



ACE MENTOR PROGRAM

ARCHITECTURE • CONSTRUCTION • ENGINEERING

STRUCTURAL ACTIVITIES

NEWSPAPER TOWER

DEVELOPED BY:
THE ACE MENTOR PROGRAM OF FREDERICK, MD

Educational Goals Learn the scope of structural engineering and the basis of stability. Learn about the strength of different shapes and structures. Develop the skill of working in a team.

Description Using newspaper as the primary structural material, students will build either the tallest free-standing structure or the strongest four-foot-tall structure. As an alternative, students can attempt an even more challenging activity of building a bridge.

Time 45 minutes

Materials

Each group of students will need:

- ▶ 3 or 4 sheets of newspaper
- ▶ 1 roll of tape
- ▶ 1 pair of scissors
- ▶ 1 ball of string (for the bridge option only)

The purpose of this activity is to build either the tallest free-standing structure or the strongest four-foot-tall structure. Discuss stability, strength of cross-sectional shapes, and teamwork to reach final design/construction. Measure the height for “tallest” structures and load the “strongest” structures. Note that loading the structures takes some forethought. Either provide a container for weight (e.g., a cup for pennies or ball bearings, if something fancy is not available) or describe the requirements to receive the weight (e.g., a clear area to hang, a flat surface to rest, etc.).

For students who have already done this activity in previous years, a bridge option is meant to be even more challenging. A ball of string can be added to the mix of materials to see what the groups would come up with. Prescribe a challenging distance to span (i.e., 4-5 feet) and decide whether fixing the ends of the bridge is acceptable. Then, load the bridges and see what happens.

Newspaper Tower

created by Sanj Malushtre,
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STRUCTURAL ENGINEERING



For students who have already completed this activity, try building the strongest bridge.



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Procedure

1. Split students into groups of 4-5, depending on the number of students.
2. Provide each group with the materials.
3. Inform groups that they must choose to build the tallest structure or the strongest structure and explain some of the structural issues and principles that students should take into consideration.
4. Give students time to brainstorm ideas and design the best possible structure before they start construction. Mentors can go around to each group and offer advice or assistance.
5. At the conclusion of the exercise, the lead mentors should test or measure each structure and then announce which structure(s) are the best.
6. Explain to the group why some structures were very strong and others were not. ▽

