

Overview

Module 1 introduces participants to the methods and theoretical foundations of the *Reflecting on Practice*TM program.

Session 1 introduces the program and presents **foundational ideas on learning** that will be explored further throughout the program. It initiates discussions on the important contributions of informal science learning environments (museums, zoos, aquariums, science centers, etc.) as places where people come to learn and develop interests in science, as well as to become motivated to pursue careers in science.

Session 2 engages participants in **discussions about professional learning and reflective practice**. It introduces them to the **professional learning community** framework and **the use of tools**, such as video, to aid reflection.

In Session 3, participants gain insight into the **nature and practices of science** in the best way possible: by *doing* and *reflecting* on science. They have the opportunity to discuss the seminal question, “What is science?” and then, “What is the value and effect of a deeper understanding of—and reflection on—the nature and practices of science?”

The program presents opportunities for informal educators to

- learn about and discuss science pedagogical content;
- begin to make their practice public, as they create methods and tools to facilitate observations;
- initiate habits of reflection in their practice; and
- engage in critical discussions and reflections with colleagues.

Overview

In Module 2, participants dig deeper into the big ideas introduced in Module 1 with the “Five Foundational Ideas on Learning.” Very importantly, they consider the implications of these ideas for how we teach.

Session 1 opens with a hands-on activity that places participants in the role of the learner. Participants think more deeply about **how people experience learning**, and consider teaching and learning strategies with a research discussion on three topics: the brain and prior knowledge, social activities and conversations, and engagement in learning.

Session 2 continues the discussion on learning with an emphasis on the **critical role of prior knowledge**. Another hands-on activity places participants in the role of learners, and is used as a shared experience around which participants discuss the role of prior knowledge in learning.

Session 3 is the **first Video Reflection session**. Participants learn how to conduct video sessions in a whole-group activity in which they use video reflection tools to observe and discuss a colleague’s video clip, focusing specifically on prior knowledge.

In Session 4, participants use the *Reflecting on Practice* Video Reflection Tools during **critical-friendship video reflections**, to review and discuss videos of their practice. Once again they focus specifically on accessing and connecting to learners’ prior knowledge.

Overview

In this module, participants probe more deeply into the significance of *talk* in learning, and consider how to best facilitate conversations in their interactions, depending on their **teaching purpose**. One teaching purpose, Activate Prior Connections, was the focus of Module 2. In this Module, four more—**Give Information**, **Check for Understanding**, **Express Your Thoughts**, and **Transfer Understanding**—are examined in depth. The educators critically examine how they currently converse with learners in their practice, and explore methods for facilitating conversations that specifically support learning.

In Session 1, participants brainstorm **characteristics of quality learning conversations**. They take part in three scripted role-plays in which they analyze facilitated conversations, and discuss both the limitations and potentials inherent in these conversations for supporting specific **teaching purposes**. They read and discuss research on **the role of talk in learning**, including how we process information into long-term storage and how this relates to the importance of talk for supporting learning. After having seen it implicitly modeled since the program began, participants are now formally introduced to the **Discussion Map** for guiding group discussions.

In Session 2, participants take part in a hands-on activity that offers a shared experience to probe more deeply into teaching purposes when facilitating conversations. They read and discuss different facilitation approaches, and learn how to use the **Facilitation Approaches Framework** to facilitate conversations to support learning.

In Session 3, participants do a close re-reading of the Research Discussions on learning and talk from Modules 2 and 3. Following this priming, they do a **whole-community Video Reflection** on facilitating learning conversations strategically designed to achieve specific teaching purposes, including how to allow for the sharing of multiple ideas as learners are guided towards the scientific view.

In Session 4, participants meet in their **critical-colleague groups to do their own Video Reflections** on the module's focus, the importance of talk to the learning process.

Overview

In informal science learning environments, in which a team of educators may teach the same set of programs and activities, consistency across educators' teaching practice may be inextricably tied to **how these programs and activities are designed**. In Module 4, participants integrate insights and ideas from research discussions and readings, their own program and institutional experiences, and both new and familiar Educator Moves to reflect on **how successfully their current practice supports evidence-based understandings of how people learn**. In this module participants examine the design of their own activities and programs through the lens of research-based practices to support learning.

Session 1 assesses the use of **objects** in participants' programs and activities. It begins with recognizing that objects are used in many learning experiences in informal learning environments, and offers a set of categories for organizing and talking about these objects. Five empirical case studies are used to provide participants with deeper insights into **how learners interact with objects at informal learning environments**. Conveying the Research Discussion in this form invites participants to engage with the research content in a new way. The subsequent hands-on activity encourages the educators to use insights gained from the Research Discussion to critique how they currently foster conversation and engagement with objects in their own activities and programs. They are then challenged to think of ways to leverage these objects to more effectively support learning.

In Session 2, participants redesign an actual program or activity from their practice. They are first explicitly introduced to two Teaching Tools—the **Learning Cycle Design Framework** and **Thinking Routines**—that were used in the design of sessions and hands-on activities in the *Reflecting on Practice* program. Calling on their experiences in *Reflecting on Practice* as concrete examples, participants work in small groups to **analyze and revise the design of an activity or program** implemented within their own institutions.

Session 3 offers two ways for participants to further reflect on their practice. The opening **whole-community Video Reflection** focuses on using objects to support learning. Following that, participants work individually to make a poster that documents **their learning gains to date and their plans for continued learning**. Colleagues who have not participated in *Reflecting on Practice* are then invited to a poster session at which these Reflection Posters are showcased by the participants.

In Session 4, participants meet in their **critical-colleague groups to do their own Video Reflections** on the module's focus, the use of objects to support learning.