

# Making museum memories

Conversational reflections on children's experiences can reveal and advance learning



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*Conversations shortly after hands-on learning experiences can consolidate children's fleeting patterns of engagement with objects into long-lasting memories. Moreover, conversational reflection can add layers of understanding of events beyond what is available from direct experience with objects alone.*

For the past several years, my colleagues and I have partnered with practitioners at Chicago Children's Museum on projects to build knowledge and a research base for educational practices in museums. One focus of our work together concerns family engagement in conversational reflections about museum experiences. The following is an excerpt of a conversational reflection recorded by a mother and her child shortly after visiting the museum's *Tinkering Lab*, a makerspace where families build with real tools and materials:

Mother: *Did you have fun today?*

Child: *Yeah.*

Mother: *What did you do?*

Child: *So I went to the tool thing where you make stuff and build.*

Mother: *Tinkering Lab?*

Child: *Yeah. So when I got in there I started to brainstorm. And then I thought of an idea. And then after I got the first piece of wood (holds up creation), after I got this piece of wood, I got two pieces of wood that would attach to actual wheels.*

Mother: *Uh huh.*

Child: *But then I decided well it's not gonna work because the wheels were too big on each other.*

Mother: *Cool. So what did you do?*

*Conversation continues to describe the child's use of tools.*

As illustrated by this example, conversational reflection involves telling and sharing experiences with others. It includes stepping back to think, consider, remember, and even make personal meaning of experiences. Reflection is generally considered critical for learning. And it is foundational in modern science, technology, engineering, and mathematics (STEM) education. Why might conversational reflection be especially important for learning from visits to a children's museum?

Consider that many exhibits in children's museums are designed to encourage active, hands-on engagement with concrete objects to enhance early learning. But the ultimate goal is that children will be able to use what they learn in a museum elsewhere, such as at home or school. Conversational reflections may help meet this challenge of constructing understandings of experiences that are transferable across contexts and time.

The combination of hands-on engagement with objects and conversational reflection may promote transferable learning for several reasons. For one, conversational reflection can lead children to focus less on specific objects and more on the general knowledge and concepts that can be learned from object manipulation.

And conversational reflection can help children connect prior knowledge and new learning. By pointing out the relation between the wheels and axles on a car they made and the family car or the child's skateboard, a parent can help a child realize how actions on individual pieces relate to day-to-day activities. Talk about wheels and axles might also lead to discussion of concepts, such as force and friction, and engineering practice, such as planning, testing, and redesigning.

## **“Conversational reflections may help meet the challenge of constructing understandings of experiences that are transferable across contexts and time.”**

The child could then use this learning – stemming from synergies between children's direct experience with objects and reflection on these actions – at home or school, when constructing another car, or something else that rolls.

One more reason conversational reflection is important is this: it can reveal children's initial understandings. For example, when children express needing to add more wheels, or to reduce the amount of weight, to make their car go faster, conversational reflection provides a “diagnosis” of what children know and what they might need to know more about. This can be helpful to parents, educators, and researchers who seek to identify and increase what children learn from hands-on activities.

### **Creating problem-solving experiences that are retrievable and reportable**

A recent study [under review] shows how my partners and I are investigating these ideas about conversational reflection and learning. 248 families with 6 to 11-year-old children recorded conversational reflections shortly after visiting the museum's tinkering exhibit. The recordings were made in a multimedia station just outside of the *Tinkering Lab* called *Story Hub: The Mini Movie Memory Maker*. *Story Hub* offers museum visitors the opportunity to create and share stories about their choice of the museum's current exhibits.

Some families, including the family in the example, participated in a design challenge in *Tinkering Lab*: Make something that rolls. Other families visited the exhibit during a time when there was no explicit design challenge. These families made whatever they thought to make. Also, some families elected to take their creation with them after making it in *Tinkering Lab*, and they showed their creation off as they recorded their conversations in *Story Hub*.

We found that children who had their creation with them reported more information than those who did not. Children who participated in the *Make It Roll* challenge contributed a greater amount of information to the reflections than children who visited the exhibit when there was no design challenge.

## **"Adding a design challenge to building activities can prompt increased talk about engineering practices and support early opportunities for STEM learning."**

Basically, the props supported children's reporting. But it also seemed that the design challenge moved children's tinkering beyond sensory involvement with tools and materials, to problem-solving experiences that were more retrievable and reportable.

Most importantly, it was the families who had their creations with them that talked the most about engineering practices and the value of tinkering. They talked about testing and improving their creations. The most talk about engineering practices came from families who both had their creations with them, and who had participated in the *Make It Roll* challenge.

These results make theoretical contributions. They suggest that conversational reflection can play a part of an *extended encoding* of an experience beyond the duration of the event itself, boosting what is learned through hands-on activities.

As well, the work recommends practices in informal educational settings, such as museums. Adding a design challenge to building activities can prompt increased talk about engineering practices and support early opportunities for STEM learning. And families should be encouraged to take what they create in museum exhibits and programs home with them. These physical artifacts can bolster conversational reflections in ways that can not only reveal, but also advance children's learning.

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The purpose of the [biannual IMBES Conference](#) is to facilitate cross-cultural collaborations in biology, education and the cognitive and developmental sciences. Our objectives are to improve the state of knowledge in and dialogue between education, biology, and the developmental and cognitive sciences; create and develop resources for scientists, practitioners, public policy makers, and the public; and create and identify useful information, research directions, and promising educational practices. The 2018 conference took place in Los Angeles, California.

The author of this blog post, Catherine A. Haden, was among the presenters at the conference.

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