



WAYNE STATE  
UNIVERSITY

# LESSON PLAN

## PIPE CLEANER SKYSCRAPER CHALLENGE

### SUBJECT AREA: ENGINEERING AND PHYSICS

**DESCRIPTION:** Working in teams, students will attempt to build a free-standing tower using pipe cleaners.

**LESSON OBJECTIVE:** Use critical thinking and teamwork to build the tallest tower. At the end, students will process what worked well and how they overcame any challenges that stood in their way.

### MATERIALS/SUPPLIES:

- 15-20 pipe cleaners per team
- Optional: This activity could also be completed using other supplies, such as toothpicks and marshmallows

### ACTIVITY PROCEDURES:

1. Group students in teams of three or four.
2. Pass out bundles of pipe cleaners (or other selected building supplies).
3. Instruct students that each team has 10-15 minutes to work together to build the tallest free-standing structure. Encourage students to discuss or map out their initial plan.
4. After working for five minutes, tell your students to freeze: "Your team had an unexpected budget cut, and one of your resources has been depleted. Each team member must now put one arm behind their back."
5. After an additional three minutes, tell your students to freeze again: "Your engineering company realized that the loss of resources was detrimental to the product. The manager has decided to expand your operations to bring in more business, allowing you to use both arms again; however, you are now unable to speak the same language. Continue your task without speaking."
6. Another two minutes passes. Have your students freeze again: "Business is booming, and your company has hired translators. Complete the task with all your resources. You have one minute left!"
7. Provide a 20-second warning before having students step back from their structures.
8. Walk around the room and note the different shapes and sizes of each structure. Determine the tallest tower and have the team explain their design.

### DISCUSSION AREA AND QUESTIONS:

- What went well with building?
- What challenges did you have to overcome, and how did you overcome them?
- How did you feel while building? How did you feel when road blocks were added along the way?

*Adapted from Lekita Jones, WSU College of Nursing*