Living Laboratory®
Developed at the Museum of Science, Boston

Researcher-Visitor Interaction Protocol:
Observation and Interview Data Collection Guidelines

Preliminary Note: While this guide is written to aid in data collection and interpretation around Researcher Interactions with visitors, most of the same principles apply to educator interactions with visitors through Research Toys.

Purpose and overview:

The purpose of formative evaluation is to help you learn more about visitor interactions with Living Lab researchers at your site so that you can make improvements to your program. In order to do this, we are providing you with tools that will allow you to conduct observations and interviews with visitors in order to develop a better understanding of what they are taking away from these interactions, and to learn more about the visitor experience at your institution.

The purpose of this formative evaluation is **not** to critique individual researchers, or to provide individualized feedback to researchers. In order to maintain visitors' confidentiality, it is important **never** to share visitor comments directly with researchers. If you have strong concerns about the way a researcher is communicating with visitors that need to be immediately addressed, please discontinue data collection and address those concerns according to protocol at your site. Please note any issues of this nature on the debrief form, without including any identifying information about the particular researcher involved.

Process:

The process of formative evaluation can be briefly summed up in the following steps:

1. **Ask questions:** What do you want to learn about your program? What questions do you have about how researchers and visitors are interacting? What are your goals for your program? What do you expect to see? What would be ideal? Write down all of your questions before beginning the evaluation, and keep them in mind. They will help guide your interpretation of the data you collect.
2. **Collect data:** Using a standardized observation and interview sheet, observe interactions between researchers and visitors and interview visitors afterward. After each session, write down answers to the debrief questions.
3. **Organize data:** Enter all of the data into an easy-to-review format so that you can look for trends and patterns.
4. **Analyze and interpret data:** Look for patterns and compare what you are seeing to the goals. Talk over the data with colleagues, look for alternate interpretations, and look across multiple data sources to find answers.
5. **Summarize:** Write up a few findings and identify next steps. What actions, if any, will you take based on what you saw in the data? Share the findings with any stakeholders.

Eligibility Information:

Interviewees should be the caregiver for a research study participant or should have participated as a research subject. All interviewees should be 18 years of age or older. You will most likely want to include a subset of participants who were educational participants only (i.e. participants who did the study only to learn about it, since they were not eligible, able, or willing to consent to be research subjects.)

Sampling protocol:

Sampling for this data collection will be continuous—this means that you should approach each eligible visitor. Shadow the researcher through their participant recruitment, study enactment, and debrief. Approach the adult member of the participating group to invite them to participate in the post-visit interview, and, if they agree, walk with them and their child as you conduct the interview if necessary. After an interview, complete your notes, and check over the observation and interview forms to make sure everything is complete and legible. Once that is done, prepare yourself to observe the next eligible group—this means that you should begin an observation as a visitor begins their interaction with the researcher.

Equipment/supplies needed:

- Signs indicating the area is being observed for the purpose of improving programming
- 10-15 interview/observation forms, including observation sheet and interview sheet
- 10-15 check lists of research activities
- 2 Pens/pencils
- Clipboard
- "I Helped" stickers or other handouts, if desired
- Data collector debrief form

Before starting observations:

1. Explain the purpose of this evaluation to researchers, and ask them if they are willing to allow you to observe their interactions with visitors and to conduct a short study afterwards: "We are conducting this formative evaluation in order to learn how we can improve our Living Lab program. Our goal is to learn about and improve all aspects of the Living Lab program here. Data will not be associated with individuals. Would it be okay with you if we observe your interactions with visitors?"

    - *If they say yes:* "Great – Thanks! We will also invite the visitors to participate in an interview afterwards. We will be happy to share overall findings of this formative evaluation with you after data has been collected and analyzed across sites, but will not be able to give you individual visitor feedback. Please be assured that the interviews will not be associated with you personally in our analysis. Do you have any questions?"

    - *If they say no:* "Okay – no problem! We will not conduct observations of your interactions with visitors for this evaluation. We will be inviting visitors to participate in a short interview after you are finished talking with them, but please be assured that the interviews will not be associated with you personally." If a researcher asks not to be

observed, do not observe them. Please just make a note of this in your debrief form, without identifying the researcher by name. Do interview adult visitors after they or their children have participated in the study and finished interacting with the researcher.

2. Set up the observation signs near the area that you will be observing, including areas where the researcher will be approaching visitors to recruit participants.

Conducting observations:

Observations can begin as soon as a researcher has approached an adult (18+) visitor. Follow the researcher during recruitment, and observe their entire communication with visitors. We are interested in visitors who agree to allow their children to participate, or who agree to participate themselves in the study, including visitors who participate but are not eligible for the study (educational interactions only). If a visitor declines to participate (or allow their child to participate) in the study during recruitment, discard their observation.

Observe the entire interaction between the researcher and the adult visitor, including:

1. Recruitment / discussions before the study
2. Any interactions during the study between the researcher and the adult visitor.
3. Behavior of the adult visitor during the study (i.e. do they observe the study? Participate? ask questions?)
4. Any interactions after the study between the researcher and adult visitor.

Especially note diagnosis/performance question and answers, as well as any questions that the caregiver asks the researcher which the researcher does not seem comfortable answering, or is not able to answer.

Conducting the interview:

After the family has concluded their interaction with the researcher, as the adult starts to walk away towards another experience, approach them for an interview. If multiple children are participating in the study, note this in the observation and approach for an interview following the last child's participation. Since caregivers want to monitor children who may wish to explore the exhibits, it is best if you can walk around with the caregiver as you conduct the interview. It is also helpful if you let caregivers know this. If you are willing to, let them know that it's okay if the accompanying child interrupts or if they need to attend to the child during the interview. Approach the adult family member and say (required portions are underlined, feel free to adapt the rest so it is comfortable for you):

"Hi, my name is ___. I work here at the Museum, and I'm doing some evaluation to help improve the Living Lab program you just experienced. We are interested in getting your feedback, and hearing a little about what you got out of your interaction with the researcher. I can walk around with you as you go through the museum, so we don't have to stand here, and you should feel free to interrupt me or stop the interview at any time if you need to tend to your child or for any other reason. Would you be willing to answer a few questions to help us improve the program?"

- *If they say yes: "*Thank you so much! Please interrupt me at any time if you want to stop the interview, or if you need to tend to your child. There are no right or wrong answers, we just want to get your feedback and thoughts."

- *If they say no: "*Okay—thank you! Enjoy the rest of your visit."

When you conduct the interview, we would like to capture quotes that are in the first person and as close to verbatim as possible (e.g. "I really liked it when the researcher told me that she would be playing a hide-and-seek game to find out how well my son estimates numbers" instead of "The mom liked hearing about the research methods.") To do this, we frequently take notes with key verbatim phrases during the interview, then once the interview is complete, immediately go back through the interview sheet to fill in full quotes.

If, during the interview, the visitor shares an opinion or misconception that you wish to discuss with them, make a note to yourself, but complete the full interview. Once the interview is complete, stop data collection and bring the clipboard up to your chest. At that point, feel free to return to "educator mode" and discuss what you heard with them.

When you finish collecting data for the day, take a moment to write answers the debrief questions. These debriefs will help you recognize broader themes in the data, especially when you collect data across multiple days and times of day. They will also help you and/or your staff keep track of how data collection is going in general.

Analyzing the Data:

When you have collected a sufficient amount of data (we recommend around 10-15 paired observations and interviews), enter it into an Excel spreadsheet, with each observation item or interview question getting its own row or column. Each group should be assigned a unique number (1, 2, 3, etc.), and entered into rows corresponding with the question columns (or vice versa). For binary observation items, write a '1' if the behavior was observed and a '0' if it was not. You can also use number for questions with a set number of options as long as you devise a consistent numbering scheme. For instance, when recording participants' relationships to the child they came with, you could use '1' for 'Parent,' '2' for 'Grandparent,' and so on.

Quantitative data, such as the binary observations, can be analyzed using counts, averages, percentages, medians, modes, and other similar strategies. You do not need to carry out any statistical tests on your data—you can still learn about your program and make changes based on a smaller dataset.

Qualitative data can analyzed with coding, a process by which one categorizes the data according to themes and patterns. Create as many categories as necessary to capture what the data says; one good rule of thumb is that there should be at least two responses that fit into each category. You can do this in several ways, but in any case it is helpful to code in such a way that you can keep track of all of your categories. One way to do this is with a table. For example, you could insert visitor quotes into a table similar to the following:

Visitor notes implications of study findings.	Visitor makes observations about his or her child.	Visitor identifies other conditions to try.
Group 1: It's interesting to think about how parents or teachers prompt kids.	Group 2: I think I'll pay more attention when I talk to him.	Group 3: I wonder if she had been given all of the stickers at the same time if she would have done the same thing.
Group 4: I think it's important because of marketing. You'd want to get the best name for a toy, for instance.	Group 5: My 3-year-old didn't understand the study without another child there to share with. The older children got that.	

In general, try not to read meaning into visitor quotes or fixate too much on one comment, even if it is especially interesting or entertaining. Once you have finished coding, look everything over to see if it makes sense. Sometimes it is also useful to have others look at the data and code it to see if they see similar categories emerge as well. It can be helpful if at least one person who did not do the data collection can look at the data and code it. Some other educators have noted that getting this outside perspective is valuable.

Interpreting the Data:

When you begin to interpret your data, start by going back to your original questions and expectations. Write them down or keep them close at hand. Start with your first question and look across the data to see how to answer it. Go through the interpretation process with all of your original questions, as well as any others that arose during or after the evaluation.

For example, you might have asked the question, “What aspects of the study do researchers and visitors talk about?” You probably don’t expect researchers to talk about every single aspect of their studies in every single interaction, but that they will at least speak with visitors about their hypotheses and research questions. When you look at the observational data, you see all the researchers gave a description of study activities and spoke about the purpose of the study, but that very few spoke about their hypotheses. Why might this be? Should you be concerned? It is a good idea to look across your data and speak to others to find different possible interpretations. For example:

- Look at the data collector’s daily debriefs. Were the researchers being observed on busy days? Was the level of learning generally appropriate for visitors?
- Look at the open notes for questions that visitors ask the researchers. Were visitors asking questions about other study aspects?
- Look at what visitors say they learned from the activity. Do they mention the researcher’s hypothesis at all? Do visitors mention their own expectations for the study’s results?

The answers to these questions can help you decide if you want to take further action. How important to you is it that researchers discuss hypotheses? Do visitors seem to pick up on hypotheses without them being discussed? Are the researchers and visitors having otherwise good discussions? Or do you feel that visitors are missing something important, and that you want to emphasize the importance of talking about hypotheses in your next researcher training?

The answers are ultimately up to you and your team. This is another reason why it is important to involve others in the data interpretation process. It is often advantageous to include at least one person who collected data and at least one person who did not. The data collector may be able to provide additional context, and the non-data collector may have a broader perspective on the responses as a whole. During the interpretation process, try not to make any assertions that aren't backed up by some part of the data.

Sharing the results:

Once you have addressed all of your original questions and found solid grounding in the data for your explanations, you can share your findings with relevant stakeholders. It is helpful to write down findings in a short report or memo to make the results easy to disseminate and create a written record of the evaluation. In your report or memo, include the following sections:

1. **Introduction:** What were your original questions? Why did you choose those questions? You should also include a brief description of the program.

2. **Methods:** What methods did you use for data collection? When and where did the data collection take place? What did your sample look like?

3. **Results:** List your key findings and the data that you found to support each finding. Take care not to be too overreaching in your conclusions. Also note any possible limitations or alternate explanations for the data.

4. **Next Steps:** Based on your key findings, what are some possible next steps to take? What next steps are being planned? Have any already been taken? If so, what were they, and why were they taken? What about the program should change? What should stay the same?

Once you make changes to your program, you can restart the evaluation process to see if the changes have their intended effects.