



IMPORTANT:

Read all directions before proceeding

TINKERTOY TOWERS

OVERVIEW: This program is intended to stress planning and teamwork. The class is divided into groups of about six students each. Each team is provided a Tinkertoy set and told they are to plan and then construct a Tinkertoy tower. During a timed period, the teams compete to determine which group can build the tallest tower. The tower building contest is repeated up to three times with discussion between each trial.

OBJECTIVE: Children develop problem solving and teamwork skills as they strive to build the tallest tower.

GRADE LEVEL: 3-6

STATE STANDARDS:

SCIENCE INQUIRY AND APPLICATION

During the years of PreK-4 all students must become proficient in the use of the following scientific processes, with appropriate laboratory safety techniques to construct their knowledge and understanding in all science content areas:

- *Observe and ask questions about the natural environment
- *Plan and conduct simple investigations
- *Employ simple equipment and tools to gather data and extend the senses
- *Use appropriate mathematics with data to construct reasonable explanations
- *Communicate about observations, investigations, and explanations
- *Review and ask questions about the observations and explanations of others

TIME: 30 minutes

VOCABULARY: Free standing structure

MATERIALS: Per group of 3-4 students

- Tinkertoy container
- Measuring tape

For the presenter:

- *A stop watch
- *A CD player
- *A CD appropriate for students

DEVELOPED BY: _____

Alan Stobbe, Engineer, BP Lima Refinery

Barb Wasely Engineer, BP Lima Refinery

PROCEDURE:

STAGE ONE:

Divide the class into 4 groups of 5-6 students. The students should be seated at the tables.

Explain to the class that they will be able to use the Tinkertoy[®] kits to build the highest free standing structure and that you will measure the structure. Ask them to explain what "free standing" means.

Tell students they will have 2 minutes only. Dump out the Tinkertoys[®] yourself. Assist the groups that are having difficulty.

Stop building after 2 minutes.

Measure the height and record on chart.

Identify any structure that fell and compare it to a bridge that collapsed due to poor materials or lack of teamwork needed to produce the safest bridge.

After measuring, ask if the students noticed what happened during the building. Were there any disagreements over how to build? How many structures were there? (Some tables may have a structure for each child). However, there are not enough pieces for everyone to build a structure.

Collect Tinkertoys[®].

STAGE TWO:

Since you put the Tinkertoys[®] away quietly, we will give you another chance to build the highest structure. Add a planning stage.

Give groups two minutes to talk through some plans.

Encourage teamwork.

STAGE THREE:

Distribute and dump Tinkertoys[®].

This time, keep track of the 2-minute building time by music on the cassette.

Help any tables that need it.

At the conclusion of 2 minutes. Measure and chart.

Explain to the students that you need the right surroundings to be most creative. You cannot watch TV and do homework.

CONCLUSION:

Have students identify features of the tallest freestanding structure and identify reasons they perceive to have affected their success.

Discuss the relationship between an engineer's job and this activity. (ex. teamwork, building with a broad enough base to support the height).