

Science Communication: effectively connecting with your audience and successfully making your point.

BACKGROUND INFORMATION

People in informal environments approach learning differently compared to when they are in a more academic setting. One of the most important differences lies in their motivation. Someone who is in an informal environment is there voluntarily and is primarily motivated by what interests them, not by external rewards such as a grade, certification, or requirement or employment. This self-interest can be an incredibly powerful way to learn (see Falk and Dierking, 2002 and Ham, 2013, among others). However, the flip side of this type of intrinsic motivation is that informal learners do not have to pay attention; if they are bored, or if what they are hearing or doing does not interest them, they can simply stop paying attention or even leave.

It is therefore important to understand the most effective approaches to sustaining an audience's interest in an informal setting. In this PD Element we have categorized these approaches into three overarching characteristics, maintaining that learning will be most successful if it is (1) organized; (2) relevant to the audience; and (3) engaging. As detailed below, we chose these categories based on a variety of research in learning theory, cognitive psychology, and informal science education.

Successful interactions are organized

Explora Science Communication Fellows will engage in a *Concept Mapping* exercise to identify and develop the main concepts to share with public audiences. This exercise helps narrow the focus of the presentation and helps scientists think about what will be of interest to the audience and why. Organizing the activity and facilitation around a main idea not only simplifies the subject matter, but communicates the “why it matters” and “so what” to the audience.

After scientists identify the main ideas of their science presentation, they need to think about how to present these ideas in a way that is easy to follow. Audiences in informal settings “will switch attention if they have to work too hard to follow a train of thought. In advertising, this relationship is well known.” In fact, the relationship can be expressed as a formula: the probability that an informal audience will pay attention is inversely proportional to the perceived reward (potential benefit) and the amount of effort required (Ham, p. 26).

As well, learning can be disrupted if the facilitator does not have materials prepared and organized in advance. *Dimensions of Success* (PEAR, 2011-2015) recommends that all materials are prepared and organized in a way that minimizes time loss and disruption to the learning. Facilitators who have carefully prepared their activity, questions, and ideas are more likely to be able to respond to changing situations in flexible and creative ways.

Successful interactions are relevant to the audience

As pointed out by Falk and Dierking (p. 56), “All learning begins, and ends, with the individual's unique interests, motivations, prior knowledge, and experience.” Skilled educators are able to help the learner make meaningful connections, both emotionally and intellectually. They provide “‘hooks’ or entry points, enabling learners to relate their previous experience, prior knowledge, interests and beliefs to the new experience” (Falk and Dierking, p. 140).

There are a variety of strategies that can be used to make meaningful connections with informal audiences, including the use of examples, analogies, contrasts, similes, and metaphors. The strategy of “self-referencing” helps to make a personal connection with the learner by appealing to something they care about. Simply asking



“Think of the last time you . . .” can engage the learner in a deeply personal way, and therefore be meaningfully relevant. Research shows that people will pay attention to things that remind them of themselves (Ham, 2013).

Successful interactions are engaging

Tilden memorably pointed out that the “chief aim” of informal interactions “is not instruction but provocation.” Successful interactions provoke the learner to intellectually, emotionally, and even physically engage with the activity, the facilitator, and the ideas being presented. They attract and hold the attention of the audience in a way that stimulates thinking, meaning-making, and memorable connections.

Several studies have shown that table-top activities will be successful at attracting greater attention and holding that attention longer if they have parts that can be manipulated, contain lively colors and changing parts, and are facilitated using two-way communication. Using active verbs, showing cause and effect, linking science to stories about people, and using analogies can all be effective strategies to engage informal audiences (Ham, 2013).

Learners construct knowledge by engaging with the materials – not only “hands on”, but also intellectually (PEAR, 2011-2015). Contrast this approach with that of the PoP scientist presented in Skit #1, where the facilitator does all of the cognitive work and presents the information to a relatively passive audience.

