



## STEM Day Lesson Plan

**Lesson Plan Author(s) Names and Affiliation:** Lesson plan is based on a Pinterest search for STEM projects and has been modified for WSU STEM Day by Lekita Jones

**Title:** Pipe Cleaner Challenge

**Subject Area:** Engineering, Critical Thinking, Team Building

**Learning Activity Description:** Students will try to build a freestanding tower with pipe-cleaners and overcoming particular obstacles along the way of the build.

**Lesson Activity Objective:** Learning to overcome obstacles that are presented in a student's life presents them a better view on how to work through issues in school and in life. This activity provides students to find better ways of dealing with obstacles that come along through their lives. It also teaches about team work and critical thinking which can benefit them especially in college. Having students build with tons of interruptions and working together in a group gives them a feeling of what to expect in the real world.

**Lesson Activity Outcomes:** The expected outcome is that students are able to build a freestanding tower with many interruptions along the build and that they are able to work together in a group using critical thinking.

**Materials/Supplies Listed:** 15 pipe-cleaners per team

### Teacher Procedures:

1. Group students into teams of 4 - 6.
2. Pass out bundles of 15 pipe-cleaners to each group.
3. Instruct students that each engineering team is tasked to build the "tallest free-standing structure" with the materials provided. Teams will have about 10 minutes. Free-standing means the structure can not be held, taped, wedged between desks, etc. Ask for any clarification.
4. After working for 2-4 minutes: tell 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 his/her back!"

5. 2-4 more minutes: freeze again. "Your engineering company realized that the loss in resources were detrimental to the product. The manager has decided to expand your operations globally to bring in more business. Your team now operates in (insert favorite country here) allowing you to use both arms again. But now you are unable to speak the same language. Continue the task without any speaking!"
6. 1-2 minute: "Business is booming, and your company has hired translators. Complete the task with all your resources! One-minute left!"
7. Count down from ten and stop the activity.
8. Walk around the room and note the different shapes and designs of the towers. Determine the tallest tower and allow the team to explain their successful design.

**Preparation Time for Learning Activity:** 20 minutes

**Room set-up:** Tables that can seat 4 to 6 students

**Group Strategies (example, group size, expected time for groups, etc.):** Students will work in groups of 4 to 6.

**Student Products/Artifacts/work pages:** NA

**Assessment Criteria/Rubric:** Group discussion at end of project, what went well, what could have gone better, how did you feel?

**Closing/Transition to next activity:** NA