

# “In the Construction Zone”

## Module 10, Build a Better Roof



### Prompt:

Can you build a roof to protect someone from the rain? Use simple materials from around your home to construct the roof. Then, test it out with a “rain storm”!

### Materials:

- A plastic bin or tupperware (approximately the size of a tissue box-- or larger)
- Watering can and water
- Materials for building (use whatever you have, here are some recommendations):
  - Tape
  - Scissors
  - Paper plates
  - Tissue paper
  - Construction paper
  - Straws, dowels, popsicle sticks, and/or coffee stirrers
  - Coffee filters
  - Waxed paper

### Instructions:

1. Read the prompt with your child.
2. Show your child the plastic container. Explain that this is the base of a house. However, the house does not have a roof! Tell your child that there is a rainstorm coming. They will need to build a roof that can protect a person from the rain!
3. Work together to cut a few “people” out of construction paper. Cut them to a size to fit in the plastic container.
4. Have your child put one paper person in the plastic container. Save the rest for when your child tries again.
5. Show your child the materials they will have to build a roof with. Explain to them that they can build as many different roofs as they want. It is not about getting it “right” on the first try, the activity is about trying many different ways of building and using materials!
6. Encourage your child to explore the materials and test them out. What materials will

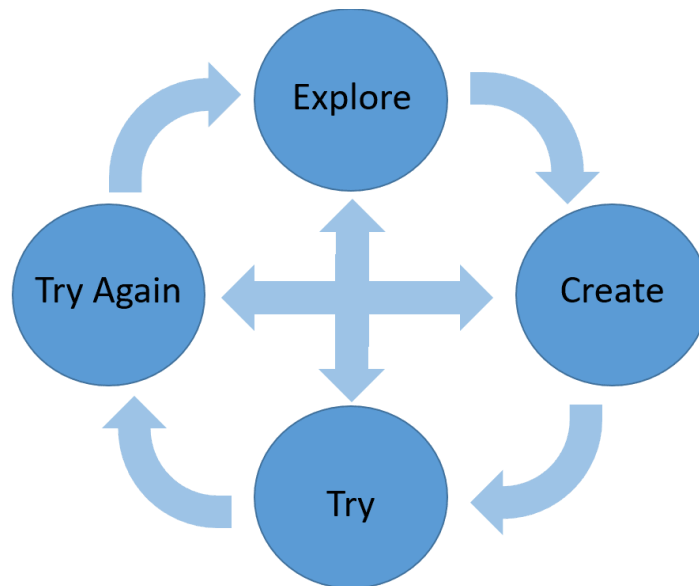
water roll off of? What materials does the water sink into?

7. Give your child time to work on building their roof. Remind them that their “job” is to make a roof that will go over the plastic container and keep the paper person dry.
8. When your child is ready to test a design, explain to them that you will be simulating a rainstorm with the watering can. If you are working inside, do this over the sink or a bathtub. Lightly pour water on their roof for 10 seconds. Have them check the person inside-- did they get wet?
9. Encourage your child to keep trying new designs and testing them out.

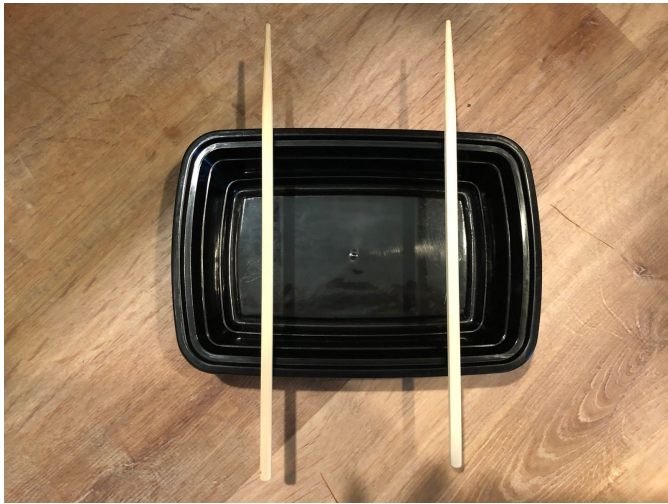
Note: When we do this at the Museum, the person inside gets wets the first few times-- and that's okay! The fun part of this activity is testing designs and making new ones. In Step 3, you should have created multiple paper people as back-ups for when the first few inevitably get wet. These will come in handy!

### Resources:

At Boston Children’s Museum, we use a special process when we do engineering design challenges, like Build a Better Roof! The image below shows the most important aspects of doing engineering with kids: exploring materials, creating a design, testing the design, and re-designing (trying again)! Note that the process is not linear, we expect that kids will cycle through it many times until they create a design that fully suits their project.



Below are some images from a very simple sample roof we constructed. Do you think this roof will keep out all of the water? What would you improve or change?



**Extensions:**

If your child needs more challenges to go along with this activity:

- Challenge them to build something that will withstand a longer rainstorm.
- Introduce a new material into the challenge-- like tin foil or cardboard.
- Change the plastic container your child is working with. Give them something smaller or larger. Does this make the challenge more difficult? Or easier?

Together with your child, go to the “In the Construction Zone” topic on Flipgrid and share their favorite roof structure.