Spaghetti Bridge-Building

Spaghetti bridge-building is an activity that has been used successfully from kindergarten on up to university engineering schools. It is uniquely malleable in that you can make it as technical or non-technical as is appropriate for your students.

The most successful way of doing spaghetti bridges at the high school level for me involved showing slides of different bridges, and talking briefly to students about what gave each design its strength.

I generally get kids to work in pairs on bridges.

Each team is given a bottle of glue (refillable) and a box of spaghetti that has slightly less spaghetti than the maximum weight allowed by the contest rules (see poster). They are also given a piece of plywood that they can use as a work station. It allows them to put their work away without risk of breakage.

I give them a certain number of classes to get their bridge done by. I often find myself giving them worktime during lunch hours as the deadline draws near.

On Test-To-Destruction day, I get weights - and surprising amounts of them!

Each bridge is weighed and the weight recorded. Then each bridge is photographed with its builders. (I love digital cameras!)

Each bridge is set up between two tables, with a garbage bin or tote below to catch the debris. Weights are hung on the bridge from a rig. (use weight-lifting weights - the ones for science beam balances will not be enough!) The rig can be as simple as a strong bit of string tied around the center of the bridge. The only issue is to make sure the rig is exactly the same for each bridge!

As weights are added, the recorder calls out the amount of weight now on the bridge. More and more weight is added until the snapping begins. You can see and hear the bridge beginning to give way. However, don't wait too long - spaghetti and glue is surprisingly strong and it is flexible. I generally do a 30 second wait and then hang the next weight on. We keep going until the bridge finally and spectacularly falls!

We record the weight at bridge breaking….

Then I calculate the load ratio (weight at breaking in grams divided by bridge weight in grams) which tells us how much weight was carried per gram of bridge weight. The winner is the bridge with the highest ratio.

I sometimes also give prizes for nicest looking bridge, for best construction techniques (ie it looks like a bridge, not just a mass of spaghetti glued together!)

Bridge-Building Week

Prizes, fun, destruction!

A spaghetti bridge has held up 388 kilograms of weight…
Can you build a strong bridge?
How can materials be made stronger than they usually are? How much weight can your bridge hold up?
Build a bridge and enter it in the strength contest - Help test it to destruction to find out how strong it is!

Bridges must be at least 60 centimeters long, and made only of spaghetti and glue
4 classes of spaghetti bridges…
Grades 11/12
Grades 9/10
Grades 7/8
Intermediate - Grades 3/4/5/6
Bridges must be at least 30 cm long and made of Popsicle sticks and glue.

Primary - Grades 1/2

Bridges to be tested to destruction on !