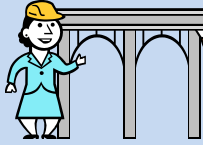


Activity - Paper Structures



Grade Level:
All

Activity Time:
20 minutes

**Adapted from
SWE.org*

The Challenge: Imagine you are a structural engineer and you must design and build the strongest structure using a limited amount of paper.

Materials:

- 30 sheets of 8½" X 11" paper
- One roll of masking tape
- Books to stack on top of the structure

Introduction:

1. Introduce the challenge to your child by asking them to describe some of the tallest or unique buildings or structures that they have ever seen.
2. Have a discussion about the types of careers that could be involved in the process of designing and building a structure or building.
3. Tell them that today they will be structural engineers who must design and build the strongest structure using a limited amount of paper and time. Their challenge is to build a structure at least 6 inches high which can support a book. They will have 5 minutes and 30 sheets of paper. They may not tape the structure to a table or any other fixed structure.

Brainstorm:

4. Brainstorm with your child for 3 minutes possible designs for their structures. As the two of you are brainstorming, ask open-ended about their designs.
 - *What types of designs do you think would be the strongest?*
 - *How can you manipulate paper to make it hold more weight?*

Build and Test:

5. Give your child a stack of paper and a roll of masking tape. They will have 5 minutes to build their structure.
6. Once the time is up, test the structure by placing a book on the structure. Continue to add books until the structure collapses.

Reflection and Discussion:

7. Once your child has completed the challenge, spend some time discussing what worked best about the structure and ways to

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improve the structures. Use the following questions to guide the discussion.

- *How did having a time limit affect your end product?*
- *How would you redesign your structure?*

Some ways you can make a structure more stable is by:

- Making the base wider
- Taper the structure (Make the top skinny and the base wide)
- Make the base heavier
- Lower the centre of gravity. The center of gravity is the point at which all of the weight of an object appears to be concentrated.
- Add more support points