Newspaper Structure

Summary

Use newspaper rods fastened with tape, to assemble a free-standing structure that students can get into.

Current Physical Science Curriculum links

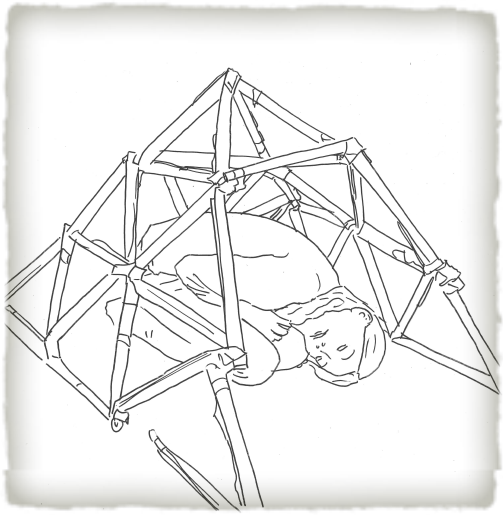
Force (gr 1), Materials + Structures (gr 3), Forces (gr 5)

Draft Physics Curriculum links

Forces (gr 2), Energy (gr 4), Newton's Laws of Motion (gr 6)

Processes of Science/Curricular Competencies

Manipulation, comparing observations and predictions, inferring, concluding, consideration of alternatives



Materials

- stiff rods, diameter 1-2cm, length ~40cm e.g. pieces of broom handle or conduit pipe. One for each pair of students.
- several newspapers, a couple for each pair of students. Remove the smaller pages of shiny advertisements.
- masking tape, one roll for each pair of students
- a large floor space for building e.g. gym

Materials Cost

Use recycled newspaper. Rods free from recycled materials, or about $1 each from the hardware store. About $20 for masking tape for a class of students, or ask students to bring in.

Procedure

Tell the students that they will be using only newspaper and tape to build a free-standing structure large enough for a student to get into. Prepare students by letting them know that this project will take some time and requires patience.

Show students how to make newspaper rods:

Make a stack of eight sheets of newspaper and roll them tightly around the plastic/wooden rod. Use small pieces of tape to secure the ends and centre of the newspaper. Remove the plastic/wooden rod from inside the newspaper roll. Over days, make a common bin of rods, about 50 for each group. Store the rods upright so that they don't get bent.

Show students how to securely join the newspaper rods:

Flatten the ends of two newspaper rods. Hold the flat faces tightly together and bind them tightly with masking tape. If additional rods are added to the joint, they should be flattened and taped tightly to the stack of flat rod-ends.

Introduce strong shapes that can be used for the their structures:

Depending on whether students are already familiar with the superior strength of a triangle in structures, review or introduce this concept. Ask students to build a triangle from three newspaper rods, and feel how strong the shape is. If there is weakness, point out the most likely source: a joint that is not flat.

Let the Big Build begin!

Allow at least a morning for students to work in groups of three or four on their structures. Assist where needed, but make sure the students are designing and building their own structures as much as possible. Groups can borrow ideas from each other. Once the frame is in place, students may want to add a skin of single sheets of newspaper.

More details, references and further experiments

- This activity at www.ingridscience.ca/node/468

ProD Day Oct 24th 2014
Hands-on Science
with Ingrid Sulston