

### **Discussing the role of conversation in learning at informal science institutions.**

The body of work that examines conversation in learning environments continues to grow seemingly exponentially. At the heart of much of this work is a sense that learning and conversation are somehow linked. This idea can be connected to the theories of Vygotsky (1978), which suggest that people learn by participating in social situations using tools like language. People then internalize the ideas that are expressed in interaction, inserting these ideas into complex networks of knowledge. What we would like to be able to do is identify how people learn in conversations so that we may plan for maximally effective informal learning environments that generate the kinds of conversation most likely to aid learning.

Though we have discovered a great deal about conversation over the past several decades, we still struggle with just what the relationship is between learning and conversation. Some research suggests that conversation in classrooms that is less teacher-centered and more student-centered leads to improved learning. Ways of shifting the center of attention from teacher to student include leading a discussion by asking open-ended, thought provoking questions (Dillon, 1989; Wells, 1999) and creating an atmosphere where students feel safe enough to generate their own questions (Dillon, 1989). However, very little research looks at whether such situations really stimulate learning.

Other research has shown that very young children (i.e., 3.5 years) recalled objects and scenes from a museum visit with their mothers when there was mutual conversation (not just mention by one party or the other) about that item (Tessler & Nelson, 1994). These findings may relate to those with older children that suggest generation of self-explanation improves one's understanding of a topic (Chi et al., 1994). Furthermore, in a museum-like setup Crowley and Jacobs (2002) found that 4- to 12-year-olds who heard their parents explain fossils, particularly in ways that connected to previous experience, were more likely to remember the fossil's name. Thus, though we have some preliminary understandings about how conversation can enhance cognitive learning in museums, we still have far to go in terms of discovering exactly how those relations play out and what the relation between conversation and affective learning in museums might be.

One of the strengths of informal learning environments is that people may feel more engaged when involved in conversations that are less explicitly teaching-oriented (Bowker, 2004; Falk & Dierking, 1992). That is, though teaching and learning may be happening in these environments, participants may be less aware of the need to teach and learn than they are in traditional classroom environments where there is an explicit emphasis on learning as an activity. In other words, it perhaps is the case that participants approach informal learning activities with a more relaxed attitude toward knowledge acquisition than is present in more formal learning situations. In contrast, one of the challenges that researchers and practitioners face in informal situations is evaluating the learning that occurs. Additionally, it is not always easy to identify what constitutes learning in an informal situation because the learning goals are usually not as clear as in formal learning environments. To add further to the difficulty, most

researchers would agree that the kind of learning that museums hope to inspire (e.g., long term and/or islands of expertise) does not take place in the course of a single museum visit, but rather is built up over the course of multiple conversations, museum visits, and other experiences (Crowley & Jacobs, 2002). Importantly, it may be that a museum visit, or part of a museum visit, inspires conversations or other experiences that are ‘out of range’ of the normal researcher’s project. That is, we tend to monitor what people say while they are at informal science institutions (or even at a single exhibit) rather than what they say on the ride home or in the café (see XXX for a counter example). Just what is it then that we can capture in conversations of single visits or even multiple visits to museums?

Numerous past studies point to various aspects of the situation as being important for learning conversations. There is the idea that status of the different participants relative to each other matters for the kinds of learning that may be possible (Rowe, 2002). For instance, if what is conveyed is a set of facts about a particular object, event, or phenomenon, the authority of the voice (be it personal or label text) could make a difference in what information is retained at a later time (Falk & Dierking??). It is also evident that the context in which a conversation takes place is important in determining the development of the conversation. For example, the amount of personal relevance present in an exhibit will tend to influence the extent to which families explore the topic verbally and non-verbally (Ash et al., in press). When people feel a topic has an impact on their own lives, they are more likely to engage with it. Moreover, looking at the discussions people have is one way of examining the intent participation of different group members (Rogoff, 2003), which is an experience that people engage in that is mutually formative. In other words, the individuals’ experiences both shape and are shaped by the same conversation (among other things). Furthermore, typical patterns of conversation tend to vary culturally. As such, it shouldn’t be expected that all groups who have valuable experiences at a museum would engage in the same ways with the exhibits or with each other. Learning conversations may take different forms, depending on the previous experiences people have had with learning environments and conversations (Ash, 2004?).

Particularly relevant for museums is the finding that different types of exhibits tend to inspire different kinds of conversation (Allen, 2002). Whereas conversation at live animal exhibits (and perhaps other ‘object’ exhibits) tends to demonstrate some content and conceptual thinking in visitors, the talk at hands-on exhibits is mainly limited to procedural discussion about how to use the exhibit. This research illustrates the need to coordinate expectations for conversation to the appropriate exhibit types. That is, it is not necessarily appropriate to suggest that less learning takes place at a hands-on exhibit because users talk less. Our methods for evaluating the effectiveness of these different types of exhibit must be further refined when using conversation as an index of learning.

It is apparent that museums and other places of informal learning are places that provide ample opportunities for parents and other ‘knowledgeable’ individuals to offer explanations to children and other ‘less informed’ people. For instance, Kevin Crowley’s work often investigates the kinds of explanations people use in museum settings. One work particularly looked at the explanations parents provided to children of different genders, showing that adults tended to explain more to boys than to girls

in a discovery center (Crowley et al., 2001). Interestingly, exhibits can be designed such that the same material inspires adults to explain to girls as well as boys (Power Girl or Alice REFS).

Additionally, despite the myriad studies on visitors' use of labels in museums, there is still relatively little research about the effect of label text on people's museum conversations. Assuming that conversation and learning are relatively closely linked in many instances, it seems surprising that there is not more information available about how the specifics of label text help to generate or hinder visitor conversation. That is, attempts have been made to examine the types of labels that exist (e.g., Bradburne, 2000) and even to check how much conceptual change takes place in the presence of different types of labels (e.g., Falk, 1997). However, few studies have investigated the relationship between a relatively accessible indication of thought at an exhibit (conversation) and the types of labels in a museum (see McManus, 1989; Going APE? for an exception to this).

It is worth considering whether research can somehow develop a taxonomy of conversation that could be easily used by staff at informal learning centers to evaluate how effective their programs are with respect to the generation of conversation. There are several problems associated with this idea. The first is that it is imperative that research and evaluation be paired appropriately with the aims of a particular program. In other words, some programs may have goals that are affective or attitudinal in nature. A general taxonomy of conversation would need to be sufficiently broad to cover the various needs of evaluators. The second problem stems from the problem outlined at the outset of this paper: research has not identified a way to pinpoint how conversation and learning are related in such a way that others may take this information and apply it to an evaluation of a museum exhibition or other informal learning program. Therefore, in order for such taxonomies to be developed, there is a need for academic researchers and museum (or other) staff to coordinate their efforts, a process that will no doubt require a lengthy commitment to complete.

Meeting the challenges that face research and practice in examining conversations in informal settings could potentially change the way museums and other informal institutions think about their roles in designing informal environments, training staff who interact with visitors, and assess the effectiveness of programming. One question that arises through pondering the relation between learning and conversations is what implications there would be on practice once there is more understanding about the nature of learning conversations. Research is needed to inform both our understanding of learning in conversations but also for how best to apply these understandings.

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