

Research Toys

What is a “research toy” ?

- museum-style activity, developed from published research article(s)
- generally, facilitated by staff and/or volunteers
- child as ‘participant’, caregiver as education target
- formatively evaluated and iterated through piloting



Why present research in the museum?

Your goals narrow the type of studies that are relevant, and what aspects of those studies are most important.

- Results – what scientists know about child development (take-home messages)
- Methods – how scientists study child development (encourage visitor observation of child behavior)

Identify tasks that can be modified for demonstration, and that will spark conversation with museum visitors.

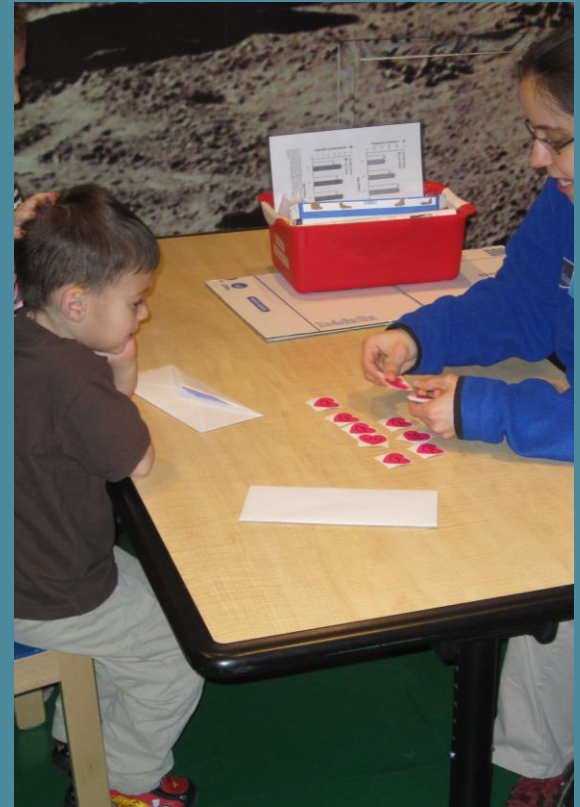
Choosing a study

What kind of studies?

old, well-established studies are likely to have results that are no longer in dispute

recent studies show the “cutting edge” of developmental research and help educate visitors about science as an ongoing process

*activities with tasks similar to research currently conducted in your museum are not recommended



Research Toys: Conceptual Reasoning

Categories

How does conceptual reasoning develop in early childhood?



Blickets

Are children sensitive to the relationship between the name of an object and its properties?



Research Toys: Mathematical Reasoning

Cardinal Number

When do children understand that the amount of things in a set are associated with a number word?



Intuitive Algebra

How do children understand 'part' and 'whole' in mathematical relationships?



Research Toys: Executive Function

Greedy Monkey

How does impulse control develop in toddlers and preschoolers?



Inhibition

How are impulse control and the ability to take different perspectives related in young children?



Research Toys: Understanding People

Infant Pillows

How do scientists know what babies are thinking before they are able to talk?



Emotion Dolls

How do stories and facial expressions affect children's understanding of different emotions?



Research Toys: Teaching and Learning

Novel Toy

How does direct instruction affect a child's play behaviors?



Praise

How does children's motivation change after being praised for "hard work" vs. "being smart?"



Research Toys: Social Reasoning

Stickers

How willing are children to share and what factors influence the decision to share?



Owner Dolls

Do young children understand when the owner of an object has changed?



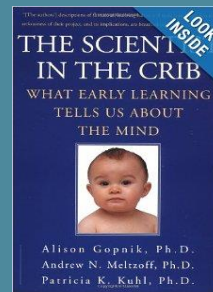
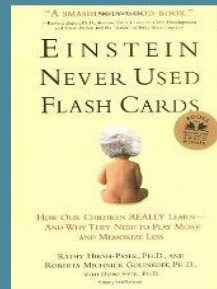
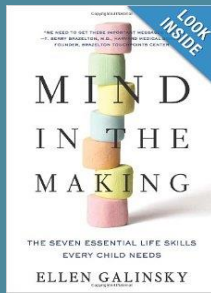
Getting Started



Find a study
Develop a toy
Prototype/Pilot
Training
Evaluation

Review the Literature

- Start with books, articles, and other resources – not with research papers!



Online Resources

- Science Daily – Look under the “Society and Education” tab for the most current studies
- Science Friday – Search under the topic “Brain” for studies about children’s learning

Access Original Papers


- www.informalscience.org
access to EBSCO database = full text articles from 1,000+ journals
- *Early Childhood Research Quarterly*
(*NAEYC*)
- webpages of professors or university labs
- contact the lab, or ask someone with a university connection for help

Develop, Pilot and Refine

- Identify what children did while participating in the study.
- Find, create, or buy materials to replicate the task(s) or create a similar activity.
- Try the activity with visitors, identify success/challenges and make changes.
- Draft an interpretation guide.
- Train staff.
- Observe staff and provide feedback.

Toolkit Resources

- “Developing Research Toy Activities”
- “Reading Research Papers – An Educator’s Guide”
- Formative Evaluation: Research Toy Interaction Observation and Interview Instrument



Translating Research for Museum Audiences - Developing “Research Toy” Activities

Introduction

This document offers suggestions for drawing on the combined expertise of museum educators and scientists to translate jargon-filled research articles into activities that can be used with public audiences in museum environments. Development of the *Infant Area* (an exhibit for children ages 0-12 months and their caregivers at the Museum of Science, Boston) provides an example of activities created by educators based on research in visual development and causal learning.

The following questions can help guide the development process:

What is the goal for presenting research in the museum?

Your goals will help to define what types of studies are relevant, and what aspects of those studies are most important. You might choose to focus on:

- The results of the studies—what scientists know about child development (providing take-home messages to visitors). In this case, you will search for research articles based on the topic of the study, or the age groups or other demographics involved in the study (compared to your audience).
- The methods in the studies—how scientists study child development (encouraging visitors to observe children’s learning). In this case, you will want to find studies that used materials that you can replicate, and where scientists were observing things that your visitors might also be able to observe.
- Your goals might include both aspects described above. You might set broad limits on topics of research to be presented, but attempt to find studies that can be replicated in a museum context.

What kind of studies should you choose?

- Old, well-established a dispute.
- Recent studies show a new discovery about science as an or choose from, if you will replicate studies.
- In the *Infant Area*, we quick take-home message insight into how scientist (Aquarium).



Reading Research Papers - An Educator's Guide

Introduction

To successfully present a research toy interpretation, it is helpful for interpreters to read and understand the original paper researchers wrote to share their study findings with scientific peers. This document helps to break down a research paper for non-scientist readers.

Article Title and Citations What journal was it published in? Who are the authors? What lab(s) and institution(s) do the authors represent?	
Research Question What question were the researchers interested in trying to answer? Why was it an important question to ask?	
Hypothesis What did the researchers think participants would do in the study? Why?	
Methods Who were the participants (age, demographics, geographical location, testing site)? What did participants do? - What were the stimuli like (pictures, toys, stories, etc)? - What did researchers do with the stimuli? What did they ask children to do?	