



Marshmallow Tower

icon:

Goal

Participants will be introduced to basic concepts such as engineering structures and efficiently using limited available resources. Participants will make a tower out of spaghetti and see how high up they can place the marshmallow without the tower collapsing.

Info

15 students, 90 minutes

Materials (5 teams)

200 Spaghetti sticks (avoid spaghettini)

20 Marshmallows (standard size)

20 yds Masking tape

20 yds String

x5 Scissors

20 Paper lunch bags

x1 Measuring tape

Preparation

For each team, create marshmallow challenge kits containing the following:

- twenty sticks of spaghetti
- one yard of masking tape
- one yard of string
- one marshmallow

These ingredients should be placed into a paper lunch bag, which simplifies distribution and hides the contents, maximizing the element of surprise.

The actual marshmallow challenge takes eighteen minutes. Eighteen minutes seems to be the magic time. Twenty minutes is too long and fifteen is too short.

Class Instructor Instructions (10)

Build the Tallest Freestanding Structure: The winning team is the one that has the tallest structure measured from the tabletop surface to the top of the marshmallow. That means the structure cannot be suspended from a higher structure, like a chair, ceiling or chandelier.

The Entire Marshmallow Must be on Top: The entire marshmallow needs to be on the top of the structure. Cutting or eating part of the marshmallow disqualifies the team.

Use as Much or as Little of the Kit: The team can use as many or as few of the 20 spaghetti sticks, as much or as little of the string or tape. The team cannot use the paper bag as part of their structure.

Break up the Spaghetti, String or Tape: Teams are free to break the spaghetti, cut up the tape and string to create new structures.

The Challenge Lasts 18 minutes: Teams cannot hold on to the structure when the time runs out. Those touching or supporting the structure at the end of the exercise will be disqualified.

Start the Challenge (18)

Start the countdown clock and the music with the start of the challenge.

Remind the Teams of the Time: Countdown the time. Usually, I call 12 minutes, 9 minutes (halfway through), 7 minutes, 5 minutes, 3 minutes, 2 minutes, 1 minute, 30 seconds and a ten-second countdown.

Call Out How the Teams are Doing: Let the entire group know how teams are progressing. Call out each time a team builds a standing structure. Build a friendly rivalry. Encourage people to look around. Don't be afraid to raise the energy and the stakes.

Remind the Teams that Holders will be Disqualified: Several teams will have the powerful desire to hold on to their structure at the end. Usually because the marshmallow, which they just placed onto their structure moments before, causing the structure to buckle. The winning structure needs to be stable.

Finish the Challenge (10)

After the clock runs out, ask everyone in the room to sit down so everyone can see the structures. Likely, just over half the teams will have standing structures.

Measure the Structures: From the shortest standing structure to the tallest, measure and call out the heights. If you're documenting the challenge, have someone record the heights.

Identify the Winning Team: Ensure they get an ovation.

Wrap up with the Lessons of the Marshmallow Challenge: Describe some of the key lessons of the marshmallow challenge.

Kids do Better than Adults: On virtually every measure of innovation, kindergarteners create taller and

more interesting structures.

Prototyping Matters: The reason kids do better than business school students is kids spend more time playing and prototyping. They naturally start with the marshmallow and stick in the sticks. The Business School students spend a vast amount of time planning, then executing on the plan, with almost no time to fix the design once they put the marshmallow on top.

Tips

Wrap Up: Generally, a tight [presentation](#) introducing the challenge will motivate the team. Let them know this challenge has been conducted by tens of thousands of people in every continent, from the CFOs of the Fortune 50 to Students at all levels. The lessons learned are universal.

Contributors

Max Gochioco: Adapted the popular marshmallow challenge into a lesson plan format.

External Resources

http://marshmallowchallenge.com/TED_Talk.html