

Learning through... activity!

Providing kids with basic tools that still allow them to make a huge variety of structures allows for lots of creativity. We have learned a lot by using the [Exploratorium's Learning Dimension Framework](#) as an observational tool, here of some of the learning themes you can expect to see in this activity:

Initiative

Our kiddos set very ambitious goals for cardboard construction! And often face set backs in their processes, which makes for great tinkering. We often see:

- Setting goals and planning materials, steps, and strategies to achieve them.
- Persisting through set backs by testing new materials or techniques.
- Taking inspiration from each other's work and offering feedback to each other around tools or materials.

Developing Understanding

Kids often experience new tools and materials in our mystery box workshops. This leads to some amazing ah ha moments! We see:

- Having a realization about a tool or materials and offering an explanation of their understanding.
- Complexifying projects or concepts as they build mastery with new tools.

Engagement

With the wide variety of materials and interesting tools, our mystery box kit is engaging for all ages. We see:

- Exploration of materials to inform creative designs
- Making many things! Trying materials over and over again in new ways.
- Staying for the full duration of a program (and beyond!) and finishing many projects.
- Showing strong emotions of pride and joy at their creations.



Cardboard Construction Facilitation Guide

The Bubbler's cardboard construction kit is one of our favorites! It is easily adaptable to large or small groups, targeted design challenges or just open ended explorations with the tools and materials.

- All ages
- Minor facilitation needs
- 30 min to 2 hrs
- Drop in or targeted challenges
- Larger group workshops?

Materials in this kit:

- Makedo cardboard toolkits
- Canary cardboard knives
- Klever Kutter cardboard knives
- Paper hole punches
- Corrugated tubing
- Gaffer's tape
- Brads
- Cotton twine
- Lollipop sticks
- Plastic wheels
- Pipe cleaners
- Plastic straws
- Plastic needles
- Dowel rods/skewers
- Recycled styrofoam
- Packing peanuts
- Storage containers
- Cardboard

Things to know:

To prompt or not to prompt?

It is very tempting to provide challenges or prompts for kids around cardboard construction. When we initially made our kit, we included many various prompt, but found that the people who relied on them were adults and parents. Kids found enough inspiration in the variety of materials and tools as well as their imaginations. However, if someone is having trouble getting started, we stick with *Make something that is helpful! To you or to your community.*

To take home or leave behind?

Kids are so proud of their contraptions! Yet, being able to reuse materials is helpful on a budget. We have found if we set the expectation at the beginning, the taking apart at the end goes smoother. Lines we have heard:

- Only things that fit in your bookbag can go home.
- You can leave your contraption for display for (designated time) or choose to take it apart now.
- Let's take a picture so you can refer back to this when we do construction again!

Inspirational texts



It's only Stanley
by Jon Agee



Not a box
by Antoinette Portis



Rosie Revere Engineer
by Andrea Beaty



Oh no! (Or how my science experiment destroyed the world)
by Mac Barnett



Created by Rebecca Millerjohn & the Bubbler team
www.madisonbubbler.org



Making Something!

Skills to model:

Creative Brainstorming

It's ok to list ideation as a skill to model

- Read one of the books about different creations and think together about what you would make. Prompts work for design challenges, but for open ended activities we suggest simply, "Make something that is helpful... to you, or your community."
- If you are doing a design challenge, take some time to brainstorm together. What would a robot need to rebuild a city? To put out a fire? To sew on a button?
- Put supplies out in eye catching ways to give inspiration.
- Make your own contraption as kids work, and model explaining your planning

Cutting with Cardboard knives

Often times, our younger learners want to slice, rather than saw with a cardboard knife. Deming your tools helps them be more successful and avoid injuries.

Connecting Cardboard or Manipulating Paper

There are lots of ways of joining materials together (apart from everyone's favorite TAPE.) Having an example wall is a great way to show possibilities to little makers.



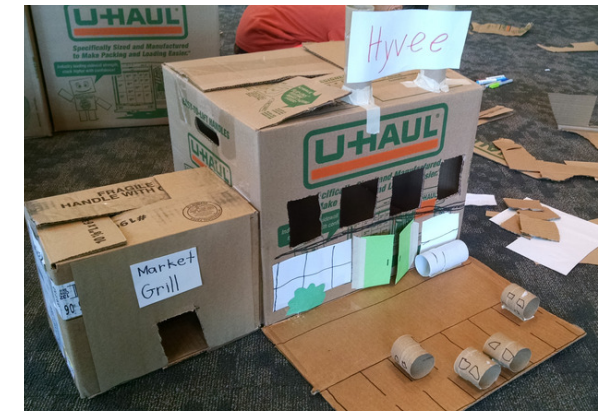
Project ideas - see more pics on our website!



Build cars for a drive in movie!



Make a cardboard city with all the important buildings! (... like a tunnel of love)

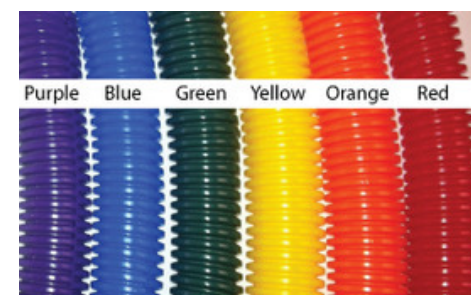


Our favorite supplies!

Cardboard Knives - Klever Cutters & Canary Cardboard Knives



Corrugated Sleeving (Robot arms!)
Available in bulk from McMaster-Carr



Gaffer's Tape
Easy to tear in all directions without scissors



Facilitation Questions (for sneaky evaluations!)

It's hard to tell what kids are thinking and processing during making, especially without interrupting their flow. Over time, our team has designed these conversational questions to genuinely track learning outcome during making.

- What is the name of your creation ?
- What does it do? Or What kind is it?
- What makes it so awesome?
- What would you change to make it more awesome?