



Chapter 5

PROGRAM PLANNING, REFLECTION, AND ITERATION

If the pandemic has taught us anything, it's that we're highly capable of being adaptable, switching gears, and creating new experiences with lasting effects.

Most likely, you already have some form of early childhood programming taking place, whether it be through storytime or other hands-on programming and events. The knowledge we share in this guide isn't suggesting that you scrap what you've already been doing in favor of some shiny new program. Rather, we hope it encourages you to explore what's possible when you modify or enhance your current early childhood offerings.

The important part is to set goals with clear timelines and deliverables and not be afraid to just give something a try! It's so easy to push changes off to the next month or year, but incremental changes can add up and make a big difference over time, so don't be afraid to start small.

Program planning, reflection, and iteration form a constant cycle. As lifelong learners, we know that programs are never "perfect." There's always some way that we could reach a child that is struggling, invite a new caregiver into the experience, or work on our own question-posing strategies to be the best models for adults. This constant iterative programming cycle is part of truly embracing the maker mindset that you hope to instill in the children. Thinking of yourself as a "maker" and "tinkerer" of child programs can be a



Chapter 5 PROGRAM PLANNING, REFLECTION, AND ITERATION

very helpful mindset. Focus on making small changes with intention and being flexible to learning from and with your patrons and staff as you go.

In this chapter, we talk about our ever-changing program model and the ways in which we gather feedback from our staff and families to make adjustments and keep improving. We're still tweaking and refining our program today!

The Evolution of Program Planning

As mentioned, program planning is never done. Our program evolved over time as we learned more about the needs of our community, what worked, and what didn't. We wanted to create an environment where children and caregivers could freely engage with materials, experiment, and play. After surveying many state preschool curriculum guides and looking at the way other programs were setting up their spaces and what activities they were offering, we began planning.

After exploring, it was agreed that we could categorize the concepts we hoped to reinforce in the Little Makers program by using the common acronym STEM as the basis. We began with the following brainstorm:

Science	inquiry, light, color, shadow, gravity
Technology	coding, circuits, patterns, sequencing
Engineering	building, ramps, woodworking, circuits
Math	measuring, counting, patterns

We also kept in mind the [Exploratorium's Learning Dimensions tool](#), outlined in Chapter 2, to guide us. We then reflected as a team about what the most important characteristics of a Little Makers program are so we could always keep them in mind when planning. Essentially, we tried to identify what makes a Little Makers program a Little Makers program.

We decided on these essential characteristics:

- Playful exploration of STEM
- Open-ended
- Authenticity of materials and tools

In the initial planning stages, we considered having multiple activities around one theme, but this approach seemed to lose the open-ended quality we were striving for and became too limiting. It was also difficult to figure out how to use themes without dictating the outcome of each activity. We wanted to be sure we weren't setting up families to produce a particular "thing" or finished product. Instead, we noticed that when we approached the theme more loosely (a week of ramps and things that roll, a week of

exploring light, reflection, and color, a week of exploring sound, etc.) but supplemented it with other self-directed play stations where lots of tools and materials were available to explore, things just happened organically and were more in line with reaching our goals.

We decided to focus on simple activities and play that lead to a deeper understanding over time. One of the ways children begin to develop understanding is repetition. Every time they hear something said or watch it done, they internalize and extrapolate. This is equally as important for adults too! Having adults see the same activities modeled for them over and over again can help them internalize the learning and feel more confident to try similar things at home. We also tried to illuminate how these concepts are already part of our everyday lives by drawing analogies, pointing out similarities, etc.

SMALL TRIALS: POP-UP EVENTS

At the start of our program, when the Keene Public Library was under construction, we offered pop-up events to help familiarize staff with the tools, while allowing them the opportunity to practice facilitation techniques. A pop-up event was a single activity around a particular topic, such as circuits, where we experimented with conductive clay.

These events took place during the same two-hour window of time as our regular Saturday programming, but because the library was under construction, they often took place in the Youth Department at a single table or in the small story room. And because of the location, they weren't limited to preschool-aged children, so the age range varied greatly.

These trial runs were wonderful experiments that helped flesh out which activities and tools we might want to incorporate into our regular Saturday programs once the new Little Makers space opened up. They became an important part of our program-planning evolution.

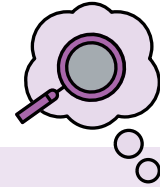


Our first sessions entailed a lot of trial and error. Sometimes it seemed as though we put out too many stations of activities, but we knew we needed more than one activity for this age group. The challenge became to have enough, but not too much, available. We decided to structure each session with two or three consistent and repeated activities, alongside two new activities. That equation struck the right balance for our community.

In addition to the specific activities we offered, our program plan needed to include open-ended questions and language prompts. As we discussed in Chapter 4, facilitation is a



key part of how a program is received. Using open-ended questioning techniques and language is so important for young developing minds. Even if a child can't use the words themselves, exposure to scientific language prepares their minds for the future. Children learn language through interaction. The interaction can be specific verbal discourse about a particular topic or indirect commentary during an activity—with each iteration, children begin picking up the terms.



There are a host of great program planning resources available online. We used a helpful [Learning Tool](#) from Making+Learning, shown below. We customized ours by adding Little Makers characteristics that are important to us, along with the Exploratorium's Learning Dimensions, so we would be sure to keep them in mind as we developed our plan.

PAUSE AND PONDER

As you begin your program planning, think about:

- What are the main goals of your program?
- What makes your program unique?
- How do your current program offerings match up with the Exploratorium's Learning Dimensions? Are there any gaps or places where you could tweak or enhance your programming?
- In what ways can you "start small" and try making minor changes to your programming?

Little Makers Program Planning

1 Learning Goal

What do you want your learner to be able to do, know or feel?

LITTLE MAKER CHARACTERISTICS

Involves playful exploration of STEM
Open-endedness
Authenticity of materials and tools

LEARNING DIMENSIONS

Initiative and Intentionality
Problem Solving and Critical Thinking
Development of Understanding
Creativity and Self-Expression
Social and Emotional Engagement

2 Evidence

What would it look like to demonstrate this learning goal?

*"I would see..."
"I would hear..."*

3 Activities

What activities would produce the intended evidence of this learning goal?

How would you design the activities given maker-based characteristics?



“This has definitely helped me come up with ideas on ways I can interact with [my child] and get him kind of thinking about things, building his confidence, and that he can do these things.” — *Parent/Caregiver*

The Importance of Reflection

An essential, and sometimes neglected, part of developing a program is taking time for reflection. We all tend to be exhausted after a program has ended, but we can't stress enough how just taking five minutes to jot down a few notes before you leave for the day can really help. Make sure to do these reflections after each session. Take the time to hold discussions with staff and other volunteers who ran the program. It's incredible what valuable insights can be shared and capitalized upon.

For example, after several debriefings, we began to wonder if having a theme for each session that connected the activities together was essential. Did we see the children making and tinkering differently when the program was unstructured and only loosely connected thematically? We found that the answer was no. That allowed us to let go of some of the angst generated around what the program would look like on any given Saturday. This, of course, doesn't mean that planning didn't take place—that was a necessity! However, it allowed us to let go of constraints and create a more playful environment for the participants and the library staff involved. The stress of trying to connect each activity to a particular theme was gone.

For all staff and volunteers involved, ask yourselves questions related to the program sessions, such as:

- How did the session work? Was it successful?
- What did you observe? What stood out to you?
- Is the environment impacting the programming?
- How can you improve or change the environment to further benefit patrons?
- What resources do you have on hand in terms of materials, personnel, space, etc.?
- Did you have sufficient staff for facilitation?
- What might you do differently next time?

It's also important to reflect on what children learned during the program. Again, referring back to the Learning Dimensions tool can help. We've included the [Learning Dimensions](#)

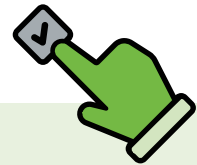


[tool](#) and an expanded view of all of the indicators of children’s learning in the Resources section. When you review this tool, think about the goals of your program and what levels of agency you might expect. Did you notice any children engaging in building together or working side by side? Were they noticing phenomena or asking questions about what they observed? All of this becomes valuable information as you determine what changes you might want to make.

You may have other skills that you hope children gain (outside of the levels of agency outlined in the tool). For example, one of the essential scientific skills we noted was perseverance. We could see a lot of evidence of that when kids were exploring with the pulley system, the conveyor belt, the ramps, and even the circuits. Kids kept trying things and working with others to figure it out.

From there, we created a reflection sheet that we offer in the Resources section. Feel free to use it as-is or adapt it as needed to fit your particular program. The purpose for us was to:

1. Document the implementation of the program.
2. Provide a tool for program facilitators to reflect on the program in practice.
3. Track potential progress toward meeting intended outcomes and note the strategies implemented to reach them.



TRY IT!

Check out the [Facilitator Reflection Form](#) in Resources.

Reflection for Adults and Their Children

Reflection is an integral part of STEM learning. Reflecting helps us process information. This is especially important and empowering for young children because much of what they do is new to them. Reflecting involves remembering what things looked like, how they changed, felt, tasted, and more. Essentially, reflection helps children (and adults!) remember what, how, and why, offering them dedicated space to think about and process what they experienced and learned.

Taking time to talk about what was fun, why it was fun, what happened, and why it happened helps children make meaning and connections between what they’re doing and the world around them. You might have a conversation, tell a story, or make a drawing together. You could look at photos of what you made that day and talk about it. You may find children reenacting events with their dolls or telling their own version of an event through play. You can encourage children to rethink experiences by recalling what fun you had together, what problems you had, how you solved problems, and what you discovered. What’s more, reflection that includes talking, writing, and drawing develops core literacy, comprehension, and communication skills.

We experimented with collecting reflections from adults and children through both our in-person and at-home programming. We describe the methods we used below.

VIDEO SELFIE STATION

For in-person programming, we played around with setting up an area where children could video themselves sharing a bit about the creation they made. Since we didn't have a totally enclosed photo booth setting available, we just set aside a small area (in our case, a couch) where video interviews could be conducted.

To help them reflect, we asked questions like:

- Tell me about what you made.
- Did you have any big problems while you were creating this?
- What could you do to improve your design?
- Did anyone help you with this? How?



Some children were shy when a library educator would video interview them. We then encouraged parents and caregivers to ask the questions and explored whether this could be a self-directed station. We're still exploring!

SCAVENGER HUNT

For our virtual programming, we used an app called [Goosechase](https://www.goosechase.com/) to go along with our weekly Zoom meetings and Niche Academy activities. This was consistently one of the most popular activities we suggested. Each week we posted a series of different scavenger hunt challenges aligned with the theme for that week. Here's an example for our week focused on Light and Shadow:

Hunting for Light: Light is a type of energy that allows us to see things in the world, but where does it come from? Find a light source in your home and take a picture of it.

The Sun: The sun is a big ball of light energy. The sun is what gives us light during the day. Draw a picture that includes the sun and take a photo of it.

Blocking Light: Use your flashlight and see if you can block out all the light with an object like your hand. Take a picture of how you blocked the light.

Blocking Light and Making Shadows: If light can't pass through an object, like your hand, then the object is *opaque*. Using some of your toys and your flashlight, play with blocking light and making shadows. Experiment with making shadows on different surfaces, such as a wall, a curtain, a table, or the floor. What do you notice when you hold the flashlight close to and far away from your toy? Take a photo of the shadow you create.



Hunting for Shadows on a Sunny Day: Take a walk outside on a sunny day and look for shadows. What do you find? Take a photo of your favorite shadow. Tip: If you take a walk a few hours before or after 12 noon, it's easier to find shadows.

Making Shadow Art: On a sunny day, find your shadow and trace it with chalk. Decorate it and take a photo.

Hunting for Transparent Objects: A *transparent* object is one that you can see through. Light can shine through a transparent object like a glass of water or a window. Find a transparent object and shine your flashlight through it. What happens? Take a photo to share.



Bouncing Light: When you shine a light on a shiny surface like a mirror, the light bounces from that surface to another. This is called *reflection*. Can you bounce light off your mirror and onto the wall? Give it a try and snap a picture.

At the end of each week, we would collect all of the submitted photos and put them in a slideshow that we would feature on our final live Zoom meeting for the week. Both adults and children loved seeing themselves and their scavenger hunt finds featured on the screen. These photos allowed for a natural moment to reflect and talk about what they did, what they found, if anything was difficult or surprising, etc.

IMPROVING YOUR PROGRAM USING DATA

When it comes to measuring success and collecting data about how the program went, we often hear library educators say, “I’m still working on that.” Don’t beat yourself up about it. Know that this is a struggle for everyone because most of us aren’t trained evaluators!

If you have the budget, hiring an external evaluation team can be a great way to get some concrete data about your programming. Through the Little Makers IMLS grant, we were able to do just that. However, we also tried to experiment with ways to collect data ourselves that fit in naturally with the program.

Below we outline three methods you can try to collect valuable data you can then use to continually improve upon your program.

Interviews

Conducting in-depth interviews can involve a major investment of time, but asking brief interview questions can serve as an informal way to make connections with and get feedback from parents and caregivers who attend your program. The goal for any interview is to get insight into a person’s experience and what they thought and felt. Rather than the interviewer talking and telling, you want the interviewee to talk as much as

Chapter 5 PROGRAM PLANNING, REFLECTION, AND ITERATION

possible. Through the conversation, you can identify what information they share seems most important to them and follow that direction to delve deeper.

If you need a more systematic way to collect data for reporting purposes to a funder or other key stakeholder, then you'll want to conduct more formal, in-depth interviews where you invite participants to be interviewed for 20 or 30 minutes. The introduction for this type of interview is extremely important because establishing trust and building rapport help people open up and answer the questions you ask honestly.

You'll want to ask permission to record the interview (your phone works well) and then use a transcription app, like [Otter.ai](#), to transcribe the audio recording when it's time to analyze your results. Remember that making sense of what you heard during the interview and compiling the data in a systematic way can be time-consuming. If you go this route, be mindful to stay objective and not cherry-pick the data, focusing on only what you want to hear.

Asking brief interview questions can also serve as a great, informal way to foster interactions with parents and caregivers—and it can be done via email or phone, in addition to in person. Have a notebook handy to jot down key ideas and thoughts as they emerge and keep a record of these conversations on your staff reflection form as well. If possible, try asking the same series of questions to see if you can see any patterns emerge.



TRY IT!

Check out the [Parent/Caregiver Interview Guide](#) in Resources.

Surveys

If you're considering using surveys as part of how you measure the success of your program, our advice is to keep it simple. If possible, start with a survey tool already in use at the library so you won't have extra data to analyze and your patrons won't end up with survey fatigue. It's a real thing!

We decided to piggyback off a survey tool we were already using at our library, [Project Outcome](#), published by the Public Library Association, a division of the American Library Association. This is "a free online toolkit designed to help public libraries understand and share the impact of essential library programs and services by providing simple surveys and an easy-to-use process for measuring and analyzing outcomes."

There are seven standard questions and three questions that you can customize to meet your specific needs. The resource includes both immediate surveys (intended to be delivered right after a program ends) and follow-up surveys (intended to be sent out sometime later after participants have left your program). We chose to modify the follow-up surveys since we were most interested in learning what "stuck" about our programming. Then, we added the following three customizable questions that focus on child and caregiver outcomes as well as soliciting a story about their experience. As you will notice, the questions were directly related to the Exploratorium's Learning Dimensions too.



“It gives me more confidence because it showed me that it’s okay to let her lead sometimes, not always have an answer, and look up answers together.” —Parent/Caregiver

Little Makers Survey Questions

(Customized Questions 8–10)

8. Parent Outcome Multiple Choice: What thing(s) did you learn by participating in the Little Makers program? (Check all that apply.)
 - a. I feel more confident when doing open-ended tinkering and play with my child.
 - b. I ask more “how” and “why” questions.
 - c. I think more “out loud” with my child.
 - d. I follow my child’s lead more.
 - e. I focus more on the process than the product now.
 - f. I share my excitement and engage more with my child when discovering.
 - g. I pay more attention to the language I use while my child is tinkering and exploring.
 - h. I better understand the “maker mindset.”
 - i. I see more ways STEM is already embedded in my child’s everyday life.
 - j. Other, none, or N/A
9. Child Outcome Multiple Choice: What behaviors has your child demonstrated as a result of the Little Makers program? (Check all that apply.)
 - a. Responding — S/he has initial interactions and makes observations during activities.
 - b. Exploring — S/he probes the problem, variables, and/or possible solutions.
 - c. Owning — S/he takes intellectual risks and/or applies understanding.
 - d. Initiative — S/he develops own ideas or goals and/or expresses interest.
 - e. Problem-Solving — S/he demonstrates troubleshooting and/or trial and error.
 - f. Understanding — S/he has moments when s/he “gets it.”



- g. Creativity — S/he uses materials or thinking in novel ways.
 - h. Socio-Emotional — S/he demonstrates increased confidence, collaboration, and/or personal development.
 - i. Other, none, or N/A
10. Parent/Child Outcomes Open-Ended: Please share one specific memorable highlight from the Little Makers Program. (Perhaps elaborate on your responses to questions 8 or 9).

One of the wonderful benefits of using Project Outcome is that the surveys were developed with a national audience in mind and have been validated. The surveys are intended to be delivered electronically, and the website includes a platform to analyze your results, taking some of the time burden off your staff.

Talkback Board

One informal way we tried to collect feedback was inspired by the University of California, Irvine’s Connected Learning Lab [Talkback Board](#). A particular prompt or question is posted in a highly visible location (bulletin board or white board), and patrons are invited to respond or place their votes. We posted questions that we were curious about, like “What did you learn today? Where did you get stuck?” Then, we left sticky notes out with writing utensils for patrons to write their responses and post them on the board. It provided a quick and easy way to get a general sense of how a program went that day or if we were able to meet a particular goal.