

Design Challenge: Gumdrops Towers

Spark your child's creativity with this engaging design challenge. In this activity, your child will build a tower using gumdrops (or another soft material such as marshmallows or modeling clay) and toothpicks. The goal is to build a tower that is as tall as possible.

We have included step-by-step instructions as guidelines for the design thinking framework. Your job is to help your child through the design thinking process by teaching them the importance of empathy, brainstorming, and prototyping. This activity is aligned to the following NGSS: K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3.

What You Need

- Gumdrops (or any other soft material like fruit snacks, marshmallows, modeling clay, etc.)
- Toothpicks
- Ruler or tape measure
- Pen and paper for brainstorming and note-taking
- Optional: a small piece of cardboard (cut to fit at the top of the finished structure)
- Optional: at least 20 pennies (feel free to add more)



What You Do

1. Give your child some gumdrops (or fruit snacks, marshmallows, or small balls of modeling clay) and toothpicks to start. Allow your child to explore the materials by asking them to build whatever they would like.
2. After allowing your child to build freely for a while, ask them to take some notes on their creation. Ask your child to draw their design. Then, help your child measure and write down the height and width of the structure.
3. Now, explain the design challenge to your child.
 - Tell them their goal is to design a tower using gumdrop candies (or whatever material you provide) and toothpicks. The structure should be as tall as possible and be able to stand on its own without falling down.
4. Ask your child to **brainstorm** ways in which they could change their current creation or build something completely new. For example, ask your child to build a structure that is narrower and taller.
5. After your child has finished brainstorming, ask them to choose one of their ideas to build. Make sure to remind your child of the overall goal of their design.
 - This is an important step of the design thinking process because it teaches your child to prioritize the functionality of their design over personal preferences, and it prevents them from getting too emotionally attached to one design.
6. Now it is time for your child to actually build, or **prototype**, their design! Give your child room to test and create on their own, but help out if they need assistance.
7. Once your child has finished building, help them to **test** their prototype.
 - If their prototype stands on its own, congratulate them on their success!
 - If your child's design does not stand on its own, ask them what they think went wrong. Have your child go back to the original brainstorming and prototyping stages. Ask your child to redesign their structure and continue brainstorming and prototyping until their design is successful.
 - Once your child has a tower that can stand on its own, consider one of the following activities:
 - Measure the height of the tower and challenge them to make an even taller tower.
 - Try placing a piece of cardboard on top of the tower and add pennies until the tower fails. Then, challenge your child to build a new design that can hold more pennies than their previous design.
8. To finish the activity, ask your child a few final questions.
 - What did they learn during the initial exploration of the materials?
 - What different types of designs worked or did not work in each challenge?
 - What was the most challenging part of the activity? What was the most fun part?