Chapter 4

THE ART OF FACILITATION

If you take only one thing away from this toolkit, it should be that how you facilitate your program can make all the difference.

How you become a model and effective facilitator is one of the most important parts of the program and can really change what type of experience children leave with. And equally as important is how you empower parents and caregivers to engage with their children during your program and once they leave your library.

For example, imagine that two different library educators download the same activity from the internet about experimenting with balls and ramps. One of the educators gathers all the children together at the start of the program to talk about gravity and how the height of the ramp affects how fast gravity pulls the ball back down to the earth. Then the educator asks that each child take one ramp, one ball, and a stack of books and that they add one book at a time to increase the height of the ramp to see if the ball moves faster or slower.

Meanwhile, the other educator puts out a variety of different types of materials that children could use to build ramps (e.g., cardboard poster tubes, foam insulation, curved molding), along with balls of various sizes, and asks that children explore how to make the ball move. This educator walks around the space and asks children why they think their ball is moving faster or slower and if the ball feels heavy or light. The educator inserts the word gravity when a nonverbal child points in excitement at how fast their ball moved.

Even though both educators start from the same activity, the experience is very different for the two groups of children. Because most of us are accustomed to the first type of learning that we experienced ourselves in school, we tend to gravitate toward the step-by-step model that explains how something works before we try it out. But the purpose of this

toolkit is to push library educators slightly out of their comfort zones to engage children in tinkering experiences that focus more on exploration and curiosity rather than on learning a particular concept.

This method not only provides a more playful atmosphere for the children, but it also models for parents and caregivers how this type of exploration can easily be facilitated at home, with no planning required! Adults are reassured that they don't need to be experts or know the subject at hand but rather can explore and co-learn alongside their child.

Likewise, you don't have to be a facilitation expert out of the gate. Facilitation techniques are tried, evaluated, and iterated on. We're always learning to be better facilitators. Just as you encourage participants in your program to explore and learn, give yourself room to develop techniques that work for your community. Facilitation is a skill that you continually develop.

Levels of Facilitation

Facilitation, meaning direct staff intervention or involvement—whether in the form of teaching tool safety or just asking questions to prompt exploration—can run from low to high. Some activities might start as low facilitation and then move to medium or high facilitation depending on the level of engagement by both adults and children. Suppose a parent begins using terms the child doesn't understand but helps them explore the concepts. A staff facilitator could help to elicit understanding by modeling questioning techniques. This would be considered a higher level of facilitation. Called *scaffolded learning,* asking the right questions is meant to assist a child in interpreting what they're experiencing. The more the facilitator has to help the parent and child understand the concepts behind a particular activity, the higher the level of facilitation involved.

In the Little Makers program, activities that inherently require a high level of facilitation are categorized accordingly because of either safety considerations or the use of tools and materials that may be unfamiliar to both children and adults. For example, one of the highest levels of facilitation takes place during activities such as woodworking. Adult assistance is needed with cutting, gluing, joinery, etc. This activity starts with the facilitator demonstrating tools and safety techniques with the parent or caregiver and child. Then the facilitator steps back to let them explore.

When it comes to teaching adults to facilitate woodworking, the emphasis is on explaining how to be safe using any of the tools, the use of safety glasses, and being aware of your body in space in relation to the tool being used. The staff facilitator provides

reminders when necessary and discusses how to introduce new tools—particularly saws—with the adults before offering them to the children. We set up our highly facilitated activities further in the back of the room so they were less accessible to children without adult supervision and so parents and caregivers who perhaps didn't want their child to participate could easily steer the child away.

Another highly facilitated activity is the circuit activity using conductive and nonconductive dough. When parents, caregivers, and children sit down at the table with the materials, a facilitator is on hand to ask questions that prompt participants to figure out what the dough, wire, and LED lights are for, in case the materials may be unfamiliar. If not addressed with facilitation, unfamiliarity can sometimes lead to disengagement.

TRY IT!

Check out the Circuit Exploration in Resources.

In our case, the conductive dough and circuits didn't initially seem to engage the children when we tried to offer them without much facilitation. But when the staff facilitator approached the table and explained to the children that they could use the dough to test whether a bulb lights up (rather than smooshing the dough to build with as if it were playdough), they began experimenting. Once parents and caregivers understood the open and closed circuits, the station got very busy. Both adults and children were learning at the same time why some dough is conductive and how to create a closed circuit to turn the light on.

Through trial and error, we found that the circuit activity is most successful with a facilitator who understands the concepts of the activity. We also found that testing all the components offered, particularly the LEDs and batteries, in advance is really important. Facilitation is iterative. Give yourself room to learn which types and levels of facilitation are best for each of your program offerings.

Naturally, highly facilitated activities require more consideration as to how or whether to offer them. The larger the number of highly facilitated activities offered, the more staff is necessary. And, if there are safety issues involved (such with the woodworking activity), a staff member must be on hand at all times. Usually, because of staffing shortages, we had only one high-facilitation activity offered during each session.

TRY IT!

Check out the Woodworking Exploration in Resources.

Other activities like using the overhead projector and wind tunnel are considered low facilitation. Children (and adults!) can freely and openly experiment with them, and the materials are generally familiar or easy to figure out. When they saw our setups, they knew what to do right away. Still, having a facilitator available to suggest new materials or ask questions to guide the children's discovery was often very helpful, making these activities more medium facilitation.

For example, at the wind tunnel station, while we did confirm that children could play for quite a long time just letting scarves, paper, or feathers fly up and out, we had staff

on hand to ask questions. If parents or caregivers weren't interacting, staff would offer prompts so the adults realized that wind resistance and gravity could be explored through this activity. Questions may include: Why won't that item fly out? What about this one? Can you sort them out so you have a pile of things that fly and ones that don't?

TRY IT!

Check out the Wind Tunnel Exploration in Resources.

In order to minimize facilitation for some activities, picture prompts and occasional demo objects were very helpful. With the use of these tools, we didn't have to have a staff facilitator available at all times for every activity. Parents or caregivers would engage with their child using the demo object to begin the activity.

For example, when we designed a thematic activity around wind and movement, we built a car with a sail and placed it between the woodworking station and a design-creation area. As they entered the room, we told adults that the challenge for the day was to design and build a wind-powered vehicle. Children could interact with the wind tunnel and other force and motion activities right away. As they engaged, many of the parents and caregivers used the pre-created demonstration vehicle to inspire their children to design and build something of their own.

While we rarely provided examples directly tied into the stations and activities of the day, in this particular case, we found it very helpful. The examples we did always provide were examples of childrens' work displayed on our shelving units. So even though children, parents, and caregivers weren't seeing examples directly tied into the activity they were doing, they were always seeing creations and made objects that could spark ideas for new creations and objects.

Other low-facilitation activities also included experimenting with the conveyor belt and various blocks and ramps. Low facilitation doesn't mean low interest or engagement with the activities. In fact, we often changed the types of materials used for these activities each week to keep them fresh. Different kinds of blocks and ramps with various sizes, shapes, and finishes were used.

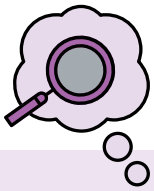
TRY IT!

Check out the Ramps Exploration in Resources.

For the ramp-building activity, sometimes there were cardboard tubes out, sometimes there were long wooden cove moldings from the lumber store, sometimes there were rubber ramps, and sometimes all of those things were available. Sometimes wooden balls were out to use on a ramp. Other times it was felt balls or even cars. Sometimes felt balls were used for sorting rather than for going down the ramp or being put on the conveyor belt. Many children happily spent quite a bit of time sorting things in different ways. Posted on the walls were terms and questions adults could use to talk to their children about force, motion, sorting, and

counting, so this activity was low facilitation. Very little modeling had to be conducted in this area, other than asking open-ended questions.

However, at times, even the ramps became medium facilitation depending on the age of the child and whether an adult had to help with ramp repairs or redesign. If a child struggled too much, a staff facilitator would typically ask questions about *why* something might be happening: Why do you think the ball falls off that curve every time? Or they might ask: Can you try something else, like another ball? Can you recurve or straighten the ramp? The necessity for intervention and prompts increased the facilitation level of the activity.



PAUSE AND PONDER

As you plan your activities, ask:

- What type of facilitation (high, medium, or low) does each activity require?
- How many staff members are available for facilitation? How does that affect the type of activities you might offer?
- How can parents and caregivers be empowered to help with facilitation? What signage or visuals can you provide to help them?

Techniques for Question Prompts

The Little Makers program focuses on co-learning. Have fun, relax, and take advantage of not having to have all the answers. Adults should act as guides along the way to help children work through frustrations and also provide scaffolding (or small hints and tips) to further their experimentation and deepen their understanding.

We realized that keeping it simple is the most important way to start. We kept questions short and to the point when addressing young children. We also modeled language using synonyms with parents and caregivers to increase their exposure to the idea that asking preschool-aged children open-ended questions elevates learning in every arena, not just STEM.

Modeling language and the questions to ask during an activity allows parents and caregivers to continue to develop those skills with their children at home. As caregivers focus their questions, they help their child make sense of what's happening to or around them, and the learning becomes more concrete. The emphasis should be on getting children to talk and not limiting them to yes or no answers. "What" questions allow a child to brainstorm or observe something they noticed. "Why" questions ask them to dig deeper into their understanding or allow them to show off their knowledge on a particular subject.

As families work on a project at the library, parents and caregivers can be prompted to ask:

- What happened to the_____?
- What have you already tried?
- What have you changed about what you're creating?
- What are some ideas that you haven't tried yet?
- What are some things you saw other people trying?
- What do you notice about _____?
- What do you think will happen if you _____?
- Why do you think _____ happened?

Keep in mind that when you ask a "why" question, the answer may not be conceptually within a child's reach. But just by asking the question, you're stretching a child's mind to find the answer. Be sure to be patient and give them ample time (at least two minutes) to process and respond. Be mindful to not correct imaginative answers that don't fit the science; instead use them as springboards for further prompts in the right direction. Children may—and often do—just shrug and say, "I don't know." To get them past that stage, provide language prompts to dig deeper into their thinking or understanding of what they were doing.

For example, when two boys played with a ramp system, one ball kept flying off the curved ramp. One of the adult caregivers asked, "Why do you think the ball keeps flying off on that curve?" Both boys just shrugged and went back to putting more balls down the ramp. The adult prompted, "Does it have anything to do with the weight of the ball? Look, what just happened with that particular ball?" One child looked at the wooden ball he had in his hand and said, "The felt balls don't work." He then let his ball go down the ramp, and it flew off the curve. The adult said, "Why didn't that ball work?" The child ran to gather up more balls and the other child said, "Maybe it was too fast."

TINY TIP!

Even if a child is nonverbal, asking questions is still vital! You are building a child's mind while finding the answer and modeling important social skills.

The significance of that interaction is that the adult pursued the question despite the initial reluctance of either child to speculate. Each boy eventually tried to answer the question logically. This interaction may lead to a more direct discussion later or make a child stop, think, and investigate further. All of these are social interactions, and the interplay of words is a powerful part of the learning process. In fact, parents told us that social interaction between the children was a main missing element in the virtual, at-home programming.

Managing Frustration

When a child is working on something and the caregiver or library educator notices they've begun to experience difficulties, rather than telling the child how to fix a problem, we try to coach the child on the path to self-discovery. For example, during one of our sessions on circuits, a child was having a hard time getting the LED to light. No matter what battery she connected it to or which way she twisted the wire connectors, the light just wouldn't go on. She worked on it for about five minutes.

Noticing that she was about to walk away frustrated that things weren't working, a facilitator approached. Rather than saying, "Maybe that light is burned out," she said, "Can you think of a reason why that bulb may not light?" When the child said that the batteries didn't work, the facilitator affirmed her hypothesis and asked her to change the batteries to see if her idea was correct. When that didn't work, the facilitator prompted her to think more about it by saying, "Do the lights ever go out at your house? Why?"

This got the child to think about the bulb rather than the batteries or connections. She pointed to another bulb and said, "Can I try that one?" There were many bulbs of varying colors, so the facilitator said, "Why not try many of them to see what happens. Do you think they'll all work?" After some testing, the facilitator followed up by handing her more to try and saying, "What colors do you think will light if you try these?" The girl spent another 10 minutes trying out the bulbs and finding out that some of them also didn't work. She began sorting them and was quite happy to see that the original problem wasn't the connections she had made but a burnt-out bulb.

The child had gained confidence by trying many bulbs. She then helped another child complete a circuit to work together to test objects. The facilitator continued to ask questions such as, "Can you make more than one bulb light up at a time? How would you do that?" A question prompt at the right time can lead to more exploration and investigation rather than frustration and defeat.

At times, though, children might just need to take a break for a minute and step away from the activity that is frustrating them. That's when having different activity stations set up for a child to move to or a quiet nook for reading and imaginative play can be helpful. A break gives the brain a moment to rest and reset, so the child can come back more calm and with potentially new creative ideas.

Sneaky Science

Throughout the Little Makers program, we aimed to help make STEM concepts more accessible. One way to do this is by "hiding" the science in the play and exploration while using facilitation to point out the STEM learning when it naturally makes sense. Remember, the objective of our programming is to help parents and caregivers engage their young children in STEM-related talk and activities. This type of programming is designed to both engage children and help adults understand how children learn and grasp how the world around them works.

There may be no obvious STEM outcome observable from the children's activities; however, children gain valuable insight into the world and materials around them through play and exploration. That's not to say there wasn't a focus on a particular set of scientific concepts to explore—just that there was no expectation to build a specific project, for example, a car to go down a ramp. Instead, children could freely play with and explore the concepts of speed, force and motion using the wide variety of the materials on hand. Parents, caregivers, and children built a myriad of ramps together at varying heights. They tried making loop-de-loops with rubber ramps, made hills, incorporated curves, and used many different materials to make their ramps work.

They explored rolling various balls down the ramp to see which would go farther, or faster, or around the curve. They discussed why things worked or didn't work. They kept revising or rebuilding when things didn't work, and even tried to make their designs better when they did work. Adults talked about force and motion and prompted the children to wonder what might happen if the ball was dropped from a certain height or pushed harder. They wondered what would change if they tried different materials, and they devised tests to find out. The whole process was inspiring to watch. And though it all, the STEM learning happened organically.

TINY TIP!

Children learn through observation, repetition, trial and error, and experimentation. Be patient and let children lead. They are much more engaged when they do.

Through their explorations and play, we saw significant evidence of scientific reasoning skills. Children investigated materials, tested hypotheses, revised expectations, and tested again. They were actively trying to make meaning out of what they were doing.

As another example, we hosted a day of exploration involving light and shadow. The room being used was kept dark, and there was an overhead projector, a light table, and flashlights, along with many props to use with each tool. The concept that light travels through materials with holes, like lace, and that solid objects block the light is one way of learning how shadows behave. This helps children extrapolate and begin to make sense

of the world around them. When they experimented by laying a dark object on top of a colorful projection to block the light, they then had observational data to understand. Children may not be able to explain the scientific phenomena or use the related vocabulary, but they did gain a better understanding of light and shadow.

Further, with an adult facilitator using words like opaque, translucent, and transparent, the children could begin to connect those words to what was happening when light shines through, gets blocked, or is partially visible. All participants had significant involvement, vocabulary and concepts were used during their play and experimentation, and everyone was busy and challenged.

Helping Adults Take the Lead

One staff member noted that the person facilitating an activity is helping to empower parents and caregivers to both understand the language related to the scientific concepts at hand and then convey that understanding to a child. When interacting with their children, adults were generally too busy to read lengthy signs with explanations, descriptions, directions, or concepts. They need one-word prompts or short questions that they can view and use in the moment. We adapted our signage in response to help them.

For example, around the aforementioned light table, we placed the terms *translucent, opaque,* and *transparent.* Parents and caregivers could see the words and were subtly reminded to use them with their children as they interacted with the materials at the station. Definitions were posted as well, so if they were unsure of the terms, there was something available to refer to. This proved to be helpful.

TRY IT!

Check out the Light and Shadow Exploration in Resources.

Through the Little Makers program, we encourage a maker mindset with the way we speak with and praise children. For example, in the midst of play, staff facilitators might describe what a child is doing using some of the STEM vocabulary. We actively strive to acknowledge and praise their actions, efforts, and perseverance, all of which are more important than "success." Then, we point out to the adults what we did and why we did it. Giving adults and children the language to ask questions around the problems allowed them to explore in different ways.

A goal is to help adults have similar conversations with their children even after they leave the library. What better way to accomplish this than to start practicing in a safe environment? Don't be afraid to be explicit and let parents and caregivers know exactly what you're doing and why. Mention that these are the types of things they can continue to do back at home, extending their child's learning.

Guiding Facilitation Virtually

Running programs virtually for our at-home programming provided a whole new challenge. We needed to guide adults on how to facilitate with their children during the week without us there to model and facilitate it for them. Through the Niche Academy platform, we were able to not only meet with parents and caregivers in real time during regularly scheduled Zoom meetings, but we also provided tips and strategies throughout the week that could be viewed asynchronously. Several examples are provided below.

Go slow. Your child's ability to process information can take a few minutes, so give them enough time to put it all together.

Let your child lead. Your child sees the world quite differently than you do. So much is new to them. Your child's questions and suggestions for new things to observe and try can lead to discovering and learning something new together. Allow them to decide what to play with and how. Ask: "What would you like to try?"

Let children make their own observations. Anyone can notice and observe what's going on—there are no wrong answers. Listen carefully and encourage curious exploration and experimentation. Your enthusiasm in the process is more important than arriving at a specific place. Ask: "What do you notice?"

Challenge yourself. Your child may want to use things in different ways that you may not think are appropriate or that could make a mess. Ask yourself if what your child wants to do is safe. If there's no danger of injury and you can deal with the mess, let them explore and try to use things in new and novel ways.

Reflect. Take time each day to reflect with your child. Reflection helps reinforce what we learn each day. Ask them what they did, what was fun, and why. Listen for them using new words, draw pictures about what they've done or discovered, and re-enact or tell stories through play with their toys.

Try to avoid giving answers. Play is about discovery. Your child will explore more deeply if you don't tell them what you know, and you let them discover something new for themselves. Ask: "What do you think? What do you wonder?"

Explain your thought process. When you do help solve a problem or share an observation, verbalize your thought process and explain what you see.

"I think I almost got more out of it than he did. Just learning how to play with your children, I think is so important, especially in times of technology." *—Parent/Caregiver*

Throughout the virtual experience, we reinforced to adults that conducting maker activities with young children provides opportunities for observing, exploring, asking questions, seeking answers, making predictions, and sharing what is discovered. By tapping into children's natural curiosity, we allow them to come to their own conclusions.

We wanted adults to recognize that if a child is especially excited about a specific object, they should try to play and learn alongside the child by exploring the properties of that object and learning what they appreciate about it. For instance, sometimes simple items like tape can be the most exciting for a young child. We already know from experience that tape is sticky. Imagine seeing a roll of bright red tape for the first time and not knowing what it is! We wanted to encourage adults to give the time and space to wonder alongside their children. Below is another example of a set of tips we offered to help facilitate these discussions.

- Orient your child to new tools and materials. Give them a place and time to explore these new materials safely.
- Wait before jumping in to help your child. Let your child work through difficulties. When you do step in, ask questions rather than offer a solution. Try using "what if" statements.
- Ask open-ended questions and then wait for your child to answer the question. Respect your child's ideas.
- If your child asks you a question you don't know the answer to, say, "I don't know the answer. Let's figure it out together." Work together to solve the puzzle.
- Use relevant scientific and technical terms in context. Explain the meaning of terms by using analogies, for example, "A ramp is like the slide in the playground. Ramps help move heavy things like your body from high to low."
- Give suggestions rather than directions.
- Show enthusiasm.
- Encourage safe risk-taking and experimentation.
- Celebrate moments of wonder, surprise, and joy.

The virtual experience of our at-home programming reinforced what we already saw through in-person programming: Parents and caregivers are a key piece of the puzzle. Whereas in the library, adults can sometimes let the library staff do the work of facilitating, with the programming at home, parents and caregivers were the main facilitators. When we design programming, we need to think about supporting their needs equally as much as the children's needs. We're continuing to work on how the resources and experiences we had online can be translated to an in-person environment to support adults in the best way possible.