

MYSTERY BOX CHALLENGE:

LEGO Small Museum Network
Evaluation Summary Report

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Introduction

The Northern California Bay Area is unique in the number of children’s museums available to families who live in this region. Some of the smaller children’s museums in Northern California include the Children's Creativity Museum (CCM) in San Francisco, Habitot in Berkeley, the Santa Cruz Children’s Museum, the Sacramento Children’s Museum, the Monterey County Youth Museum, and the Sonoma Children’s Museum in Sonoma County. These smaller museums are a valuable resource, in that they reflect and serve the particular needs and diversity of the communities they serve. However, managing a smaller museum is not without its challenges. Being a CEO from a smaller museum can be somewhat isolating. Larger museums often receive the lion’s share of attention and funding from federal agencies, foundations and other funding sources.

For this group of small Bay Area children’s museums mutual support often came in the form of the informal personal and professional relationships developed over the years by a number of the museum’s CEOs. When the pandemic hit in 2020, forcing museums of all sizes to temporarily close and rethink how they would re-engage with their visitors, this loose network of children museum CEOs proactively took on an even greater role in catalyzing collective support amongst this group. Soon after the pandemic’s effects became most evident, this group began meeting weekly over Zoom to discuss common concerns, problem solve, and strategize solutions. This newly formed cohort soon became a valuable and dependable lifeline.

This is a pretty tight group. We've already done so much learning and trust and culture building through the worst part of the pandemic, and through the worst part of our careers. – Cohort member

The ability to work collaboratively through the pandemic provided a solid foundation of trust amongst the museum's CEOs. Once the worst of the pandemic’s impacts had abated, many in the cohort were eager to explore other opportunities to work together.

In 2021, the Children’s Creativity Museum (CCM) secured a grant from the LEGO Group as part of the LEGO Playful Learning Museum Network to implement the Mystery Box Challenge (MBC) at CCM. The Mystery Box Challenge is a hands-on activity designed for young children to become inventors through designing, engineering, innovating, and prototyping. Visitors are given an age-appropriate challenge and a box of completely random recycled materials, and are asked to solve their challenge using only the materials given, along with tape, scissors, and their imagination. Throughout the process children are able to apply critical thinking skills,

while also developing their communication skills by explaining the steps they took to create their invention.

Seeing that MBC had been well received by children and adults at CCM for many years as one of their primary museum exhibitions, CCM's Executive Director believed that there might be an opportunity to creatively scale MBC to the children's museums participating in this cohort through a kind of co-creation collaborative exhibit programming process. For this project the cohort would be referred to as the LEGO Small Museum Network. CCM hired Scott Burg, an independent external evaluator, to document and assess elements of this co-creation process with the Network. This report serves as a summary of those activities.

Executive Summary

In 2021, the Children's Creativity Museum (CCM) secured a grant from the LEGO Group as part of the LEGO Playful Learning Museum Network to implement the Mystery Box Challenge (MBC) at CCM. The Mystery Box Challenge is a hands-on activity designed for young children to become inventors through designing, engineering, innovating, and prototyping. Visitors are given an age-appropriate challenge and a box of completely random recycled materials, and are asked to solve their challenge using only the materials given, along with tape, scissors, and their imagination. Throughout the process children are able to apply critical thinking skills, while also developing their communication skills by explaining the steps they took to create their invention.

Seeing that MBC had been well received by children and adults at CCM for many years as one of their primary museum exhibitions, CCM's Executive Director believed that there might be an opportunity to creatively scale MBC to children's museums participating in this cohort through a kind of co-creation collaborative exhibit programming process. For this project the cohort would be referred to as the LEGO Small Museum Network. CCM hired Scott Burg, an independent external evaluator, to document and assess elements of this co-creation process with the Network. This report serves as a summary of those activities.

The LEGO grant provided funding for the hiring of a coordinator from CCM to lead the training sessions with cohort members. Ninety minute sessions, facilitated by the project coordinator, were held on Zoom once every 4-6 weeks with CEOs from each of the other museums in the cohort. While cohort members were supportive of scaling

MBC to their museums, there was some initial push back to the idea of co-creation. Some members were concerned that their museums didn't have the bandwidth or expertise to contribute to a shared model.

Sensing this lack of momentum and confusion regarding training and implementation, the project coordinator determined that a change in approach was necessary. She realized that in order for the co-creation model to be successful, it was imperative for each of the participating museums to have a greater sense of ownership in the process. It would not work for CCM to position a one-size-fits-all model for how MBC should be implemented at each site.

The opportunity to shape and adapt MBC to fit each museum's unique circumstances shifted the training paradigm from a top-down hierarchical model to a more democratized and collaborative brainstorming approach. This approach served to strengthen the already robust trust and relationship-building amongst the members that had been part of the cohort since its inception during the pandemic.

Over a period of approximately 4-6 months the program coordinator was able to visit all but one of the participating museum sites. As hoped, these personalized visits made a huge difference in each museum's ability to better understand the MBC model, and conceptualize how the activity could fit their site. Working face-face with each museum's onsite staff, the program coordinator was able to maximize CCM's knowledge and experience at each site. Museum staff could experiment with different materials, and explore various implementation and facilitation models. These onsite visits also allowed for training across each museum's organization.

As a result of the online and in-person co-creation training initiated and supported by CCM, each of the Network museums developed their own unique models for implementing MBC. Each individual museum refined MBC implementation and facilitation models to best fit their own logistical and audience requirements and limitations.

The process of co-creation not only benefited each museum individually, but provided the opportunity for shared learning and reflection amongst members of the cohort. During the interviews, cohort members shared experiences and observations across a number of areas including the adaptive elements of exhibit design and implementation, diverse methods of facilitation with families and children, differences in play and creativity amongst younger and older children, and experientially-oriented methods of training and professional development.

Cohort members observed that MBC ‘wakes up’ creativity for young children, while also opening up both their engineering and artistic skills, and interests. They noticed that the making process, and some of its inherent challenges, provides children with a sense of ownership and accomplishment. Staff at different museums experienced a greater awareness and understanding about how children experience making. Museum staff also learned how to interact with children during making, and came to appreciate the intentionality of making experiences with children.

Through the MBC, staff at the individual museums observed differences in how younger vs. older children engaged with the activity. Older children were more intentional in what they were doing and building, while younger children were less concerned about the challenge, and more interested in the materials and general play. MBC also provided opportunities for staff to educate adults about different stages of child development. Staff appreciated having the language and observation skills to talk about and look at children’s learning and play activities.

Cohort members unanimously want to continue this work. They wholeheartedly recognize how the MBC co-creation process has benefited each of their respective museums and their visitors, and validated the value of collaboration and shared learning. Cohort members would like the opportunity to visit each other’s museum in person to experience the many ways MBC has been adapted and share ideas with other staff. There is also interest in looking for funding to expand and scale MBC to other museums, as well as other formal and informal education institutions.

Ultimately, these museums recognize the collective power of this cohort. They are anxious to explore other opportunities together. They envision that this model, which they are still refining, as something other museums might want to emulate.

Method

Eight cohort members, one museum education director, and one project staff were interviewed from July – September 2023. Interview questions were developed in collaboration with staff from the Children’s Creativity Museum. Interviews were recorded for transcription purposes only. Interviewees were asked for permission to record. No names of any interviewees are cited in this report.

Survey Summary

Evolution of a Network

Small museums as a rule do not generally have ample funding to create new exhibits on their own, let alone share in the professional training and development activities that would be necessary to implement an exhibit at each museum site. However, by pooling resources collectively the staff at CCM believed that this cohort could potentially leverage shared learning and experiences to scale the Mystery Box Challenge (MBC) exhibit to each individual museum through a co-creation process.

Before initiating this activity there were a number of critical questions that the cohort had to consider. Addressing these questions formed the basis of the project's initial training plan.

How do we scale that so that the exhibit could go to other museums and benefit from CCM's experience; the graphics, the prompts, the kinds of supplies that we buy, and the kinds of experiences we have in terms of logistical structures and so forth? How do we all talk about our experience, write the same language and train our staff on playful learning? – Cohort member

The LEGO grant provided funding for the hiring of a coordinator from CCM to lead the training sessions with cohort members. Ninety minute sessions, facilitated by the project coordinator, were held on Zoom once every 4-6 weeks with CEO's from each of the other museums in the cohort. The first few training sessions were fairly didactic in nature. In addition to some logistical and process information about MBC, these online presentations also included a good amount of conceptual background about learning theory and play prompts primarily geared for younger children.

While cohort members were supportive of scaling MBC to their museums, there was some initial push back to the idea of co-creation. Some members were concerned that their museums didn't have the bandwidth or expertise to contribute to a shared model. Others felt that since CCM had the experience in implementing and facilitating MBC for visitors, they should prescribe what should be done in order to implement the exhibit at each of the museums respective sites. In total, what these initial reservations contributed to in the early stages was a lack of clarity about where the project was headed, and who was ultimately responsible for designing MBC-related design procedures and implementation processes for each museum.

Sensing this lack of momentum and confusion regarding training and implementation, the project coordinator determined that a change in approach was necessary. She realized that in order for the co-creation model to be successful, it was imperative for each of the participating museums to have a greater sense of ownership in the process. It would not work for CCM to position a one-size-fits-all model for how MBC should be implemented at each site. What worked at CCM might not necessarily work in Sonoma, or Monterey, or at any of the other museum sites. Each site was different in terms of staffing, capacity, audiences, training models, and the types of programs offered on and off-site. For the co-creation model to work across sites, adaptation and customization of MBC to best fit each sites' particular needs, strengths and strategic directions would have to be the cornerstone of any kind of training and support.

Not all of the cohort members had actually seen MBC, or experienced the activity with children and their families. The concept was exciting, but without having actually working with the materials or facilitated their use with visitors, much of the opportunity remained abstract. As a result, it was decided that rather than focus solely on online training methods, it was imperative for the project coordinator to personally travel to each participating museum to conduct onsite training, and help each museum see how MBC could be customized at each site.

Teaching by lecture, it felt like we were forcing them to do something they didn't want to do, just like we (museum staff) sometimes force visitors to learn in ways the visitors don't want to. That was an epiphany for me. That's where we turned and said, you know what? We need to go to each site. Instead of having them come to CCM and do this virtually, we have to go there and figure out what they're saying without us being lecturing to everyone on a Zoom call. – Program Staff

We felt like no one seemed to be excited about this, and we wanted them to co-create. It didn't look like we're really having a real dialogue. We needed to be on the same level as the other museums, and not be in our ivory tower in San Francisco. We decided to go there, bring all the supplies, run the program for them so they can observe it, and then have a conversation afterwards. We would do this together, then figure out what kind of training they wanted. We wanted them to consider how they would change this and then we would go from there. I think was the breakthrough for all of us – Program Staff

This proved to be a breakthrough moment not only for CCM, but for the rest of the cohort as well.

At the beginning (of the training) there wasn't a ton of clarity about what we would be doing. It wasn't explained very well up front what the process was. In fact, it took months in order to get

to that point. The project coordinator actually had to come visit before I was like, 'oh, I get it.' I also don't have a programming staff, so it's me who has to go look if something's going to happen or be done. That's a pretty limiting factor for me to get super involved until something is really happening, but once it was here and taught in a face-to-face way, it was very easy to wrap our heads around. – Cohort member

The opportunity to shape and adapt MBC to fit each museum's unique circumstances shifted the training paradigm from a top-down hierarchical model to a more democratized and collaborative brainstorming approach. This approach served to strengthen the already robust trust and relationship-building amongst the members that had been part of the cohort since its inception during the pandemic. Cohort members spoke of the tremendous peer-peer learning and sharing that took place during the training process.

We would come together and see how everyone was doing in their institutions with mystery boxes and figure out what the kinks were. Honestly, I think that was really great. Having a bunch of people working on the same project, getting to come back to the table and be like, can you help? Does somebody have an answer to this? That's when we really got to help each other out. – Cohort member

Onsite visits

If we want this to be a truly democratized exhibit experience, I don't know if a video of me speaking 'at' somebody is the way to go.

Over a period of approximately 4-6 months the program coordinator was able to visit all but one of the participating museum sites. As hoped, these personalized visits made a huge difference in each museum's ability to better understand the MBC model, and conceptualize how the activity could fit their site. Working face-face with each museum's onsite staff, the program coordinator was able to maximize CCM's knowledge and experience at each site. Museum staff could experiment with different materials, and explore various implementation and facilitation models. These onsite visits also allowed for training across each museum's organization. As a rule, museum Executive Directors are not often used to 'working on the floor'. Therefore, it was important for them to see and model the full MBC experience firsthand.

Museum staff greatly appreciated the program coordinators' emotional support. She made the process enjoyable, and brought enthusiasm to her teaching. She demonstrated the value of having staff actually complete the activity as a participant. She would talk to staff about their own discomfort and comfort levels with the exhibit, and use that as a way to get them to think about what they were asking

young children to do and whether the children themselves would be comfortable or uncomfortable with the activity. 'Learning by doing' became the watchword of these in-person training sessions.

Having her or anybody come out and say, 'Your space looks great.' 'I like the way you've done this.' 'This looks really good.' 'How about this?' That kind of thing, that validation is really important from somebody like them (CCM) who've been doing this for years. I didn't think we were going to do a bad job, but it's still really nice to have somebody come out and say this is really great. – Cohort member

Once the content was in front of me it became very clear how I could take what they were doing, hear about their (CCM's) successes and organize it in a way that would meet the specificities of our local audience and the kinds of activities that I thought were the biggest value added to our content. – Cohort member

Different museum models

As a result of the online and in-person co-creation training initiated and supported by CCM, cohort members were empowered to develop their own unique models for implementing MBC.

Habitot – a catalyst for other types of making

Habitot has been serving the Berkeley community in one form or another for nearly 22 years. Over this span Habitot has operated as both a brick and mortar facility as well as a mobile museum. At present, the museum operates out of a leased space located in a large shopping center in Emeryville, in addition to conducting close to 20 'mobile' events per year.

We rent a 16 foot truck every couple of weeks. We load it up and we take it to a new location. I have a reservations manager who is doing all the preparation work to get into a park or a library setting or another venue for families and children.

The museum's MBC is located in their brick and mortar space. Their implementation is a little more open ended than CCM's.

We don't really have a box that's set up. We have a lot of supplies there, and kids are doing maker projects. We do have prompts that some older kids will use. The youngest kids are using their own imaginations. What our staff does is

talk to the children about what they're making and how they're making it, and why they chose this or that, or the other thing. We capture that information on large post-its. – Cohort member

Museum staff have designed a shelf adjacent to the main exhibit area where children can display their creations. The post-it notes, with descriptions from the children of what they made, are displayed next to each of the creations.

In addition to MBC, there are other maker-focused exhibits sharing the same space. MBC, has in fact, provided the impetus for plans to develop a much larger and robust maker space for the museum. The exhibit has served as a model around which other maker activities can be designed. Museum staff are hoping to secure outside funding to realize this goal.

We want to do something that's much bigger than this eventually, so being able to do this as one example of making with a lot of loose parts. That's one type of making. There are also other types of making that could be integrated into a larger maker studio. That's actually the goal that we might have.

I would say MBC is a great prototype. It definitely jumpstarted our whole maker thing. It's actually giving me the potential now to seek grants around that I might not have been able to do before. My experience, whenever you do a grant, you can't invent a new program for the grant. You have to already be doing the program.

Santa Cruz Children's Museum – enhancing the classroom experience

The Santa Cruz Children's Museum of Discovery opened in late 2014. They are currently located in what used to be an old Abercrombie and Fitch store in a shopping mall. No formal design firms were involved in the initial construction of the museum, in fact much of the design was fabricated in community members' garages. From the beginning the museum has had a very community-centric feel to it.

The Santa Cruz Museum has a very robust collaboration with local schools. This past year, museum staff have made close to 120 visits to local schools. As a result, the museum has integrated MBC almost exclusively with their school programs.

For its school program Santa Cruz adheres to the model that it generally takes multiple visits to establish a relationship with the children, especially younger ones. Museum staff will often try to visit the same classroom anywhere from 4-8 times during a school year in order to solidify these relationships. Establishing these relationships allows the children a better opportunity to learn.

In creating outreach programs for schools, the museum was looking for something that was fairly dynamic but had a concrete inherent value to it beyond the content that they might be trying to teach somebody. In this case MBC fit the bill:

MBC's constrained design and engineering challenge seemed perfect for that purpose. It really allows kids to be introspective with themselves over the course of a short period of time, say 45 minutes. – Cohort member

The museum's school-based MBC model is unfacilitated. The children are encouraged to proceed at their own pace. Unlike a museum setting, no parents participate in the MBC activity. Museum staff are present primarily to encourage a child's independent work. What facilitation takes place is more of an open-ended dialogue between staff and the child to enable each child to reflect and talk about their creation. This method was introduced and reinforced during the program coordinator's trip to the museum.

Museum staff observed that some children in school, without their parents, were initially much more fearful of failure when working with MBC than they would be in a museum setting.

In a museum, parents really take up the process for their kids and press them to continue and persevere. In maybe one every other classroom I was in and I did 15 classrooms, there would be students who would absolutely panic at the activity. They would sort of freeze up and wouldn't be able to proceed without a lot of reassurance that there was no wrong answer. Without the parents there to sort of mitigate that process, I had to come up with alternative ways to coax a child who felt that way immediately to go ahead and try some things out without fear of failure. – Cohort member

In terms of materials, Santa Cruz uses glue guns instead of tape. Staff do not want to mitigate all the risk for children, so working with these glue guns provides a degree of extra learning that takes place when children use different kinds of materials.

The museum also uses MBC as an opportunity for students to learn about recycling.

I don't know how many other museums do this but when we're out we have a big bin, we call it the recycling bin, and everyone puts the unused materials into it. Then we hand that to a volunteer at the museum who loves to sort through it and put things back into bins to pack a box at a later point. Kids really like having the recycling box. They feel less like they have to use up every material or if they don't use something, it's going to get thrown away. That's been a fun part of the process in large situations, group situations especially. – Cohort member

Sacramento Children's Museum – strengthening existing activities

The Sacramento Children's Museum (SCM) was incorporated as a non-profit corporation in 2005. Built by Roebbelen Contracting, Inc., the Museum's 7,000 square foot facility opened to the public on August 25, 2011.

What initially drew Sacramento staff to MBC was the fact that it was a 'people activity' and not a 'thing activity.' Having seen MBC at CCM, Sacramento staff saw firsthand how engaging the exhibit was for children and their families. Before implementing MBC, Sacramento had been doing something similar for a number of years called a 'Task Party.'

We do it (Task Party) at big outdoor events. The big difference is you pick a task for someone to do. Sometimes it could be things like get five people to give you a high five. So, it's not always creating, but we always pull out all the recycled materials and tape and everything, because some tasks could be building a rocket ship or something like that. The thing about task parties is it keeps itself going, because after you do a task, then you submit a task for someone else to do. We also incorporated a lot of cheering and congratulating when you finish your task.

The museum has adopted some of what they've already designed for their 'Task Party' and incorporated it into their version of MBC. Children participating in MBC are encouraged to show their creation or 'challenge' to museum staff. Children can decide to display their creation or take it home with them.

Museum staff are also planning to incorporate MBC into one of their traveling exhibits. Museum staff acknowledged that some of their current traveling exhibits were a little underwhelming. They felt that MBC would enhance the quality of these exhibits because the activity molds itself to every child and is something older children can do independently. Museum staff are also considering adding a time element to the challenge, by having children time themselves using a handheld stopwatch.

Museum staff were initially concerned that MBC would require a lot of staff training time. They were initially only going to have educators trained on the exhibit. What they discovered however was quite the opposite:

The staff love doing it. We were just going to have educators do it, not regular floor staff, but now everyone does it. It's like the top role. – Cohort member

Due in part to differences in visitor demographics, Sacramento museum staff commented that they often have to spend more time introducing MBC to families than do their counterparts at CCM in San Francisco. They've observed that parents of younger children may be reluctant to let their children partake in MBC, and so staff try to explain to parents that, to the contrary, their children can definitely enjoy the experience.

Sometimes if you have a younger kid, the parent will say they can't do this. But you kind of have to talk them through it. Then sometimes the parents do too much and take over, so you have to give them their own box. – Cohort member

Monterey County Youth Museum – creating a pop-up experience

The Monterey County Youth Museum has been open since 1998. Their current 8,500 square foot facility, which they moved into in 2008, is located in downtown Monterey. The museum's CEO is its only full-time staff member, while being supported by 14 additional part-time employees.

One of the reasons the museum was motivated to participate in the co-creation project was how well the MBC model closely aligned with, and even enhanced, the museum's own Creation Station exhibit for their visitors.

We have a [permanent] Creation Station [Exhibit] which is basically like a makerspace that has mystery box challenge pieces in it all the time that people can take from there. One of the things we realize is that as much as people love having all that stuff and piecing things together, it can be really intimidating for a whole different type of personality. Sometimes 200 items in a creation station is amazing, but sometimes what people really need or want is a mystery box challenge with eight to 12 items. The experience provides a little more direction, but still gives them the same outcome whereas they can still be very creative, but with enough guidelines to feel comfortable to go for it. – Cohort member

Staff liked that the activity design was open-ended enough to allow the museum to tailor the exhibit to 'make it their own.' This flexibility has provided the staff with a sense of ownership. ("MBC gives staff the opportunity to fill the boxes themselves, and decide what materials go into them.") Adapting MBC in such a manner reduced the learning curve for museum staff, and strengthened an already established and popular museum activity.

For us it's become kind of a popup component to an existing exhibit. It's added a kind of fresh energy that didn't necessarily take that much more work, but I know families appreciated it. I think the idea of adding an experience for one to three-year olds as a popup exhibit is exciting to families. They feel like it's an added value. It's even better that they're enjoying it. – Cohort member

Similar to other museums, Monterey staff have observed that parents of younger children often assume that the exhibit may be too complicated for their child to participate in. Staff try to encourage parents to allow their children to engage with MBC.

We try to remind parents that this is a great activity for the kids and they can act as support, and it would be fun for them to see what the kids come up with. There are some parents that respect and understand that, and there are some parents who just can't. – Cohort member

The museum is also considering incorporating MBC into some of their community outreach activities.

Children's Museum of Sonoma County – adapting space and materials

The Children's Museum of Sonoma County opened to the public in 2014. The Museum primarily serves Sonoma County, but also sees a lot of visitors from neighboring Mendocino and Lake Counties. Slightly less than 1/5 of the museum's over 180,000 visitors are low income. Their visits are subsidized through a grant funded access program.

The museum's Executive and Education Director's first saw MBC at the Children's Creativity Museum in San Francisco. After that visit they were eager to try and adapt the MBC model for their museum. Similar to the Monterey Children's Museum, the Sonoma Museum had a similarly themed activity of their own called Creation Station. The Creation Station activity was far less structured than MBC. There were no prompts or facilitations involved. Staff believed that having prompts, based on a research-based understanding of a child's capabilities at different ages, would enhance the experience for children and their families.

When we expanded the art room into the birthday party room, we called it the Creation Station. It was basically about giving kids found objects to build whatever they wanted, but we were using tools like hot glue, staplers tape and scissors. It was really super messy. Of course, kids love it but when I saw the Mystery Box Challenge and the way that it was structured around prompts, I realized that was something that we weren't doing. A lot of great thought and creativity went into putting those prompts together. – Cohort member

Museum staff are very pleased with the way MBC has been embraced by its visitors. Due to space and staff limitations, Sonoma had to modify MBC for their site. To make it work, staff modified the materials that they already had on hand. Because the museum did not have the resources to give every child their own individual box, they're providing self-serve bins with materials children can take out at any one time. Participants then build on a sturdy base of little squares of cardboard. Staff limit the use of materials to just tape and scissors. These limitations have made cleaning up a lot easier, but also has resulted in other positive outcomes.

We are seeing amazing imagination and creativity coming from something that kind of gives boundaries, or some limitation. I almost feel like limitations make the kids even more creative. – Cohort member

The museum keeps materials stored on open shelves in marked bins. There is no limitation on the number of materials a child can use. Staff found when they placed too many limitations on the activity, some children felt intimidated and backed out.

Participants can either take their creation home with them or display it in the museum's gallery. Staff commented that younger children seem to be more interested in learning about tape and scissors than the challenge itself. Older children are more motivated by the actual challenge.

When I get the younger kids that are just focused on how to use the material, we do scissor class and we sit and learn what sticky tape does and what can stick on it. What is most important is that they're excited. I don't want them to get too focused on a particular card and that they have to do it, because then it's a chore. I gauge how they're interacting and then as they get older, the inventions that come out of it are pretty amazing. – Cohort member

Staff believe that participating in MBC provides children a sense of ownership through the act of creation, and by sharing what they did through writing.

Children know that the creation is theirs. Especially if they have siblings and they're constantly having to share, it's nice to have something that's their own. The making experience delineates the space on the table. Their little tray is their little space. Then you have kids writing their story up there in the gallery. Sometimes the parent will help if their child doesn't know how to write. It gives the children a sense of pride, like signing your own artwork. – Cohort member

Museum staff who participated in the project's coordinator's in-person training have informally modeled for volunteer and seasonal staff methods of engaging with children and their families while they participate in MBC. More often, staff 'learn-by-doing.'

Museum staff feel that MBC has even more potential at their museum down the road. They envision incorporating prompts in other museum exhibits, and experimenting with different kinds of material to encourage an even wider range of creations.

Collective takeaways

It is clear that the process of co-creation not only benefited each museum individually, but provided the opportunity for shared learning and reflection amongst members of the cohort. During the interviews, cohort members shared experiences and

observations across a number of areas including the adaptive elements of exhibit design and implementation, diverse methods of facilitation with families and children, differences in play and creativity amongst younger and older children, and experientially-oriented methods of training and professional development.

Cohort members observed that MBC 'wakes up' creativity for young children, while also opening up both their engineering and artistic skills and interests. The making process, and some of its inherent challenges, provides children with a sense of ownership and accomplishment. Staff at most of the museums commented on the differences of how younger children vs. older children engaged with MBC. Older children were generally more intentional in what they were doing or building. Younger children seemed less concerned with completing a challenge per se, and seemed more interested in the nature of materials, how the materials functioned, and adopted a more laissez faire approach to making.

Older kids spend a long time making. The little kids will make stuff, they like doing it, but in the older kids, you can see that there's been a developmental shift of some type where they're really thinking hard about what they're building. – Cohort member

One cohort member commented how children seem bound to using the materials they select.

I think someone (child) recently asked for a stapler, which was interesting. I asked the staff if that has happened before? Some children ask for staples and maybe one other time someone asks for glue. I think people are really committed to what's in that box. Because materials they don't use in the box comes back, and they're proud of that and they want us to reuse it. – Cohort member

Staff learned that MBC takes over a lot of museum space, but discovered that the breadth of the exhibit benefits both the children and museum itself. Children and their families enjoyed spreading out and taking their time with their creations. Museums ascertained that MBC provided the foundation for expanding maker activities throughout their facility. Museums turned what may have been considered a constraint into an opportunity for growth.

What we learned in Santa Cruz and at Sonoma is that MBC really takes over the whole space. This was what was originally considered maybe a blocker. MBC definitely engages kids and they stay for a long time and then spread out and just totally overrun a space with it. I think that is because they're building something, and building takes time. A lot of children's museums are based more off of pretend play and having

kids interact with something that does the same thing every single time, so then they can move through a space really quickly. Mystery box Challenge is not that way. It's geared so kids can sit down for 20 minutes or more and sink into it. That takes up a lot of space and a lot of museums don't dedicate that amount of space to maker activities. Most of the museums have adapted their museum to Mystery Box Challenge. I guess there was a bit of a back and forth where they realized that it was kind of a hit. Then like they just let that space be taken over by. – Cohort member

Museums came up with different ways for handling materials. One of the most effective solutions across the board was that rather than having staff pack and repack boxes, museums developed a system where children could create their own boxes by selecting from a large bin of materials. Other museums incorporated recycling into the process, so that children understood the importance of reusing materials and not wasting them.

Staff at different museums experienced a greater awareness and understanding about how children experience making. Museum staff also learned how to interact with children during making, and came to appreciate the intentionality of making experiences with children.

I think that the quality of making requires a little bit of a mind shift so that you understand the flexibility that's going on, and you understand how to interact with children while they're doing that. – Cohort member

I very much enjoyed trying to sort of concretize the way that we were looking at the learning and play behavior and activity that is going on in these kinds of open-ended activities. I really like that this process makes me feel more confident about the kinds of activities that I'm bringing to the table. – Cohort member

Some of the Executive Directors also noted heightened levels of collaboration amongst their staff and volunteers when working with children and parents.

Sustaining the work

Cohort members unanimously want to continue this work. They wholeheartedly recognize how the process of co-creation through MBC has benefited each of their respective museums and their visitors, and validated the value of collaboration and shared learning.

Executive Directors would like to see other staff (e.g., Education staff) from the different museums develop a cohort similar to the one they've developed. Having

such a forum could expand beyond MBC, and provide an opportunity for staff to network and share ideas.

We (the museums) are so small, there's really not that much difference between the Executive Director and the Education Director. We're kind of all doing the same things anyway, but there may be a chance for just the education folks to talk to each other. Some of them just started at their museum. Some of them are new emerging museum professionals. It could be one of their first jobs, and so they may not be able to jump in quite as easily with us Executive Directors or the fact that we all know each other for years.

Cohort members would like the opportunity to visit each other's museum in person to experience the many ways MBC has been adapted and share ideas with other staff. There is also interest in looking for funding to expand and scale MBC to other museums, as well as other formal and informal education institutions. The cohort would like to explore how MBC can be used in schools, on field trips, and as part of community outreach activities.

This past spring, a number of cohort members presented on MBC at the Association of Children's Museums Annual Conference in New Orleans. Cohort members would like to continue to share their experiences through conference presentations, publications, blog posts and other online or in-person communication platforms.

CCM is working with a team from the California College of the Arts (CCA) to oversee a redesign of some of the physical components of MBC, as well as assess the overall exhibit experience with children and adults. The CCA team is also helping to create an MBC website that will provide resources and tips for educators and parents for using MBC either in their institutions or at home.

Cohort members want to think more intentionally about evaluation. How can they really know if and how MBC is making a difference? How do they define success?

How do we measure the outcomes? How do we know we're making a difference? We have to go beyond how many kids did it and show images of kids' creations, or what parents said about it. What are those goals? Is it that that child now feels more confident about themselves, that they can build anything? Do they feel like they're creative? How is the child more confident? – Cohort member

Ultimately, these museums recognize the collective power of this cohort. They are anxious to explore other opportunities together. They envision this model, which they are still refining, as something other museums might want to emulate.

I'd like to see us continue to try and invent some new common programming. I love the nature of this activity where the focus is on creating rather than thinking of us as competitors. We're all in the same children's museum space, recognizing that we're not competing with each other at all. The innovation that's going on at our individual museums can be seeds for innovation elsewhere, but also make our own innovation stronger. I really think that that's a powerful tool. We should continue to collaborate and apply this model of working together as small museums and harnessing the power of these eight people and museums altogether. It helps us to move through this particular space with the resources that we do and don't have available. – Cohort member