

Activity: Toothpick Construction**Focus:** Essential Employability Skills, Job & Career Pathways**Grade Range:** K - 2nd**Time:** 30-40 minutes**INSTRUCTIONS**

1. Begin today's lesson by asking students to name things that can be built or are built (i.e., houses, buildings, schools, bridges, etc.)
2. Read *The House That She Built* aloud to students. *Note: If teacher allows, you can move the students to a "group" setting (carpet, reading space).
3. Explain to students today's challenge: They will be working in small groups to design a structure using chosen building materials (the toothpicks and whatever joining materials the mentor team has provided). Options of challenges can be, but are not limited to, the following (*Note: It is recommended to start with one challenge that each team will compete against each other to start. Should time allow, teams can choose an additional challenge to complete):
 - Build the tallest structure you can without it tipping over/breaking at the foundation.
 - Build the strongest structure you can with the goal of the structure being able to support a large book (or other available item such as stapler, pencil box, water bottle, etc.)
 - Build a bridge that connects two items (such as books) and can support various smaller items (such as pencils, erasers, tape, glue, etc.) without breaking.
4. Separate students into up to 5 small groups with at least one mentor paired with each group. Each group will need one box of toothpicks and a portion of the chosen joining materials (optional to provide/have students get paper to draw design ideas before building).
5. Allow groups about 10-15 minutes to design and complete the designated challenge.
6. Once group construction is complete, all students should become "hands off" and not permitted to adjust the structures at this point.
7. One or two mentors will now walk around with the test item and trial each group's structure (i.e., walk around and set a large book on top to test the strength if that was the designated challenge).
8. The group (or groups) whose structures pass the test will be declared the most effective structure!
9. If time allows, groups may choose to repeat the challenge to improve their structures, or complete one of the additional challenges. Follow the same steps as before, ending with mentors testing each structure.
10. To wrap up, discuss successes and trials as a whole group. Consider the following questions:
 - What worked well in your structure?
 - What could have been improved in your structure?
 - Are there any materials you think could help your structure be more sturdy/tall/successful?
 - How do you think builders use these strategies in real life?
 - Why do you think blueprints are necessary in construction?

SYNOPSIS

Students will participate in a STE(A)M activity where they will design and construct structures using toothpicks and other materials.

MATERIALS

- Book: *The House That She Built*
- Toothpicks (recommended: 1 box per small group—at least 6 boxes total)
- Joining material (i.e., jellybeans, marshmallows, gumdrops, etc.)

TIPS

- Your team can choose one material to take to build with, or more than one! As a small group, students can choose what they want to build with, or mentors can choose prior to the visit.
- Optional: have students draw their design ideas before building to mimic preparing blueprints.