

Science Museum Adapts Model to Bring Joy Through STEM to Families Hit Hard by COVID-19

The New York Hall of Science's 'Hyper-Local' Approach to Family Engagement Builds 'Parents' Agency' to Support Their Children's Learning in STEM

Author: GFRP Staff

While science, technology, engineering, and mathematics (STEM) fields hold career and financial opportunities that immigrant families especially value, Latin and Central American immigrants are not proportionately accessing the opportunities for advancement. Informal learning institutions like the New York Hall of Science (NYSCI), as well as other centers and museums, are well positioned to address this discrepancy in STEM education, particularly by supporting family engagement.

NYSCI is located in the Elmhurst/Corona section of Queens, New York, a port of entry for new immigrant groups of families over the years. As part of a larger strategy to broaden participation in science, NYSCI hired Andrés Henríquez in 2015 as vice president in STEM Learning in the Communities to partner with other organizations in the community and more fully engage children and families in STEM. "As a science museum, we wanted to change the face of STEM," says Henríquez.

Elmhurst/Corona is [a vibrant](#), Latinx community. Two-thirds of the residents are foreign born (from South and Central America), English is not the primary language spoken at home, the community is densely populated and dotted with multi-family homes that are chock-full full of children and grandparents. Many of the families have service industry jobs (restaurants, hotels), and the majority of the community is undocumented.

To achieve more diverse participation around STEM, Henríquez and his colleagues created [NYSCI Neighbors](#)—a "hyper-local" initiative to engage and serve more diverse families, build STEM interest, knowledge, and skills and form closer, ongoing relationships with surrounding residents, institutions, and community-based organizations.

Over the past five years, NYSCI Neighbors has engaged over 3,000 families in ongoing STEM activities through new, museum-based programs and partnerships with 20 local schools. In the process, the institution is transforming families' perceptions of the museum and of how they can support their children's STEM learning pathways.

"We felt very strongly about building parents' agency to be able to come to museums. It doesn't sound like a big deal, but it's a huge step forward for first-generation parents who have never been exposed to complicated institutions that look so formalized," Henríquez says. "There are a lot of hands-on making projects for families and walks around the museum to see and understand what exhibits do. We want to build that agency, that this is theirs. They can touch things. That was enormously important, and that takes time."

The Elmhurst and Corona communities emerged as the epicenter of New York's raging COVID-19 outbreak. The communities had and have some of [the highest rates](#) of infection in the city and had some of the highest numbers of deaths in New York City. The devastating health crisis is further exacerbated by increased economic hardship. Many local residents work in service sector jobs, which all but disappeared during the city's period of closure, with many of the undocumented residents not eligible for federal relief, such as the federal Paycheck Protection Program or state unemployment benefits. In one of the local elementary schools, 90 students lost one or both parents to the coronavirus.



Photo Credit: New York Hall of Science

The Global Family Research Project recently talked to Henriquez about how he and his colleagues built their “hyper-local” approach to family and community engagement, about how NYSCI Neighbors staff members have shifted the model to serve families at home during the pandemic after the museum closed in March, and about lessons for others who are now reimagining the role of museums and families in children’s STEM learning.



GFRP: Give us some background on how NYSCI works with families to support their children’s learning. How did NYSCI make an organizational commitment to family and community engagement and how is it working?

Henriquez: The idea was to engage families in our communities and local nonprofits, as well as 20 schools that serve them, to put children on a learning pathway which includes science, technology, engineering, and math— and to use this as a way out of poverty. We work intensively with families who live within three quarters to a mile from the museum and also provide services to 20 schools that are part of Community School District 24 and are farther away. At the start, we knew it was absolutely critical to build relationships with first-generation families because they trust no one. Building trust was absolutely essential. We have had generous support from the Simons Foundation, Carnegie Corporation of New York and Deutsche Bank Americas Foundation and our services are all free.

We asked parents what were the kinds of things they needed. They really wanted to understand what their kids do in school. They wanted a space and place to understand science and technology in a way they could do it with their kids. They wanted to learn English. So for families living three quarters to a mile from the museum, we began our museum-based *Parent Ambassadors* program, where we emphasized the kinds of things that parents are doing in their home as hobbies—like cooking, crocheting, measuring—that are science-related and science-based, as well as an English as a second language (ESL) program and other supports.

We really wanted to take a page out of the “[Funds of Knowledge](#)” research and make sure we embraced the unique elements of parents’ culture to say, “These are the kinds of things that you can share with your children. And you don’t need to know the right answer; let’s figure it out together.” As part of ESL, parents go around the museum to see and understand the exhibits and have opportunities to see and experience new approaches to hands on, inquiry-based and exploratory learning for the whole family. The majority of the classes are taught in Spanish.

We also started an after-school program called *Science Ambassadors*. The kids wanted to come and found it was a place they could open up if they needed help with their homework. The parents really wanted children to get homework done before they got home so it turned out to be the biggest draw. Parents respect the schools and hold them in high regard. Doing well in school means being prepared and having children finish their homework. Many of the parents are not fluent in English, and having children complete their homework each day was incredibly helpful for parents.

GFRP: How do you partner with the New York City Department of Education and local schools?

Henriquez: The New York City Department of Education ran the ESL program in their adult learning program. Then we have a relationship with Community School District 24. There are 20 schools that we work with. We work with their principals, their parent coordinators, their science teachers. Many of the parents and children came from schools that are close by.

We did a neighborhood walk-about with our staff. The NYSCI Neighbors team wanted to show the staff how committed these parents are to come to the museum. What does it take to pick up their kids after school, go to the sibling’s school, get a snack and go to our museum? It took parents 30-45 minutes to get to our museum. Our colleagues realized the effort it takes for parents to walk over to the museum. They were like, “It’s amazing they come at all.”

There are some schools that are farther away from the museum, so we decided to do 10-week classes in schools. We would go out every Wednesday or every Friday to the school to work with parents and their children to do *Science Ambassadors* work.

The ways in which science has been implemented in New York State, with the Next Generation Science Standards, is time-consuming and the schools we work with have very little time to do hands-on science. But the idea of doing engaging, creative STEM is happening all the time in our museum. NYSCI has the freedom because we don't have to report to the state as schools are required to do. Parents are beginning to understand that informal spaces are places where you can learn—places where there are things to do, touch, and create. That is part of the process of learning that we value.



NYSCI rapidly adapted its model to reach students and families at home with interactive STEM activities.
Photo Credit: New York Hall of Science

GFRP: How have the communities you work with been affected by the pandemic and school closures?

Henriquez: If New York was the epicenter of COVID, then Corona and Elmhurst was [the epicenter](#) of the epicenter. Corona had the highest number of deaths in all of New York City and Elmhurst was the third highest. Together the two communities lost 737 souls. In one school alone, 90 children lost one or both parents. The [density](#) of the population in Elmhurst and Corona is intense and families live in close quarters. These families are also front-line service workers—in restaurants and hotels—and are often on long subway rides to their jobs.

We're seeing lots of stress on the families around the lack of essential technology tools and access. The public schools have given away Chromebooks and iPads and there are unlimited data plans. But the competition for the technology is not just for the kids, but for the parents who are looking to connect with family members, check out food bank schedules, find health information. It's the last mile of connectivity for families. It's unbelievable that we had to have a pandemic for people to realize the importance of technology. At the end of the day, our families want their children to be safe, to have enough food, and to [learn](#).

GFRP: When lockdowns began, how did your model for continuing relationships with families change? How are you engaging with families now?

Henriquez: We started a Facebook group with parents before the museum closed. It was just a way of sending out information. Now we're delivering quite a bit of content through Facebook and Zoom. We're doing all kinds of work to continue to provide family-focused programs virtually. We're doing videos and streaming in both English and Spanish. My team has to first write a script to do this. They first write it in English, then in Spanish and then they have to practice, then they have to record and edit the content. It's quite a bit of work. We are trying to provide a little joy in families' lives with a variety of activities.

We're also doing something called NYSCI Neighbors Making at Home. A lot of the families didn't have the tape and the glue guns and the materials to do what they wanted. So, we've created these toolboxes, deliver them to children's homes and have online courses over several weeks. After the course is over, we collect the toolboxes, replenish them and distribute them again.

Because the community has been so devastated, we are working with certain schools to use our museum as a food bank. When food banks take place, we stuff each of the bags with science activity packets. We have served over 1,000 meals since the pandemic started.



NYSCI has served as a community food bank during the pandemic.
Photo Credit: New York Hall of Science

For the parent work, we have *Cafecitos*, which means a little cup of coffee in Spanish. We give them informational resources, discuss issues around immigration, how to get Medicaid, SNAP benefits, how to make a go of this during a pandemic. We have a number of monthly calls like that. Parents look forward to the information and we are a trusted source.

We have surveys and are trying to figure out methods to see how all of this is going. We're not just a museum; we also have a pretty substantial learning lab. There was a commitment from our CEO and president that any work we do that has to do with children has to be targeted to our community. Think about what Geoffrey Canada did in Harlem with the Harlem Children's Zone. We're trying to do the same thing in our ZIP code and with science. We have a dozen Ph.D. researchers who get grants, and much of their work also focuses on the community.

They also have our numbers and they call us. I was so touched when all this COVID broke out, and two or three parents called us to find out how we were doing. I was really touched by that. And we all miss the kids.

GFRP: How did you shift your model for the summer? And what does the NYSCI model of family and community engagement tell us about ways we might address pandemic-related learning gaps?

Henriquez: There's so much summer reading loss. Our children are being left behind even more. So, we have developed a distance reading program with our young people. Our Explainers — young people who work in our museum and facilitate the exhibits facilitators — read science books to the kids, virtually. It's dialogic reading, back and forth. We focused on comprehension. We're hoping to maintain this now that the school year has started.

In Elmhurst and Corona, we're also working as part of a new, informal collaborative with 20 nonprofit organizations in the community called Elmhurst/Corona Recovery Collaborative. It includes other museums, the Queens library, the Queens Zoo, the Queens Botanical Garden and Queens Theater, to name a few. We have four working groups—food and economic security, health and healing, education and community welfare, and awareness and fundraising.

There are so many things that so much of us are doing, and we all reach different communities, different parents. We all came together to provide some kind of structure for the kids. We're trying to figure out how we communicate with the community that this is a safety net. They can depend on any one of us for anything, from upcoming food banks to information about funeral resources.

We're also working with the Queens Public Library that has something called the Queens Memory Project. We want families to document their experiences. Not just for the education part, but it becomes part of the healing process for families. We don't have the expertise on mental health issues, nor do we have the social-emotional expertise, but the schools do. We are trying to work all together to leverage one another's expertise. There is a lot of hope, we feel the pain of the community, and we are pulling together.

GFRP: What are some of the major lessons you've learned about how museums and other community institutions can support the kind of family engagement you've created?

Henriquez: We are learning and doing at the same time. We are trying to figure this all out. But first, it's having leadership that really understands that you need to pivot your institution so that you are relevant to the community, whatever that is. Then, listening to our community and being responsive is really critical. You can't do everything. But what are the ways you can act with others in the community so you can leverage as much as you can?

Museums are trying to figure out how to work more deeply with their communities. It is a worthwhile effort and we need to think more about how to diversify audiences that come to museums. Working with communities means establishing long-term relationships. The work needs attention. It needs staff and resources.

We might not get a thousand kids into the STEM field. But the fact that we are going to get families to appreciate science, ask critical questions, and consider a number of points of view is as important for the science field as it is healthy for citizens and society. ↻

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Contributor:

GFRP Staff

Design:

Rachel Hanebutt, Global Family Research Project

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