

# Module 3

## Encouraging Exploration and Inquiry

### Module Overview

---

#### Objective

During this module, participants will explore a different approach to facilitating learning outcomes for visitors at exhibits: focusing on exploration, reasoning, and inquiry, rather than the communication of facts and knowledge. Participants will develop their skills noticing how families engage in reasoning and inquiry as they work on an exhibit activity and will identify and practice strategies for supporting open-ended investigations.

#### Materials needed



- Module 3 Video 1 (<https://youtu.be/LEZnaEwlpIq>)
- Module 3 Video 2 (<https://youtu.be/PP9jujMtc8I>)
- Handouts (one per participant)
  - Introducing Module 3: Encouraging Exploration and Inquiry (a few copies in case participants need them)
  - Module 3 Video Discussion
  - Module 3 Reflection Homework
  - Introducing Module 4: Negotiating Family and Facilitator Goals
- Chart paper or whiteboard and markers

#### Plan for session (95-105 minutes)



- 1) Warm-up activity, 10 minutes (optional)
- 2) Homework sharing, 15 minutes
- 3) Introducing the module, 10 minutes
- 4) Video discussion, 60 minutes
- 5) Homework for Module 4, 10 minutes

## Warm-Up Activity

10 MIN



If you opt to do a warm-up activity, start the session with it. For this activity we recommend What's in the Box (<http://www.nisenet.org/catalog/improv-exercises>). In general, an effective activity for this module will focus on brainstorming and generating ideas without concern for “correct” answers.

## Previous Session's Homework

15 MIN



In small groups, participants take turns sharing experiences they had doing the homework: one recent experience they had observing a family or one experience they had interacting with a family. After reflecting on the interaction, participants can also share what they might repeat or do differently in the future.

After 10 minutes, ask a few volunteers to share either their own learning or lessons gleaned from their group discussion. You may want to summarize observations, point out dominant themes, or make connections to practices at your institution.

## Introducing the Module

10 MIN



Introduce this module's topic, paraphrasing what is written below. Participants should have already read “Introducing Module 3: Encouraging Exploration and Inquiry” prior to this session.

### Introducing the topic



*Today's topic is facilitation to support exploration and inquiry, rather than the communication of facts and knowledge. There are many educational goals that facilitators can strive for during interactions with families at exhibits. In the REVEAL project, the focus was on supporting mathematical reasoning—a way of describing and using mathematical patterns in the world around us, not unlike scientific inquiry. Facilitating learning interactions with a focus on goals such as mathematical reasoning or scientific inquiry requires different strategies from those in which the goal is “teaching” visitors particular facts. Although this type of facilitation can be challenging, it can also be very freeing, since the educator's primary focus is supporting exploration, not ensuring that visitors get the “correct answer.” In today's videos we will consider what mathematical reasoning and inquiry looks like for families at exhibits and how we as facilitators might help support and deepen that inquiry.*

## Connecting to previous experiences

In small groups, participants discuss their responses to the questions at the end of the handout “Introducing Exploration and Inquiry.” After a few minutes, continue the discussion with the larger group.



- 1) Consider one (or more) of the “practice exhibits” you’ve chosen for this PD program. Think about that exhibit through the lens of “exploration and inquiry” and describe several ways visitors might interact with it that follow quite different paths.
- 2) How could facilitators support families in these varied interactions with the exhibit you’re considering?
- 3) Think of a time when you yourself interacted with an exhibit without worrying about “getting it right.” What did it feel like? How was it different from situations in which you felt there was a right answer?
- 4) How might a visitor’s background or prior experiences (e.g. careers, interests, school experience) affect his or her approach to exploration and inquiry?

## Video Discussion

60 MIN

In this module, you will be using the following two videos:

- Module 3 Video 1 (<https://youtu.be/LEZnaEwlpIq>)
- Module 3 Video 2 (<https://youtu.be/PP9jujMtc8I>)

## Introducing the videos



This module’s videos take place at both the Drawing in Motion and Balancing Art exhibits. Ask participants if they have any questions about the exhibit activities. Refer to the exhibit description handout from Module 1, as needed.

Pass out copies of the Video Discussion handout and give participants a minute or two to review the document. Paraphrase the following information about the videos for participants.



*In the first video segment you are about to watch (Module 3 Video 1), a facilitator is working with an adult and a child at Drawing in Motion. This video segment begins as the family approaches the exhibit. In the second video (Module 3 Video 2), a facilitator is working with two young adults at Balancing Art. The segment begins as members of the family approach and then skips ahead to later in the interaction.*

*We will watch each video twice. The first time, ignore the handout and just try to take in the whole interaction. In between the first and second viewing, read over the handout questions. During the second viewing, look for how the family members approach the exhibit activity and content—in this case, the mathematical relationships—and how the facilitator supports their explorations. Notice how the visitors—both adults and children—respond to this facilitation. After the second viewing, you will have time to write down responses to the handout prompts.*

## Key video moments for the session leader

Below are some moments in the video when something particularly noteworthy happens relevant to supporting exploration and inquiry. This is not an exhaustive list of every interesting moment in each interaction. We point these out to help you, the session leader, have evidence to support observations by the group. We do not recommend giving these lists to participants.

### Video 1:

- 1:28 The facilitator invites the family to try a challenge.
- 1:41 The facilitator points out the number line.
- 2:26 The facilitator helps the child use the number line.
- 3:05 The group celebrates success.
- 3:15 The family launches a second challenge.
- 3:22 The adult echoes the facilitator’s questioning style.
- 4:00 The facilitator reinforces the child’s recognition of a circle.
- 5:07 The facilitator provides positive reinforcement.

### Video 2:

- 1:22 The facilitator makes her first comments since greeting the group.
- 2:00 The young adults continue to explore and hang weights as facilitator observes.
- 2:25 The facilitator refers back to start with an observation and proposes challenge.
- 3:14 The facilitator asks about distance as a variable.
- 4:33 The facilitator encourages one visitor to facilitate for other family members.
- 6:05 One family member steps back to take a photo.

## Video discussion: Module 3 Video 1



Watch the video segment twice. Then take 3-5 minutes for participants to quietly jot down their own answers to questions on the first page of the video discussion handout.



Next break into small groups of 2-4 participants (if possible, try to mix up groups from previous discussions) and share answers. Ask one member from each group to share a summary of their discussion with the larger group.

In your discussion, keep track of the strategies participants mention on the whiteboard or chart paper. You may want to write down other group responses as well, but keep those ideas

separate from the list of strategies. Some strategies participants might mention include: providing open-ended challenges that motivate exploration and inquiry, showing appreciation and encouraging visitors, helping tailor the activity to the abilities and interests of the group, providing timely explanation or guidance as needed (e.g., pointing out an important variable) to help visitors explore the exhibit more deeply.

- 1) What did you notice happening in this video segment?
- 2) What approach did the family initially take to exploring the exhibit?
- 3) What specific strategies did the facilitator use to tailor the activity to the family and encourage exploration?
- 4) How did the adult respond to this facilitation?
- 5) What are other ways the facilitator could have encouraged the visitors to freely explore the mathematical relationships and concepts presented in this exhibit?
- 6) How did the design of the exhibit place limitations on the facilitator's ability to encourage open-ended inquiry?

### Video discussion: Module 3 Video 2



Watch the video segment twice. Then take 3-5 minutes for participants to quietly jot down their own answers to the questions on the second page of the video discussion handout



Break into small groups of 2-4 participants and share answers. Ask one member from each group to share a summary of their discussion with the larger group. Continue to record possible strategies on the chart paper or whiteboard.

- 1) What did you notice happening in this video segment?
- 2) How did the facilitator's opening line set the scene for exhibit exploration?
- 3) What specific things did the facilitator do or say to encourage members of the group to explore the mathematical relationships in the exhibit?
- 4) How did the facilitator's support position the visitors to engage other group members in deeper inquiry?
- 5) What other strategies might the facilitator have tried to encourage deeper exploration?

## Discussion for Both Videos



After watching and discussing both videos, continue the group conversation using the questions about both videos on the second page of the handout.

- 1) How did supporting exploration and inquiry look different for the two groups?
- 2) How might you facilitate exploration and inquiry for families at exhibits in your own institution?
- 3) What are some challenges you might encounter taking this approach to facilitation?

At the conclusion of this module, record the list of strategies generated during the conversations (e.g., take a photo or type the list) and share the ideas with participants. Other strategies participants might mention relevant to encouraging exploration include: orienting the family to how the exhibit works, posing challenges that highlight multiple approaches and multiple answers (e.g., “Can you think of another way to do this?”), and letting visitors choose or create their own challenges.

## Reflection Homework

10 MIN



In the time between this session and the next, participants will observe how families explore, discover, and inquire at exhibits without facilitators present. They will also practice incorporating strategies for supporting this exploration and pursuing educational goals beyond communicating content knowledge and facts.

Pass out copies of the Module 3 reflection homework handout to each participant, as well as the background reading for the next module: “Introducing Module 4: Negotiating Family and Facilitator Goals.” Allow participants a few minutes to read over the handouts. Ask for any questions, clarifications, or comments.

## For Further Exploration

---

### More Videos

Full-length, unedited versions of the videos from this module (without subtitles) are available on the project website:

- Module 3 Video 1, unedited (<https://youtu.be/u5WjAQ22RbY>)
- Module 3 Video 2, unedited (<https://youtu.be/MAInar9qVNM>)

You can also watch videos that were assigned to other modules and the bonus videos, paying particular attention to what the interactions reveal about facilitating for exploration and inquiry.

### Readings

The following books and articles can be useful for continuing to explore the topic of intergenerational communication and interactions among adult and child family members:

Humphrey, T., & Gutwill, J. P. (2005). *Fostering active prolonged engagement: The art of creating APE exhibits*. San Francisco: Exploratorium.  
[http://www.exploratorium.edu/vre/ape/ape\\_intro.html](http://www.exploratorium.edu/vre/ape/ape_intro.html).

Institute of Museum and Library Services. (2009). *Museums, libraries, and 21st century skills*. Washington, D.C.: Institute of Museum and Library Services.  
<https://www.imls.gov/assets/1/AssetManager/21stCenturySkills.pdf>

National Research Council. (2009). *Learning science in informal environments: People, places, and pursuits*. Washington, DC: National Academies Press.  
<https://www.nap.edu/catalog/12190/learning-science-in-informal-environments-people-places-and-pursuits> (See section 1, “Learning Science in Informal Environments”)



### Video 1

- 1) What did you notice happening in this video segment?
  
- 2) What approach did the family initially take to exploring the exhibit?
  
- 3) What specific strategies did the facilitator use to tailor the activity to the family and encourage exploration?
  
- 4) How did the adult respond to this facilitation?
  
- 5) What are other ways the facilitator could have encouraged the visitors to freely explore the mathematical relationships and concepts presented in this exhibit?
  
- 6) How did the design of the exhibit place limitations on the facilitator's ability to encourage open-ended inquiry?

### Video 2

- 1) What did you notice happening in this video segment?

- 2) How did the facilitator's opening line set the scene for exhibit exploration?
  
- 3) What specific things did the facilitator do or say to encourage members of the group to explore the mathematical relationships in the exhibit?
  
- 4) How did the facilitator's support position the visitors to engage other group members in deeper inquiry?
  
- 5) What other strategies might the facilitator have tried to encourage deeper exploration?

### **Both Videos**

- 1) How did supporting exploration and inquiry look different for the two groups?
  
- 2) How might you facilitate exploration and inquiry for families at exhibits in your own institution?
  
- 3) What are some challenges you might encounter taking this approach to facilitation?

- 1) Take some time, even just 20-30 minutes, to watch both facilitated and unfacilitated family groups engaging with exhibits at your institution. When you are watching other staff members, first ask them for permission to observe. When watching unstaffed interactions, respect the privacy of families by being unobtrusive and ending your observation if families appear to be uncomfortable.
  - For unfacilitated groups: How do families explore the exhibit? Do they focus more on knowledge and understanding or exploration and inquiry? Do they seem to think they need to find a “right answer”?
  - For facilitated groups: Do facilitators focus more on communicating knowledge or supporting exploration and inquiry? What does the facilitator do or say to support and deepen exploration?
  
- 2) Now that you’ve watched examples of facilitators interacting with families and considered how to incorporate new ideas into your own practice, you can try these strategies out yourself (if needed, refer to the list generated during the video discussion). Before you meet for the next session, try to incorporate a few new strategies into your facilitation with families at exhibits. Observe how visitors react and reflect on ways you can continue to improve the new approaches. Choose one interaction to share with the group during the next module session.
  
- 3) To prepare for Module 4, please read the handout “Introducing Family and Facilitator Goals.” Consider how this perspective relates to your facilitation experience by answering the questions on the handout, in preparation for discussing them at the next module meeting.



In the REVEAL project, a key goal for facilitators was to honor and respect family interests and agendas and look for overlap between the goals of families and those of the educator. Searching for this balance is one of the reasons why the REVEAL facilitation approach focuses on three, equally important educational objectives: (a) supporting intergenerational communication, (b) ensuring visitor satisfaction, and (c) encouraging mathematical reasoning. Finding strategies for helping families explore the mathematical relationships in exhibits was important, but never at the expense of creating a satisfying experience or helping adults and children learn together. Finding this balance involves, first and foremost, listening, observing, and seeking to understand family priorities. Is it critical for the grandfather to spend quality time with his grandchild? Is the mother an expert in the exhibit content and excited about sharing her knowledge with the family? Understanding and appreciating these goals helps us develop empathy for visitors and often helps us to let go of the power and authority we take for granted as educators.

Respecting families and finding a balance between facilitator and family goals are not just philosophical stances. There is emerging research that this balance is critical to creating enjoyable experiences that lead to ongoing, long-term family learning. An educator that pursues his or her goals at the expense of those of the family risks alienating visitors, lowering satisfaction, and undermining the roles and identities of family members. For example, researchers studying interactions between staff facilitators and families in lab spaces at a science center found that adults resisted educator attempts to become involved in the learning experience when these educators were interfering with the facilitation that adults were already engaged in or were not aligning their approaches to family goals (Pattison & Dierking, 2013). In the worst-case scenario, museum educators risk creating a space that is hostile or unwelcoming for visitors, especially those who may be unfamiliar with the museum context (Archer et al., 2016; Farrell & Medvedeva, 2010; Garibay, 2009). For all these reasons, negotiating family and facilitator goals is central to the work of museum educators.

In order to achieve this balance, facilitators must continuously look for clues from families and rapidly adapt their facilitation approaches to each group. In the REVEAL project, this process was called the *cycle of reflective facilitation*:

- 1) **Observe**—Facilitators look for clues about roles, interests, and agendas of individual family members and the group as a whole, as well as evidence of how the family is already engaging with the exhibit on their own.

- 2) **Support**—Based on their current understanding of the family, facilitators choose strategies designed to deepen and extend the experience at the exhibit and achieve goals that are shared by both the family and the educator.
- 3) **Reflect**—Facilitators notice how family members react to their facilitation strategies, reassess their understanding of family interests and goals, and plan their next steps. This final stage necessitates further observation of the family, which launches the cycle again or, in some cases, leads the facilitator to step back from the interaction.

This cycle of reflective facilitation is not a new process—it's likely something that you already do, even if you're unaware of it or call it something else. Experienced educators go through many rounds of the cycle during an interaction with a single family and, at the same time, also reflect about their practice on a larger scale, thinking about lessons learned from each interaction and how they can improve in the future (Pattison et al., 2016). At both scales, the process is closely connected to the more general idea of reflective practice, which is being embraced by educators in museums, schools, and beyond (e.g., Pattison et al., 2013; Preskill, 1999; Schön, 1983). Particularly in learning environments like museums, where families primarily control how, where, and what they learn, this reflective process is a critical tool for ensuring that learning experiences at exhibits meet the needs of both the family and the educator.

After reading this handout, consider the following questions. You will discuss them in small groups when your group meets to explore Module 4: Negotiating Family and Facilitator Goals.

- 1) What are some of the different goals, interests, and agendas that family visitors seem to have at your institution?
- 2) What are some of the ways that family goals overlap with your goals as an educator? In what ways don't they overlap?
- 3) What do you usually think about when you are facilitating for a family group at an exhibit? Is there a thought process you go through to guide your facilitation approach?
- 4) Describe a time when you changed your facilitation strategies based on what you understood about the family group. Why did you change your approach? What happened as a result?