reopening decision requires you to acknowledge and internalize the notion that you have to be flexible with how you’re implementing any of these decisions. You can’t use January 2020 benchmarks.

**M:** When you’re working on exhibit plans in the situation we’re in now, it sounds like your approach really doesn’t change. You’re still interested in the long goal.
O: I’m interested in both long and short goals. I have made shifts in exhibit designs that don’t detract from the overall experience but clearly signify we are mindful of people’s short-term concerns. For example, the D&H Canal Museum project includes a visitors’ center with a big screen display. Initially, before COVID, we planned to use a standard touchscreen. But now we’re looking at how we could change that interface. Over the summer months, a comfort level with some sort of hybrid interface has developed.

Recently, I was talking with a developer of a traveling exhibit that included a tactile sea animal component made from a composite material. They changed the material to bronze because of its antimicrobial qualities, which met the standards of the organizations with whom they were engaged to create this exhibit. Sum total: they kept a tactile experience but made it accessible and safe. This is how I want to be thinking. I’m not losing things, but I’m scaffolding the design so that if reality or perceptions—and perceptions might as well be reality—change, exhibit aspects can easily shift in terms of their implementation. That’s just good design: creating exhibits that have various levels of implementation built into them. Like an A/B switch: things can be in this mode or that mode, but the experience is still a rich one.

If you care enough about your design, your museum, and your communities—the people you’re trying to engage with—you’re going to figure out how to do this within current constraints, whatever they may be, as well as can be done. Not everything can be designed that way, but the answer to the problem of designing powerful exhibit elements with enough flexibility to remain viable during a pandemic—or beyond—is NOT the touchless museum.

M: What are the key factors you see in place every time an exhibit design project is going really well?

O: Number one: robust conversations. Not everybody agrees all the time, but we can have passionate conversations conducted in a respectful way.... If everyone always agrees or looks to one person for The Right Answer, you don’t end up with the best possible product.

Many people right now are faced with situations that are not going at all the way they had planned. Have you ever worked on an exhibit that wasn’t going well? How do you respond or adjust?

O: I’ve been in a few of these situations. If you have too much of a predetermined endpoint in mind, you are bound to fail. Be-
to the skyrocketing stakes, many museums will go all-in on transforming into the institutions they need to be for their communities. Some see this as a great time to reflect and reinvent/reimagine themselves. This era will give rise to museums that are educational powerhouses, agile to the core, and radically community-serving.

SW: Primarily working remotely, without daily access to my workshop or any actual materials, has been a challenge. My design approach involves trying things out and experimenting. Everything now just takes way more time and way more steps, since we can't work in groups or with volunteers, or even with each other in the usual ways. The biggest challenges about planning future exhibit design and development are all the unknowns. Returning to pre-COVID conditions completely is unlikely, so what kinds of “hands-on” experiences can we think about building?

Can you share some strategies you’ve implemented during this time to respond to the challenges that have surfaced?

KG: For the future car project described above, instead of working together to build a full-size version, our team has been holding mini-workshops for kids where each child can produce a mini- replica of a future car. Since only a limited number of kids is allowed in a workshop, we have divided it into two groups: 1) a dedicated school group and 2) kids who are homeless or from low income communities, identified by social services. We want to be sure exhibits are designed/prototyped with a broad representation of kids. It costs more: we have to add a budget line for masks, since we can't be sure kids from schools or other community groups will come with masks on.

SW: As a small museum, the staff here have always worn lots of hats and worked in a collaborative ways to get things done. The pandemic has only intensified that dynamic. Like other museum staff, we've been thrown into the deep end and are learning how to do things that we never anticipated. Maintaining good communication with the rest of the team has become a conscious strategy; it's easy to become isolated.

How has the pandemic shaped/changed your approach to creating new experiences for your visitors?

If you look at an exhibit design project in the works right now, and ask yourself, “what if another pandemic happens after this is installed?” would you be satisfied the project would remain viable as is, or are there any changes you would make to it right now?

KG: We're now thinking of the museum as something beyond just physical space. Yes, a building or location is still important, especially since kids know the museum as a place they always come to. Physical places are important—we can't abandon them. But like U.S. children's museums, our museum is also a critical organization to deal with many other needs, such as social justice and food issues. We need a physical space identity to support all these activities. We were one of the first organizations in Dakar to have a dedicated preschool space. In our new location, we will continue to have one, but will add an open-air preschool garden. We are focusing more on programs, including ones available through social media. 60 percent of our annual budget comes from vacation or summer programming.

MM: The antidote to the strain and stress of Zoom Fatigue may be getting back outside into nature. The growth of forest schools in Europe and nature-based play curricula during this pandemic have been good reminders for how successful adventure playgrounds are. Real materials and tools inspire children to affect their own environments, find interesting things to investigate (bugs, worms, snails), build their own structures, and create their own experiences. We have always been a Reggio-inspired design studio, and this approach still holds true now. As always, we are designing experiences that support change, creating flexible platforms for visitor discovery, exploration, and creativity.

MM: For those clients in the process of choosing a new project site as part of strategic master planning and feasibility studies, we recommend looking for a location with ample square footage for outdoor experiences, both at grade level and on rooftops. These types of spaces will provide facility rental opportunities as well as outdoor programming in the future.

For our projects that are in the early stages of design, we are recommending spaces with even more natural light (collections permitting, of course).

For our projects in final design and/or under construction, there have been some initial investigations into UV cleaning systems, special antiviral coatings on all surfaces, and touchless “touch screens,” but none so far have been fully incorporated. We continue to research options and evaluate efficacy, cost, and long-term operations. While some strategies may be more short-term, overall, museums will see a long-term need to communicate cleaning and safety protocols into the foreseeable future.

SW: Looking back eight months ago, when I was actively designing a special exhibit right before the pandemic hit, I now realize just how much of it will be impossible to do whenever we reopen. A folder full of notes and exhibit component sketches will have to be scrapped and revised for whatever the world will look like in six months or a year. Will there be permanent changes in capacity, proximity, or even the kinds of activities we can do? Even the fundamentals of how I think about our building and use that space will need to be completely reimagined. So, as a designer at a museum that hasn't reopened, I'm still thinking one day at a time and trying to be ready for whatever might happen.