Activities

The Magic School Bus Under Construction

Grades: 3–5

Overview
Children build a bridge with gumdrops and toothpicks, then test the strength of their bridge.

Field Trip Notes
Two inches tall, and trapped in a bathroom at Wanda's house, the kids have to get out before Wanda's mother discovers them. Gathering building materials such as spiky hair curlers, sticky BandAids, dental floss, and cotton swabs, the kids use what they've learned about structure to construct a series of towers and bridges across the bathroom to an open window! They get across the toilet OK - but will they get past the alligator in the bathtub?
Gumdrop Bridge

Time: 30 minutes
Group Size: 2-4

The Magic School Bus kids discover that the right bridge design can carry them across an alligator-infested bathtub. Challenge your kids to bridge a chasm with gumdrops and toothpicks.

What You Need
- 1 bag gumdrops
- Half a box of round toothpicks
- Ruler
- 2 equal stacks of books
- Small cup
- Paper clip
- Pennies or other weights
- Copies of GUMDROP BRIDGE page

Talk About It
Show kids the gumdrops and toothpicks. Ask: Could you build a strong bridge with gumdrops and toothpicks?

What To Do
1) Pass out gumdrops, toothpicks, and activity sheets.
2) Each group makes two equal stacks of books high enough to hang a cup from the bridge. Make the stacks 10 inches apart.
3) Ask: How long and strong a bridge can you build if you just string gumdrops and toothpicks together? Try it.

4) Challenge kids to create a better bridge design and build the strongest bridge they can between the book stacks.

5) To test bridge strength, straighten one arm of a paper clip to make a hook. Poke it through the cup, and hook the cup on the middle of the bridge. Add pennies to the cup until the bridge collapses.

6) Challenge teams to make a stronger bridge. Ask: How will you change your design? What shapes will you use?

**Next Stop**
Challenge teams to build the tallest tower they can with gumdrops and toothpicks. Does “triangle power” help in building tall towers?

**Subjects:**
- Engineering
- Science
- Observation
- Force
- Gravity
- Transportation
- Infrastructure
Draw your first gumdrop bridge.

Strength Test #1
Hook the cup to the middle of your bridge. Predict how many pennies you can put in the cup before your bridge falls. Add one penny one at a time.

Prediction _______ Result _______

Draw your new, improved gumdrop bridge.

Strength Test #2
Predict the penny strength of your new bridge. Test it.

Prediction _______ Result _______

Make It Stronger
Think: Can you make your bridge stronger? What would you change? Work with your team to make strong bridge parts. Draw your new bridge design. Then build it!